AN ASSESSMENT OF THE MULTILATERAL TRADE NEGOTIATIONS ON BENZENOID CHEMICALS

Final Report on Investigation
No. 332-151 Under Section 332(b)
of the Tariff Act of 1930

USITC PUBLICATION 1427

SEPTEMBER 1983

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

UNITED STATES INTERNATIONAL TRADE COMMISSION

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Veronica A. Haggart

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Kenneth R. Mason, Secretary to the Commission

This report was prepared principally by

Edmund D. Cappuccilli, Project Leader
William G. R. Baker and Tedford C. Briggs
Energy and Chemicals Division

Office of Industries
Norris A. Lynch, Director

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

PREFACE

On December 23, 1982, the United States International Trade Commission, in accordance with the provisions of section 332(b) of the Tariff Act of 1930 (19 U.S.C. 1332(b), instituted investigation No. 332-151 on its own motion for the purpose of gathering and presenting information to assess the impact on domestic producers of and trade in benzenoid chemicals and products as a result of the implementation of duty modifications, including the elimination of the American selling price (ASP), following the conclusion of the Multilateral Trade Negotiations (MTN) and the passage of the Trade Agreements Act of 1979. This study assesses changes in U.S. and foreign trade trends, economic conditions, productivity, and the United States and foreign countries' competitiveness in benzenoid chemicals and products following the MTN. Notice of the investigation appeared in the Federal Register of January 5, 1983 (48 F.R. 524).

No public hearings were held in connection with this study. Information in this report was obtained from submissions from interested parties, Commission fieldwork and data files, other Government agencies, and other sources.

The benzenoid chemicals and products included in this study are produced in whole or in part from either coal tar or crude petroleum. The term "benzenoid" chemicals refers to cyclic organic chemicals having a benzenoid, quinoid, or modified benzenoid structure and to certain cyclic and acyclic chemicals obtained therefrom, provided for in part 1, schedule 4, of the Tariff Schedules of the United States (TSUS). The groups of benzenoid chemicals and products included in this study are industrial organic chemicals which include intermediate chemicals and finished organic products such as dyes and pigments and drugs and related products.

Intermediate chemicals are used primarily in the manufacture of other more complex chemicals and finished products. The large-volume intermediate chemicals, known as commodity chemicals, are used mainly to produce polymers such as plastics and synthetic fibers. The smaller volume intermediate chemicals are used mainly in the manufacture of specific, more advanced chemicals and finished products such as dyes, pigments, drugs, surface-active agents, synthetic rubber, and various plastics and resin materials. Many of these chemicals are also used as end products and sold as solvents, plasticizers, flocculents, antioxidants, rubber accelerators, and food preservatives. Finished organic chemical products include such products as synthetic organic dyes and pigments, flavor and perfume materials, pesticides, and drugs and related products.

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EXECUTIVE SUMMARY

The focus of this investigation is primarily an assessment of the effect of the MTN on U.S. trade in benzenoid chemicals and products and on the U.S. benzenoid industry. The MTN resulted in the elimination of the ASP method of customs valuation and a reduction in duties for most imports of benzenoid chemicals and products. The effect on U.S. trade of these two factors, as well as other factors believed to have had an effect on trade in these chemicals and products, are discussed in this report. Also, factors affecting the trade of certain foreign nations including duty changes are analyzed as far as the foreign countries' trade statistics permit.

The major conclusions of the study are as follows:

- o The impact of other events during the last 2.5 years may have had a greater effect on the U.S. level of imports than the elimination of the ASP method of customs valuation by the United States and duty concessions effective July 1, 1980.

When the loss of ASP became effective on July 1, 1980, the level of U.S. imports of these products was expected by industry sources to increase substantially compared with previous years. Actually the following occurred. In 1980, imports of all benzenoid chemicals and products subject to the ASP method of valuation increased by 23 percent while imports of the subgroup, "competitive" benzenoid chemicals and products, increased by only 11 percent. In 1982, total imports of these chemicals and products declined by 2 percent compared with 1981, but "competitive" imports of these products increased by 4 percent. Exports of some groups of chemicals and products such as intermediate chemicals and drugs and related products, however, remained stable or increased compared with 1979 because of competitive prices or the limited number of sources for particular products. The original expectations did not take into account the other factors that impacted trade since mid-1980.

The rising U.S. dollar resulted in less costly imports and thus may have partially contributed to the increase in imports in 1981. This increase in the value of the U.S. dollar also resulted in higher costs for U.S. exports, which should have resulted in a decline in exports. This did not happen in 1981 because U.S.-produced items were still less costly for some foreign consumers than products manufactured in their own countries or imported from countries other than the United States.

Multinational producers operate plants in many countries and often manufacture these products on a large scale. Such economies of scale allow them the advantage of choosing whether to import or export or to produce in the host country.

Total duty reductions on the new TSUS items resulting from the MTN are staged over an extended period of time and, therefore, are relatively small in any one year. Since imports of benzenoid chemicals and products fluctuated on

the basis of quantity during 1978-82, any correlation between increased imports and decreased duty rates for benzenoid chemicals and products may be obfuscated by the variations in the data.

The length of time covered by this investigation since the changes negotiated at the MTN went into effect must also be considered a factor. The data available cover only 2.5 years, or from mid-1980 through 1982, which is probably too short a period of time to obtain reliable trends especially when considering all of the other factors previously discussed.

A future update of this study, particularly if the intervening period is relatively free of the economic changes that have occurred since mid-1980, might better determine the impact of the elimination of the ASP method of customs valuation by the United States and the duty reductions.

- o U.S. imports and exports of benzenoid chemicals and products fluctuated during 1978-82.

During this period, U.S. imports of these chemicals and products ranged from a low of 694 million pounds in 1978 to a high of 857 million pounds in 1981. U.S. imports of "competitive" benzenoid chemicals and products during this period, which were subject to ASP until July 1, 1980, increased by 34 percent, from 516 million pounds in 1978 to 689 million pounds in 1982. West Germany was the principal source of U.S. imports of benzenoid chemicals and products with $321 million, or 21 percent of the total value, and 115 million pounds, or 14 percent of the total quantity. In 1982, "competitive" imports, on the basis of value, accounted for 56 percent of total imports of benzenoid chemicals and products.

Estimated U.S. exports of benzenoid chemicals and products during 1978-82 ranged from a low of 4.1 billion pounds in 1980 to a high of 4.7 billion pounds in 1979. The estimated value of these exports, however, increased by 46 percent during this period, from $2.2 billion in 1978 to $3.2 billion in 1982.

- o In recent years, domestic producers of benzenoid chemicals and products have enjoyed more favorable raw-material costs than producers in Western Europe and Japan.

Domestic producers benefited from price controls on domestic crude petroleum until decontrol in 1981, and they still benefit from natural gas price controls. However, it was the crude petroleum price controls that kept the principal benzenoid feedstock costs relatively lower than those of foreign producers which had to cope with sharp rises in world petroleum prices during the mid-1970's to 1980, from a low of $3.39 per barrel in 1973 to a high of $32.95 per barrel in 1980. During the past 2 years, however, the decrease in crude petroleum prices owing to a worldwide surplus has resulted in more favorable feedstock prices both domestically and overseas. Domestic producers

of these chemicals, in general, have had ample supplies of raw materials available to them during the past several years.

- o Apparent consumption and domestic production of benzenoid chemicals and products also fluctuated during 1978-82.

Apparent U.S. consumption during this period ranged from a high of 74.4 billion pounds in 1979 to a low of 62.0 billion pounds in 1982. The value of these chemicals and products consumed during 1978-81, however, increased by 54 percent, from $31.1 billion in 1978 to $45.0 billion in 1981 owing to rising energy and raw material costs and increased labor costs.

U.S. production of benzenoid chemicals and products during 1978-82 ranged from a high of 78.4 billion pounds in 1979 to a low of 64.7 billion pounds in 1982. During this period, U.S. production was greatly affected by economic conditions in mid-year 1980 and late 1981 and 1982. In 1982, U.S. output of these chemicals and products declined by 10 percent compared with that of 1981, as a result of continued low demand by end users.

- o The value of U.S. shipments of all chemicals and allied products (SIC 28) declined for the first time in 10 years, from $180 billion in 1981 to $170 billion in 1982, as a result of the continuing economic problems in the United States and other countries.

The only major group of synthetic organic chemicals in 1982 to show an increase in shipments was drugs with a total value of $27 billion compared with $25 billion in 1981. As a result of declining revenues, capital spending by domestic chemical producers declined by 2 percent to $13.27 billion in 1982. Research and development expenditures (R. & D.) by the major organic chemicals producers, however, did not follow the same trend as other financial indicators for these firms in 1982. The total amount of R. & D. expenditures for 15 basic organic chemical producers in the United States increased 20 percent in 1982 to approximately $2.5 billion compared with the 1981 total of $2.1 billion.

- o During 1978-81, the average unit value of U.S. benzenoid chemicals and products increased by 50 percent, from 43 cents per pound in 1978 to 64 cents per pound in 1981.

This increase was due to general inflation, higher unit labor costs, and increasing energy and feedstock costs. In 1982, the unit value for these products is believed to have remained at the 1981 level or declined slightly for the first time during the past 5 years because of low capacity utilization rates and declining revenues resulting from the continuing worldwide economic slowdown which reduced demand for these products.

- o Foreign trade of three representative MTN countries in organic chemicals fluctuated during 1978-81 despite duty reductions. The significance of this observation is that the experiences of these nations were similar to those of the United States which negotiated the removal of ASP even though they never had ASP.

In general, imports for these three countries increased during 1978-80 and then decreased in 1981 despite duty reductions which generally became effective for these countries in 1980. Japan was the exception as imports increased in 1981 supported by additional shipments from the United States, which is Japan's major source of imported organic chemicals. U.S. exports to the other two representative MTN countries, West Germany and Switzerland, represented generally less than 10 percent of total U.S. exports, as these two countries tend to trade mainly with other West European countries.

Exports of organic chemicals from these countries to the United States accounted for a small share of their total exports during 1978-81. In 1981, this share averaged 7 percent and ranged from 4 percent for West Germany to 16 percent for Japan.

- o Many of the factors that affected the major trading partners of the United States were similar to those that impacted the United States, and included the duty concessions made on organic chemicals and products, the changes in currency exchange rates, and the worldwide economic downturn.

Duty concessions made by the major U.S. trading partners on organic chemicals and products ranged generally from 30 to 35 percent and were usually staged over a period of time. Because of staging, the yearly duty changes were generally quite small. A quantitative assessment of the effects of the reduction on trade, is made even more difficult because of the effects of other factors on trade.

The decline in value of the currencies of the major trading partners of the United States compared with the U.S. dollar generally led to increased exports in 1981 from these countries to the United States depending upon demand, and their imports from the United States also declined.

The worldwide economic downturn generally led to a decline in overall exports of organic chemicals and products during 1980-82. Imports of these chemicals and products by the major U.S. trading partners also declined owing to lower consumer demand resulting from the economic downturn. Because all the factors are interrelated, it is difficult to determine if one factor had a greater effect than the others on world trade during this period.

BACKGROUND

One of the major results of the recent MTN was the elimination of the ASP method of customs valuation on imports of benzenoid 1/ chemicals and products. As a condition to acceding to the new international code on customs valuation, the United States agreed to eliminate the ASP method of valuation. In accordance with this commitment, ASP was abolished through Presidential Proclamation 4768, as authorized by the Trade Agreements Act of 1979, 2/ and became effective on July 1, 1980. This ended the ASP method of valuation begun in the early 1920's to protect the new domestic benzenoid chemical industry which manufactured products such as dyes, drugs, and their intermediates from foreign competition.

Prior to the United States' entrance into World War I, there was, for all practical purposes, no U.S. synthetic organic chemicals industry. The German chemical industry which had the technical knowledge in this area dominated the U.S. market by exporting these chemicals at prices designed to stifle any domestic competition. As a result, the United States became highly dependent on German imports for its supply of dyes and a variety of other chemicals such as intermediates and drugs. The war caused a supply disruption of these chemicals from Germany, resulting in severe shortages for the domestic consumers.

After the war, the U.S. Government and the domestic industrial community were committed to the establishment of a strong, independent, domestic chemical industry, particularly in the area of synthetic organic dyes and other related chemicals. This commitment resulted in duties which were not only relatively high but also assessed on the ASP of an imported dye or coal-tar chemical if it was "competitive" 3/ with a domestic product. If "noncompetitive," 4/ the imported dye of coal-tar chemical was valued for customs purpose on the basis of the U.S. value.

1/ The term "benzenoid," as used in this report, refers to cyclic organic chemicals having a benzenoid, quinoid, or modified benzenoid structure and to certain cyclic and acyclic chemicals obtained therefrom, provided for in part 1, schedule 4, of the TSUSA. For a definition of the term "modified benzenoid" see U.S. International Trade Commission, Imports of Benzenoid Chemicals and Products, 1981, . . ., USITC Publication 1272, July 1982, p. 1.

2/ See Public Law 96-39, 93 Stat. 144, 1979.

3/ According to Imports of Benzenoid Chemicals and Products, 1981, USITC Publication 1272, p. 1, competitive imports are products that are similar to domestic products and that accomplish results substantially equal to those accomplished by the similar domestic product when used in substantially the same manner.

4/ Products classified as "noncompetitive" by the U.S. Customs Service do not accomplish results substantially equal to those accomplished by similar domestic products when used in substantially the same manner.

The ASP and the U.S. value 1/ methods of customs valuation for imported "competitive" and "noncompetitive" dyes and other related coal-tar chemicals, respectively, were adopted by Congress and included in the Tariff Act of 1922 (the Fordney-McCumber Act). The Tariff Act of 1930 (the Smoot-Hawley Act) continued the ASP as one of five separate bases of valuation.

Prior to the MTN, the U.S. valuation system was composed of two separate customs valuation laws, sections 402 and 402a of the Tariff Act of 1930 (19 U.S.C. sections 1401a and 1402, respectively). There were 9 possible standards for customs value under these laws. The five standards in section 402a were the valuation standards established in the original Tariff Act of 1930. The Customs Simplification Act of 1956 added a new section 402 containing four additional standards. The original five standards were used to appraise only those articles for which the dutiable value during fiscal year 1954 would have been 5 percent less if valued under the new section 402 standards, as compared to being valued under the old standards of section 402a. These articles are listed in Treasury Decision (TD) 54521 and are known as the "Final List" articles.

The ASP method of customs valuation was used under both sections 402a and 402, and was virtually identical under both laws. The value of the import was based on the selling price of a U.S. manufactured article which is like or similar to the imported article. ASP was used only if required specifically by law. Benzenoid chemicals were subject to appraisement on the basis of ASP under both section 402a (by virture of being on the Final List) and section 402 (for benzenoid chemicals not appearing on the Final List).

As a contracting party to the General Agreement on Tariffs and Trade (GATT), the United States has participated with other nations in multilateral negotiations to lower tariff rates and to eliminate nontariff barriers. In 1964, the United States and other major trading countries began the Kennedy round of trade negotiations. During the negotiations, the United Kingdom and the European Community (EC) requested that the United States abolish the ASP. The U.S. representatives, however, did not have the authority to negotiate such action. Since the EC offers on chemicals were conditional upon removal of ASP by the United States, a deadlock was reached which threatened the entire negotiations. This impasse was resolved when the negotiators ultimately agreed upon a two-tier arrangement. Part of the chemical concessions were incorporated in the "Kennedy round package" which would take effect upon

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1/ Imports of Benzenoid Chemicals and Products, 1981, . . ., p. 1, states that "the essential difference between these two values is that the American selling price is based on the wholesale price in the United States of the competitive domestic product, whereas U.S. value is based on the wholesale price in the United States of the imported product less transportation and most of the selling expenses." For additional information concerning U.S. methods of customs valuation see Customs Valuation, Report of the U.S. Tariff Commission to the Committee on Finance and the Subcommittee on International Trade, United States Senate, Mar. 14, 1973.

conclusion of the round, and the other part in a separate supplemental agreement, where concessions were contingent upon legislative action by the U.S. Congress abolishing ASP. 1/ The separate agreement was to enter in force on January 1, 1969, but Congress did not pass the legislation and the parties agreed to extend the expiration date until January 1, 1971. Congress again failed to pass the legislation during this period, and on December 19, 1972, the European Common Market Council of Ministers decided not to implement the second tier of tariff reductions. As a result, the ultimate duty reductions on benzenoid chemicals and benzenoid products of the Kennedy round were approximately 50 percent by the United States but only 36 to 39 percent by the major European nations.

The Trade Act of 1974 provided new authority to the President to enter into trade agreements (the 1962 Act authority had expired in 1967). On the basis of that authority, the United States participated in the Tokyo round of Multilateral Trade Negotiations, the most recent and the seventh round of negotiations since the GATT was organized in 1947. During this round of negotiations, the EC again proposed the elimination of ASP as an item of trade negotiation.

In a letter dated February 24, 1978, the Special Representative for Trade Negotiations requested the Commission to prepare an analysis of the MTN rules for customs valuation, which were proposed for adoption by the United States and its major trading partners. The MTN-proposed code was cast in the form of an amendment to the GATT rules on customs valuation--formally known as the Agreement on Implementation of Article VII of the General Agreement on Tariffs and Trade. The Special Representative also requested the Commission: (a) to determine the rates of duty under other then-current bases of appraisement such as export value which would have provided an amount of duty substantially equivalent to the amount collected if ASP were not applicable; (b) to advise whether these proposed rates would have been significantly different if the standards in the MTN Valuation Code (e.g., transaction value) had been the basis of appraisement; (c) to assess the degree to which these proposed rates (as determined using MTN Valuation Code standards as the basis of appraisement) would provide protection to domestic industry equivalent to that afforded by then-existing rates of duty and methods of valuation; and (d) to advise of the probable economic effect upon domestic industries of adopting the proposed rates and making a staged reduction (in the MTN) of up to 60 percent in the new rates, in accordance with the Trade Act of 1974, assuming adoption by the United States of the standards in the MTN Valuation Code.

As a result of this investigation, the Commission found that many benzenoid chemicals and products classified in "basket" categories had widely divergent AVE's depending on the method used to assess duties. This divergence led ultimately to the establishment of a number of new 5-digit TSUS

1/ John M. Dobson, Two Centuries of Tariffs: The Backround and Emergence of the U.S. International Trade Commission, U.S. Government Printing Office, December 1976, pp. 41-43, 121-2.

items with differing rates of duty. In general, the new classification system consisted of specific chemicals and products with separate duty rates and a number of subgroups arranged by chemical structure such as amines, carboxylic acids, and heterocyclics, or by end use such as dyes, drugs, and pesticides. These new subgroups are divided into three categories: (a) individually listed chemicals or products generally classified as "noncompetitive" during the representative period (1976-78); (b) tariff basket categories containing existing chemicals listed in the Chemical Appendix and generally known as the "competitive" categories; and (c) "other" basket categories including "future" chemicals and products not classified in the other two items. The relative duty rates of these three categories are the lowest for the first category, next lowest for the third category, and highest for the second category.

When this round of negotiations was completed in 1979, a series of agreements were reached which included the elimination of the ASP and the U.S. value basis of U.S. customs valuation for benzenoid chemicals and products. Imports of these chemicals and products would be assessed duties primarily on the basis of transaction value. These agreements were incorporated in the Trade Agreements Act of 1979 and became effective for the United States on July 1, 1980. Final U.S. rates of most items will be reached by January 1, 1987, after a number of staged duty reductions.

Some domestic benzenoid chemical producers opposed the elimination of ASP because of increasing foreign competition in the domestic market. They argued that elimination of ASP and the duty reductions which approximated 35 percent overall would cause problems for them in the domestic market because of the increased price competitiveness of similar imported products. The smaller producers of these products contend that they would not be able to compete with the lower priced imported products and might be forced to cease domestic production, resulting in increased unemployment in some areas. For example, unemployment estimates by industry sources ranged from 8 to 10 percent in the cyclic intermediates industry. A number of domestic producers further stated that the duty reductions made by those participating in the negotiations were not great enough to spur any large increase in U.S. exports of chemicals and related products. However, the compensation to the United States for the loss of ASP was offset to some degree by these duty reductions.

Description and Uses

The term "benzenoid" chemicals refers to cyclic organic chemicals having a benzenoid, quinoid, or modified benzenoid 1/ structure and to certain cyclic

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1/ The term "modified benzenoid" describes a molecular structure having at least one six-membered heterocyclic ring which contains at least four carbon atoms and having an arrangement of molecular bonds as in the benzene ring or in the quinone ring, but does not include any such molecular structure in which one or more pyrimidine rings are the only modified benzenoid rings present.

and acyclic chemicals obtained therefrom, provided for in part 1, schedule 4, of the Tariff Schedules of the United States (TSUS). 1/ Certain benzenoid chemicals, however, are specifically excluded from part 1, schedule 4; among these are certain chemicals obtained from animal or vegetable products. 2/ The benzenoid chemicals and products included in this study are produced in whole or in part from either coal tar or crude petroleum. Prior to the enactment of the Tariff Classification Act of 1962, benzenoid chemicals and products were known as "coal-tar chemicals and products" since they were produced primarily from coal tar by distillation. The new classification and "benzenoid" nomenclature which resulted from the 1962 Act were necessitated by the development of new chemical processes using petroleum as a raw material, which eventually replaced most coal-tar chemicals and products.

There are basically three distinct groups of benzenoid chemicals and products; the crudes, the industrial organic chemicals, and the finished organic chemicals, except elastomers, also known as synthetic rubber. The benzenoid crudes and the elastomers are not included in this study as they were not subject to ASP and, consequently, were not included in the MTN. Also, the benzenoid crudes are duty free under part 1, subpart A, schedule 4, of the TSUS.

Industrial organic chemicals

Industrial organic chemicals which are dutiable under part 1, subpart B, schedule 4, of the TSUS 3/ consist of those chemicals which have been advanced in value from the duty-free crudes but not specially provided for as finished chemicals in subpart C. This group includes nonbenzenoid intermediates derived from benzenoid chemicals, miscellaneous finished organic chemical products such as rubber-processing chemicals, gasoline additives, synthetic lubricants, and mixtures containing benzenoid chemicals. The largest subgroup, by far, are the benzenoid intermediate chemicals. In 1981, U.S. imports of the top 12 benzenoid intermediate chemicals accounted for approximately 29 percent of the total quantity of imports entered under part 1, subpart B, schedule 4, of the TSUS, industrial organic chemicals. 4/

Benzenoid intermediate chemicals are synthetic organic chemicals derived principally from petroleum. Some of them such as phenol and pyridine are also obtained from coal-tar crudes usually in smaller amounts.

Virtually all of the chemicals included in this category are used to produce other chemicals; hence they are often referred to as intermediate

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1/ See app. A.

2/ See app. A for additional exceptions provided for in the headnotes for subparts B and C.

3/ See app. A.

4/ U.S. International Trade Commission, Imports of Benzenoid Chemicals and Products 1981, . . ., USITC Publication 1272, July 1982, p. 6.

chemicals. For example, the large-volume intermediate chemicals, known as commodity benzenoid chemicals, are used primarily to manufacture polymers such as plastics and synthetic fibers or to produce other chemicals which in turn are used to produce polymers. For example, ethylbenzene is used to produce styrene for polystyrene resins.

The remaining smaller volume intermediate chemicals, over 1,000 of which are produced domestically, are used mainly in the manufacture of specific, more advanced chemicals and finished chemical products such as dyes, pigments, drugs, surface-active agents, synthetic rubber, and various plastics and resins materials. Many of these chemicals are also used as end products and sold as solvents, plasticizers, flocculents, antioxidants, rubber accelerators, food preservatives, heat-transfer agents, and lubricants.

Finished organic chemical products

The finished organic chemical products dutiable under subpart 1C 1/ are obtained by synthesis from chemical crudes and industrial organic chemicals dutiable under part 1, subparts A and B, schedule 4, of the TSUS, respectively. They include such products as synthetic organic dyes and pigments, flavor and perfume materials, pesticides, explosives, plastics and resin materials, plasticizers, surface-active agents, photographic chemicals, tanning materials, medicinal chemicals, and drugs. In 1981, imports of drugs and related products accounted for 26.6 percent of the total value of imports under subpart 1C; second in importance were imports of benzenoid dyes and pigments with 22.7 percent.

Synthetic organic dyes and pigments.--These finished products are substances used to impart color to other materials. In 1982, approximately 66 percent of all synthetic organic dyes used were consumed in the coloring of natural and synthetic textile fibers. The balance was used in foods, drugs, leather, paper, and plastics. Pigments are used principally to color, opacify, or brighten printing inks, paints, and plastics. Nearly all dyes are soluble coloring materials which are applied in solution to impregnate the host material; pigments are applied as a paste or powder to coat the host material. Dyes and pigments are classified by color, chemical class, and chemical structure; in addition, dyes are also grouped by class of application such as acid, basic, direct, disperse, and vat dyes.

Currently, virtually all U.S. production of dyes is synthetic. In contrast, synthetic organic pigments production accounts for only 10 percent of domestic production of pigments; inorganic pigments are the predominant type. Organic dyes and pigments are also obtained from natural sources, but have been replaced, for the most part, by the synthetic products which are less costly and more consistent in quality and supply.

1/ See app. A.

The principal raw materials used in producing synthetic organic dyes and pigments are petrochemicals such as benzene, toluene, and xylene, which in turn are used to manufacture chemical intermediates such as aniline, toluidine, and naphthalenesulfonic acid. These chemical intermediates are combined in temperature- and pressure-controlled reaction processes to produce dyes. Some of these dyes are precipitated to produce most pigments. "Batch" production methods are used, rather than continuous production methods, because many separate, successive, and often involved chemical reactions are needed to produce dyes and pigments.

Drugs and related products.--The term "drug," as defined in part 1, schedule 4, of the TSUS means those substances having therapeutic or medicinal properties and chiefly used as medicines or as ingredients in medicines. These substances, to be classified as benzenoid, must also meet the legal definitions of benzenoid as defined in the headnotes of the TSUS.

The headnotes of the TSUS specifically exclude a number of medicinal chemicals with benzenoid or modified benzenoid structures such as, but not limited to, estrone, estradiol, corticosteroids, morphine, and other chemicals having a benzenoid, quinoid, or modified benzenoid structure, which are produced from animal or vegetable products in which the benzenoid structure occurs naturally.

Thus, the situation exists where identically the same drug can be classified as benzenoid or nonbenzenoid, depending on whether or not it was produced synthetically or semisynthetically, as opposed to being derived from naturally occurring material. In addition, a drug that is not benzenoid in structure is classified as benzenoid if benzenoid chemicals are used in its synthesis.

Approximately half of the bulk drugs produced in the United States are benzenoid and include drugs of virtually all therapeutic groups. Almost all antihistamines, for example, are benzenoid, as are the anti-infective sulfonamides, most penicillin antibiotics, many analgesics such as aspirin and acetaminophen, and many of the autonomic drugs, hormones, and vitamins.

THE U.S. INDUSTRY

Basic Data and Information

Over the past 60 years, the benzenoid chemical industry in the United States has grown from a small number of companies in the early 1900's, producing mainly benzenoid dyes, drugs, and their intermediates to several hundred companies in 1982, producing over 1,000 various benzenoid chemicals. In 1982, nearly all of the major synthetic organic chemical producers in the United States manufactured some type of benzenoid chemical or product.

During 1978-82, there were approximately 600 domestic producers of benzenoid chemicals and products. These producers ranged in size from very

large, highly diversified manufacturers to very small single-product producers. Several dozen of the very large producers are multinational chemical firms, usually vertically and horizontally integrated, manufacturing a number of benzenoid raw materials and finished products such as intermediates, dyes, drugs, pesticides, and plastics as well as nonchemical items. The majority of the domestic producers, however, are considered small in size, less than $50 million in sales per year, and usually produce a limited number of specialized products. For these producers, finished products manufactured from benzenoid chemicals are an important, and often a major, source of income.

In 1982, the top 100 domestic producers of chemicals, including benzenoid chemicals and products and ranked by sales, included various types of firms. There were approximately 20 petroleum types, 10 foreign subsidiaries, and 4 drug firms in addition to several other diverse firms such as steel, food, tires, and aerospace. The majority, however, were either basic or specialty chemical firms.

Data on the number of workers engaged in the production of benzenoid chemicals and products are not available because statistics in this area are usually based on groupings of similar end uses for chemicals such as drugs, agricultural chemicals, and industrial organic chemicals and not on their derivation or structure. In 1982, there were approximately 900,000 workers producing chemicals and allied products. 1/ Industry sources estimate that between 180,000 and 200,000 workers were engaged in the production of benzenoid chemicals and products in 1982, mainly in the categories of drugs and related products, dyes and pigments, and intermediate chemicals. In 1979, employment in the benzenoid chemical industry peaked, but by 1982 the number of workers had declined by approximately 10,000. The average annual salary per worker, however, increased from $18,500 in 1979 to approximately $26,000 in 1982. 2/ Production of benzenoid chemicals and products was reported in Puerto Rico, the U.S. Virgin Islands, and approximately 40 States, with Texas, Louisiana, New Jersey, New York, Pennsylvania, Michigan, Illinois, and California being the largest employers.

Intermediate chemicals

The chemicals included in this group are generally either commodity chemicals which are produced in large quantities or are specialty chemicals, also known as semicommodity, fine, or performance chemicals. The commodity chemicals are usually produced by petroleum companies, whereas the specialty chemicals are usually produced by chemical firms varying in size from large multinational firms to small companies specializing in a few chemicals and products.

During 1978-82, the number of intermediate chemical producers increased from approximately 180 to 200. In 1982, these chemicals were produced in

1/ U.S. Department of Commerce, U.S. Industrial Outlook 1983, January 1983, p. 9-2.

2/ Ibid.

approximately 300 plants located principally in Texas, Louisiana, New York, New Jersey, Pennsylvania, California, and Illinois.

Exact data on the number of employees and the value of shipments for intermediate chemicals are not readily available because many of the producers employ workers to manufacture a number of different chemicals and usually aggregate the value of similar chemicals according to use or chemical structure such as cyclic crudes and intermediates. In 1982, there were approximately 31,000 workers producing cyclic crudes and intermediate chemicals at an average annual salary of $27,000 per worker compared with approximately 35,000 workers at an average annual salary of $20,500 per worker in 1980. 1/

Intermediate chemicals are products of an industry which is highly capital and energy intensive. As a result of increasing production costs for these chemicals, domestic producers have been allocating larger shares of their capital expenditures for replacement and modernization of plants and equipment. The latest available data for 1980 show capital expenditures for cyclic crudes and intermediates amounted to $440 million, representing an increase of 26 percent over that of 1979. 2/ Over 50 percent of this amount was spent on upgrading plants and equipment. In 1982, industry sources estimate capital expenditures in this area declined from 2 to 7 percent compared with capital expenditures in 1981.

Synthetic organic dyes and pigments

During 1978-82, the number of companies in the dyes and pigments industries decreased from 56 in 1978 to 50 in 1982, mainly as a result of mergers. In the same period, the number of plants remained relatively constant, totaling 81 in 1982 owing to additions by the remaining firms. In 1978, there were 39 dye producers operating in 53 plants, and 35 pigment producers operating 48 plants. By 1982, the number of dye producers had decreased to 31 companies operating 52 plants; the number of pigment producers had also decreased to 33 companies, but the number of plants remained at 48. From 1978 to 1982, the number of companies producing both dyes and pigments decreased from 18 to 14, and the number of plants producing both dyes and pigments remained at 19.

In 1982, plants producing dyes and/or pigments were located mainly in New Jersey, New York, Pennsylvania, and South Carolina. These States have large concentrations of dye and pigment plants because they possess either primary sources of raw materials such as refineries and chemical plants or a major outlet for their products such as textile-finishing factories. 3/

1/ Ibid., p. 9-11.

2/ Ibid.

3/ U.S. Synthetic Organic Dye Industry: Its Competitiveness in the World Market, Investigation No. 332-120 . . ., USITC Publication 1166, July 1981, p. 13.

Although many of the U.S. dye or pigment producers are small, domestically owned companies, some are large manufacturers, including six firms that are affiliates or subsidiaries of foreign multinational companies. The large companies have the capacity to produce a wider range of chemical products, including dye or pigment intermediates. These producers currently market a variety of chemical products in addition to dyes, pigments, and their intermediates. In contrast, the small domestically owned companies produce mainly a narrow line of dyes, pigments, or intermediates.

In 1982, the dye industry employed about 8,000 production workers, some of whom were also employed in the production of pigments. The pigment industry itself employed about 6,000 production workers. During 1978-82, the average hourly earnings of industrial organic chemical workers, including dyes and pigments production workers, rose from $8.23 to $11.85, or by 44 percent. 1/ In comparison, the average hourly earnings of all manufacturing employees rose from $6.17 in 1978 to $8.50 in 1982, or by 38 percent. 2/ The domestic dye industry can collectively produce more than 1,000 different dyes; the domestic pigments industry can produce more than 160 different pigments. Domestic dye producers, as well as pigment producers, devote a large portion of R. & D. expenditures to color application work, primarily to meet the changing technology of end-use products; such R. & D. often results in variations of already existing dyes or pigments.

Drugs and related products

The production of drugs takes place in two major manufacturing stages. The first stage is the production of pure, pharmacologically active chemicals in bulk form which corresponds for the most part, to the products of the industry described under Standard Industrial Classification (SIC) No. 2833, Medicinal Chemicals and Botanical Products. The second stage is the formulation of these pharmacologically active components into Pharmaceutical Preparations, SIC No. 2834. These pharmaceutical preparations are typically the pure chemicals plus diluents or extenders. They include pills, capsules, tablets, creams, cough remedies, and various other products in dosage form which are suitable for retail sale.

Benzenoid drugs are imported mostly in bulk form, and then are used in the manufacture of pharmaceutical preparations. Therefore, this discussion focuses on the industry producing drugs in bulk form. In 1982, there were an estimated 177 establishments that produced medicinals and botanicals. 3/ Most, but not all, of these establishments produced benzenoid drugs. Major producing States accounting for the largest share of industry shipments were

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1/ U.S. Industrial Outlook 1983, . . ., pp. 9-11.
2/ Ibid.
3/ U.S. Industrial Outlook 1983, . . ., p. 14-3.

New Jersey, Missouri, and New York. Total employment in this industry was 16,000 in 1982, up 10 percent from the 14,600 employees in 1979. Capital expenditures were $153 million in 1980 (the most recent year for which data are available). 1/ This industry is more capital intensive than labor intensive, and a substantial portion of industry expenditures are directed to research and development of new products. Benzenoid drugs and related products accounted for roughly 50 percent of the industrial activity under SIC No. 2833.

Financial Information

The value of shipments of all chemicals and allied products (SIC No. 28) declined for the first time in 10 years, from $180 billion in 1981 to $170 billion in 1982, as a result of the continuing economic problems in the United States and a number of other countries. The chemicals and allied products classification includes inorganic, natural, and synthetic organic chemicals. The major category for bulk synthetic organic chemicals is Industrial Organic Chemicals, SIC No. 286. Also included in the broad category of SIC No. 28 are finished product groups primarily consisting of benzenoid-derived products. The only major group of synthetic organic chemicals in 1982 to show an increase in shipments was drugs with a total value of $27 billion compared with $25 billion in 1981. During 1978-82, total chemical sales, which contained primarily benzenoid chemicals and products, of the top 20 organic chemical producers in the United States increased by 43 percent, from approximately $50 billion in 1978 to $71 billion in 1982. 2/ In 1982, total chemical sales for these producers, however, declined by 8 percent compared with the 1981 sales of $77 billion. 3/ The companies included in this group each had total chemical sales in 1982 in excess of $1.5 billion. 4/ The average operating profit margin 5/ for this group of companies in 1982 was 4.5 percent, compared with 7.3 percent in 1981 and 6.0 percent in 1978, 6/ owing to lower sales and rising manufacturing costs.

As a result of declining revenues in 1982, the domestic chemical industry, in general, reduced capital spending to protect its financial stability. Capital spending for firms producing chemicals and allied products declined 2 percent in 1982 to $13.27 billion, but is expected by Government sources to increase by 3 percent in 1983. The economic downturn of the past 2 years resulted in significant idle capacity for many organic chemicals, particularly benzenoid chemicals, which can be reactivated in the near future to accommodate any increased demand, eliminating the need to build new plants in the immediate

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1/ Ibid., p. 14-2.

2/ "Facts and Figures for the Chemical Industry," Chemical and Engineering News, annual financial surveys, 1979-83.

3/ Ibid., . . . Jan. 13, 1983, pp. 36-37.

4/ Ibid.

5/ Operating profit as a share of chemical sales.

6/ "Facts and Figures for the Chemical Industry," Chemical and Engineering News, annual financial surveys, 1979-83.

future. The amount of capital spending by 14 major organic chemical producers in 1982 declined by 7 percent compared with that of 1981 to $6.9 billion; estimates for 1983 capital spending for these companies show a further decline of 18 percent to $5.7 billion. 1/

Expenditures for R. & D. by the major organic chemical producers, however, did not follow the same trend as other financial indicators for these firms in 1982. The total amount of R. & D. expenditures for 15 basic organic chemical producers in the United States increased 20 percent in 1982 to approximately $2.5 billion compared with the 1981 total of $2.1 billion. 2/ Planned expenditures in 1983 will rise by only 7 percent, or from $2.1 billion in 1982 to $2.7 billion in 1983, the lowest increase since the 6 percent increase between 1975 and 1976. 3/

Intermediate chemicals

Estimates of certain financial data such as sales, profits, and expenditures, on intermediate chemicals and their producers, can be made by utilizing the trends of the larger groupings which have been consistently similar. During 1978-81, intermediate chemical sales increased 80 percent, from $4.3 billion in 1978 to $7.7 billion in 1981. 4/ The value of intermediate chemicals sales in 1982 was approximately $6.9 billion, down 10 percent from that of 1981. 5/ The top 10 benzenoid intermediate chemical producers in 1982, as defined by the Commission, each had total chemical sales in excess of $1 billion. Included in this group are five petroleum companies producing mainly large-volume commodity chemicals which showed significant declines in sales in 1982. The average operating profit margin for the firms in this group was 4.8 percent, 6/ down from an average of 5.3 percent in 1981. 7/

In general, 1982 was not a good year financially for domestic chemical producers owing to the continuing economic downturn not only in the United States but in many other countries. Demand for organic chemicals, particularly intermediate commodity chemicals, decreased in 1982 along with selling prices in contrast to 1980 when a decline in demand was partially offset by rising prices. As a result of the decrease in prices, the value of shipments of industrial chemicals in 1982, in terms of 1972 dollars, declined to the lowest level since 1972 8/ and earnings for the major chemical producers fell to their lowest level since 1973.

1/ "Facts and Figures for the Chemical Industry," Chemical and Engineering News, June 13, 1983, p. 41.
2/ Ibid.
3/ Ibid.
4/ U.S. International Trade Commission, Synthetic Organic Chemicals, United States Production and Sales, annual reports, 1978-81.
5/ Estimated by the staff of the U.S. International Trade Commission.
6/ Excludes three firms which had deficits in 1982.
7/ Excludes one firm reporting a deficit in 1981.
8/ U.S. Industrial Outlook 1983, ..., p. 9-11.

Synthetic organic dyes and pigments

Financial data for the synthetic organic dyes and pigments industries are not readily available because these data are aggregated with similar chemicals in broader categories such as industrial organic chemicals. These industries also consist of a large number of small, privately owned firms which do not usually report specific financial data for publication by various private and Government agencies. The domestic producers can be classified into three categories depending upon their involvement with these products: large companies with corporate sales in excess of $100 million and sales of dyes and pigments constituting a small fraction of the total corporate income; medium-sized companies with sales ranging from $10 million to $100 million and sales of dyes and pigments constituting a significant portion of total income; and small, highly specialized, and usually privately owned companies with sales below $10 million and sales of dyes and/or pigments accounting for almost all of their income. 1/

During 1978-81, total sales of synthetic organic pigments increased irregularly, whereas total sales of synthetic dyes peaked in 1979 as shown in the following tabulation (in millions of dollars): 2/

Year	Dyes	Pigments
1978	$734	$318
1979	797	377
1980	791	361
1981	773	415

Sales of synthetic organic dyes and pigments declined between 1982 and 1981, as a result of continuing low demand for dyes and pigments in the textile, automotive, and housing industries. In 1982, total sales of synthetic organic dyes amounted to approximately $750 million; organic pigment sales amounted to approximately $400 million.

Despite increased sales during 1978-81, the synthetic organic pigments industry has reportedly experienced low profitability which continued in 1982. 3/ The synthetic dyes industry also has experienced low profitability during this period. Estimates of the profit margin for the synthetic dyes industry in 1979, the peak year of sales, averaged 6.3 percent 4/ compared with a 6.6 percent average profit margin for the entire basic chemical industry that year.

1/ Summary of Trade and Tariff Information on synthetic organic pigments, USITC Publication 841, Control No. 4-1-17, November 1982, p. 5.

2/ U.S. International Trade Commission, Synthetic Organic Chemicals, United States Production and Sales, 1978-81.

3/ Federal Trade Commission, Docket No. 9125, Initial Decision, May 14, 1982, p. 169.

4/ U.S. Synthetic Organic Dye Industry: Its Competitiveness in the World Market, . . ., USITC Publication 1166, July 1981, p. 18.

Although data on profit margins for synthetic organic dyes and pigments are not available, they tend to follow the trend of the broader category which includes these industries, namely, industrial organic chemicals and synthetic products. In 1982, the average net profit margin for this broader category declined to 3.3 percent 1/ compared with an average net profit margin of 5.8 percent in 1981. 2/

Drugs and related products

Although data are not available either for benzenoid drugs and related products in bulk form or for benzenoid drugs as a group, historically and consistently, the drugs industry has been considerably more profitable than other segments of the chemical industry. Pretax profit for the entire pharmaceutical industry which includes benzenoid and nonbenzenoid drugs in bulk and in dosage forms in 1982 averaged 17.9 percent on sales of about $27 billion. 3/ The after-tax profit margin for 1982 of 13.1 percent for drugs compared with an after-tax profit margin of 3.3 percent for other industrial chemicals and synthetics. In 1978, pretax profit in the drugs industry averaged 19.7 percent on sales of about $18 billion. The after-tax profit margin for 1978 averaged 12.8 percent for drugs compared with an after-tax profit margin of 7.1 percent for other industrial chemicals and synthetics. 4/

COMPETITIVE FACTORS

Raw-Material Costs and Availability

In recent years, the domestic producers of benzenoid chemicals and products have enjoyed more favorable raw-material costs than producers in Western Europe and Japan. Domestic producers benefited from price controls on domestic crude petroleum 5/ which kept feedstock costs relatively lower than

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1/ After tax profit is in terms of cents of profit per dollar of sales.

2/ U.S. Federal Trade Commission, Quarterly Financial Reports for Manufacturing, Mining and Trade, 1981 and 1982.

3/ Ibid., 1982.

4/ U.S. Federal Trade Commission, Quarterly Financial Reports for Manufacturing, Mining and Trade, 1978-82.

5/ A two-tiered pricing system was applied to domestically produced crude from 1974 until Jan. 28, 1981, in response to rapid price increases in the world crude oil market. This was done to reduce the impact of the increased petroleum prices on the U.S. economy. The Federal Energy Administration developed the two-tiered system. This system linked maximum allowable price to production at a particular field in order to encourage maximum production of existing reserves, exploration and development of new reserves, and continuation of stripper well leases production (wells producing less than 10 barrels per day). The phased Federal decontrol of the price crude petroleum began in April 1979.

foreign producers which had to cope with sharp rises in foreign petroleum prices during the mid-1970's to 1980; crude petroleum reached a low of $3.39 per barrel in 1973 and a high of $32.95 per barrel in 1980. 1/ During the past 2 years, the drop in crude petroleum prices, owing to a worldwide surplus estimated at 635 million barrels in 1982 2/ has resulted in even more favorable feedstock prices both domestically and overseas. These prices, however, have been somewhat negated by the continuing price rise for natural gas although this rise has slackened recently owing to declining demand. Future declines for crude petroleum prices, ranging from $6 to $7 per barrel, are predicted by some petroleum firms and would result in further price declines in certain product lines benefiting both domestic and foreign producers. 3/

Domestic producers of benzenoid chemicals and products, in general, have had ample supplies of raw materials available to them during the past several years despite temporary shortages in some areas due to plant shutdowns and excess demand for short periods. In the past 2 years, chemicals used as raw materials were available to domestic producers in excess supply as demand declined as a result of the economic slowdown. Supplies of raw materials are expected to be readily available in 1983, as capacity of operable installed production facilities for most of these chemicals was substantially in excess of demand in 1982, with operating rates in the range of 60 to 65 percent of installed capacity in that year. 4/

Because of these low operating rates, many plants were shutdown for an indefinite period. Those plants which can be reactivated as the economy improves, in addition to recently constructed plants, are reportedly sufficient to satisfy increased demand for these products through 1985.

Intermediate chemicals

Benzenoid intermediate chemicals are derived from raw materials such as benzene, toluene, xylene, ethane, and propane which, in turn, are obtained from natural gas liquids, petroleum, and/or natural gas. These chemical raw materials are then combined with other organic chemicals in a reaction process to produce a variety of intermediate chemicals.

Domestic producers of intermediate chemicals, particularly commodity intermediate chemicals, will face increasing competition from imported products in the coming years as countries with an overabundance of petroleum and natural gas complete construction of plants to produce these chemicals. Raw-material costs for these chemicals will be lower than in the United

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1/ Central Intelligence Agency, Economic and Energy Indicators, Aug. 14, 1981, p. 11.
2/ Chemical Week, Mar. 17, 1982, p. 13.
3/ Chemical Week, Mar. 2, 1983, p. 8.
4/ U.S. Industrial Outlook 1983, . . ., p. 9-10.

States, making the cost of these intermediate chemicals very competitive with the U.S. products. This situation is more fully explained in a recent Commission study in this area. 1/

Synthetic organic dyes and pigments

The raw materials used to produce organic dyes and pigments are principally benzenoid intermediate chemicals. These dye and pigment intermediates are made from primary petrochemicals and are subject to the changing costs of natural gas liquids and crude petroleum feedstocks. The cost of these raw materials, however, is a minimal competitive factor since it represents only a small part of the total value of these particular products.

Many of the raw materials used to produce commodity dyes, from which most commodity pigments are produced, are available from U.S. producers. However, most dye and pigment intermediates used to produce specialty dyes or pigments are obtained primarily from West German and Swiss sources. 2/ U.S. subsidiaries of West German and Swiss companies, whose raw materials are also supplied by the parent firm, may continue to hold a competitive advantage over other domestic dye and pigment producers. Such shipments have been either at unit values well below the general market price, or, if used captively, not available to other domestic producers. 3/

Drugs and related products

The United States is currently in a favorable competitive position in terms of raw materials costs and availability, compared with its major trading partners in Western Europe and Japan. Developing countries with low-cost chemical feedstocks are not presently major producers of drugs and related products, and those countries building petrochemical plants are building plants to produce large-volume, commodity-type chemicals rather than drugs and related products. 4/

1/ The Probable Impact on the U.S. Petrochemical Industry of the Expanding Petrochemical Industries in the Conventional-Energy-Rich Nations, USITC, Publication 1370, April 1983.

2/ U.S. Synthetic Organic Dye Industry: Its Competitiveness in the World Market, . . ., p. 19.

3/ Ibid.

4/ The Probable Impact on the U.S. Petrochemical Industry of the Expanding Petrochemical Industries in the Conventional-Energy-Rich Nations, . . ., USITC Publication 1370, April 1983, pp. 58-63, 98-101, 115-119, and 136-137.

Most benzenoid drugs and related products are manufactured from relatively simple organic chemicals. There are, however, a substantial number of drugs that are produced by chemical modification of naturally occurring materials. Examples of the latter include many semisynthetic antibiotics in which part of the drugs are produced by fermentation processes and then modified by reactions with synthetic benzenoid chemicals.

In general, all major industrialized countries have access to the requisite raw materials to produce most benzenoid drugs and related products. Raw-material cost is not, in most instances, the principal factor in decisions which determine the location of facilities to manufacture benzenoid drugs. Some of the more significant competitive factors are discussed in the following sections.

Technology and Manufacturing Processes

The domestic chemical industry and, in particular, the benzenoid chemicals and products industry, are considered to be high-technology industries because of the relatively large expenditures for R. & D. by the firms in this industry. In 1982, the chemical industry as a whole ranked fifth among U.S. industries in total funds allocated to R. & D. with an estimated $5.75 billion. 1/ The rate of increase in R. & D. expenditures in 1982, however, was smaller than in the previous year, amounting to 14.4 percent compared with 21.7 percent in 1981, owing to budget cutbacks and a lower rate of inflation which amounted to 6 percent in 1982 compared with 9.4 percent in 1981. 2/ Fifty-two percent of R. & D. spending in 1982 went to improving existing products, 27 percent was allocated to new products, and the remainder, or 21 percent, to new processes. 3/

The domestic benzenoid chemicals and products industry, for the most part, uses technology available to most industrialized countries of the world, and, therefore, attempts to develop new techniques and applications to make their products more competitive in the world markets. A growing number of manufacturers of these products, however, are allocating a larger percentage of R. & D. expenditures to higher valued specialty chemicals and products such as pesticides, engineering plastics, and drugs to replace or supplement their older products which are losing their competitive edge. 4/

This industry includes a number of multinational firms which are engaged in research on high-valued benzenoid chemicals and products. These firms, however, routinely transfer their new technology between the parent company

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1/ "A Projected Leap in R. & D. Spending," Chemical Week, Jan. 5, 1983, p. 52.

2/ "Between the Plans for R. & D. and Reality," Chemical Week, June 1, 1983, p. 22.

3/ Ibid.

4/ Chemical Marketing Reporter, May 9, 1983, p. 24.

and the foreign subsidiary, thereby, limiting the competitive advantage of the domestic producer.

Advances in process technology for this industry, in general, are similar to those found in other industrialized countries. Individual firms producing these products, however, are able to maintain a competitive advantage for their products by developing new or unique or improved manufacturing processes which lower their production costs.

Intermediate chemicals

The technology and manufacturing processes used to produce intermediate chemicals are generally well known and have evolved to be the most cost-effective methods. Because of increasing energy and raw material costs, many producers have sought to develop and improve manufacturing processes for their products and to make cost-effective changes in their equipment and facilities. Some companies are developing processes to use less expensive raw materials in the production of certain intermediates; 1/ others are using new catalysts to improve yields.

Recently, an increasing number of domestic intermediate chemical producers are allocating more R. & D. expenditures for the development of new specialty intermediate chemicals for new products to replace the specialties which are losing their patent protection. In 1982, R. & D. spending by the entire domestic chemical industry was approximately 3.3 percent of all chemical sales, the highest in 10 years. 2/ Chemical producers in other countries, however, are spending similar amounts on R. & D. and have developed similar highly competitive products. Because of this, domestic producers, in general, have no distinct advantage over the foreign competitors in this area but, in individual cases, specific process technology has resulted in a competitive advantage.

Synthetic organic dyes and pigments

In the dye and pigment industries, technology refers more to application processes than to production processes. The uses of dyes and pigments in various applications are continuously subject to study, but the production of dyes and pigments, for which the manufacturing processes are well known, seldom change. Domestic and foreign dye producers and pigment producers devote a large portion of research and development to color applications, primarily to meet the changing technology of end-use products. The new applications often require variations in the chemistry of dyes and pigments or

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1/ Chemical Engineering, Aug. 10, 1981, p. 50.
2/ Chemical and Engineering News, June 13, 1983, p. 43.

modification in the physical structure of pigments, so there is a competitive advantage for those companies which are able to develop new dyes or pigments either by creating new benzenoid intermediate chemicals, or by modifying already existing dyes or pigments.

The manufacturing processes used to produce dyes and pigments are generally available to U.S. and foreign producers. Typically, two or more benzenoid intermediates are brought together in a large vat or steel tank. Through the use of pumps, agitators, heat exchangers, and settling tanks, these chemicals react to form a more complex chemical product. This product is often transferred to another vat for further reaction with another intermediate chemical. Frequently, this procedure is repeated many times, usually in small quantities or batches; hence the name "batch process." Finally, when the crude dye or pigment has been formed and sufficiently purified, it is filtered, compressed into a cake, and then dried. After drying, the cake is ground into a fine powder form and packaged for sale.

Drugs and related products

The industry producing benzenoid drugs in bulk form is frequently characterized as a high-technology industry because of the large R. & D. and expenditures of the industry as a whole. This, of course, does not apply to all firms within the industry. Most of the large multinational drug firms have active R. & D. programs, but some other firms do not. Some benzenoid drugs and related products have been produced for many years, and will continue to be produced, by what is now considered to be old technology and old manufacturing processes and old plants. These older drugs are still therapeutically important, but are subject to the greatest amount of competition. This competition will be discussed further in the following sections of this study.

Basic technology and process technology are both important to the industry producing benzenoid drugs in bulk form. The relatively high profit margins of the drug industry, compared with other segments of the chemical industry, are directly related to a constant flow of significant new drug discoveries. An individual new drug that is a significant new therapeutic development for a frequently occurring chronic illness can be immensely profitable for a drug firm. However, to develop, test, obtain Food and Drug Administration (FDA) approval, and market such a drug can require expenditures ranging from $50 million to $100 million. These large investments make patent protection for new drugs extremely important to the drug industry, because it is during the period that the developing firm has exclusive rights to market a new drug that R. & D. costs are recouped. 1/

1/ "Profits Will Flow from Research," Business Week, Jan. 17, 1983, pp. 77 and 80.

Major U.S. drug firms employ some of the most advanced "state-of-the-art" technology in the world. However, most of the world's leading drug firms are multinational corporations and there is considerable foreign and domestic technology transfer between the parent company and its foreign subsidiaries. Advances in drug technology are not, therefore, the exclusive purview of the U.S. firms, but are generally available in most major industrialized countries, especially in Europe, the United States, and Japan.

Process technology is also important in the drug industry because, although many of the raw materials for drug synthesis are simple organic chemicals, some of the manufacturing processes can be quite complex. In addition, chemical syntheses performed in a laboratory are sometimes difficult to scale up to commercial size. Therefore, process technology often determines whether or not certain drugs can be produced competitively on a commercial scale. Some firms, by concentrating on new or novel process technology, have successfully produced a particular drug at a lower cost than competing firms. In the benzenoid drug industry, it is probably fair to say that no particular country has a distinct advantage in process technology for the industry as a whole, but that competitive advantages in process technology usually are within the operations of individual firms.

Industry and Plant Integration

In 1982, there were approximately 600 domestic producers of benzenoid chemicals and products. These producers varied in size from very large, highly diversified chemical firms to small firms specializing in one or two products. To a large number of these firms, earnings from benzenoid chemicals and products may represent only a small percentage of their total earnings. The primary production of many such firms includes products such as steel, rubber, metals, glass, photographic equipment, and petroleum. The major petroleum firms in the United States are among the largest producers of large-volume, commodity intermediate chemicals, but in 1982 their chemical sales averaged only 8 percent of total sales. 1/

The large, highly diversified chemical firms are, in general, fully integrated to maximize their investments, namely, their plant facilities. Smaller, less diversified firms usually specialize in producing only a small number of intermediates or finished products depending upon their plant facilities, location, and customers; they have little opportunity for integration.

Intermediate chemicals

The top 20 domestic producers of intermediate chemicals are large multinational chemical and petroleum firms and are vertically integrated to

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1/ Chemical and Engineering News, June 13, 1983, pp. 36-37.

the raw materials. Usually, the chemical firms producing commodity intermediate chemicals use most of their production to manufacture materials and semifinished products such as plastics, resins, synthetic fibers, and synthetic rubbers to obtain the highest efficiency of their manufacturing facilities; the petroleum firms generally sell these chemicals to other firms which process them into more finished products.

Most large chemical firms which produce a large number of organic chemicals manufacture specialty intermediate chemicals as an integral part of their manufacturing processes for more complex chemicals, namely, dyes, pigments, pesticides, and drugs to minimize labor and manufacturing costs. In some cases, smaller chemical firms find it more advantageous to produce intermediate chemicals, especially those with several uses, for sale to firms which require them to produce certain finished products but find it is more cost effective to purchase their requirements than to build a plant.

Synthetic organic dyes and pigments

Nearly all synthetic organic dye and pigment companies in the United States import benzenoid intermediate chemicals in varying quantities for their dyes or pigments production. 1/ There is little integration back to the raw materials in the domestic dye and pigment industries because, in most cases, the cost involved to build manufacturing facilities for the relatively small amounts required is not economically feasible. A few dye and pigment producers are vertically integrated, but because the economic scale of operations for the raw materials is usually much larger than the requirements of a single company's organic dyes or pigments business, much of the raw materials output is sold or employed in other end uses. These companies which include mainly U.S. subsidiaries of Swiss, West German, and British firms have the advantage of readily available raw materials, and their dyes or pigment products may command high prices during periods of tight demand for dye and pigment raw materials.

There are also other companies in these industries which market a wide variety of chemicals and related products other than organic dyes and/or pigments. These firms, which are horizontally integrated, produce textile fibers, printing inks, paints, or other end-use products of dyes or pigments. For most of these producers, the primary products are the end-use items, even though they may also sell part of their dye or pigment output in the commercial market. The dye and pigment producers which are horizontally integrated sometimes have a competitive advantage over other producers in that they are able to balance their income or losses in dyes or pigments with the sales of other products giving them more flexibility. Some companies also produce colorants such as natural dyes or inorganic pigments in addition to synthetic organic dyes and pigments.

1/ U.S. Synthetic Organic Dye Industry: Its Competitiveness in the World Market, . . ., USITC Publication 1166, July 1981, p. 13.

Drugs and related products

Many major producers of drugs and related products are both horizontally and vertically integrated in that they produce both the basic chemicals used in the production of drugs and related products and other end-use chemicals and products. Recently, several major chemical firms and petrochemical firms have made substantial investments in expanding their drug subsidiaries or have acquired existing drug companies. These new investments were made because of the relatively good performance of the drug industry during business recessions. Traditionally, drug company earnings have been higher and less cyclical than most other segments of the chemicals industry. 1/

Most firms, however, purchase intermediate chemicals to produce some of their benzenoid drugs in bulk form. Firms that are vertically integrated in the production of certain drugs frequently sell intermediates to other firms in order to maximize utilization rates in their production facilities. Also, most domestic and foreign major drug firms are multinational corporations, and these firms transfer substantial amounts of drugs in bulk form from their manufacturing plants to their various world operations where the bulk drugs are then used to make pharmaceutical preparations.

The drug industry tends to view its markets as world markets to a greater extent than many other segments of the chemicals industry. New plants are most often built large enough to supply a substantial portion of the world's markets rather than scaling the plant to produce only for the domestic market.

Pricing and Marketing

During 1978-81, the average unit value of benzenoid chemicals and products increased by 50 percent, from 43 cents per pound in 1978 to 64 cents per pound in 1981 (table 1, app. B). The unit value for these products in 1982, however, is believed to have remained at the 1981 level or to have declined slightly for the first time during this period due to low demand by consumers and lower costs for raw materials and energy. In general, these positive factors were offset by low operating capacity rates averaging 60 percent, higher unit labor costs, and declining revenues resulting from the continuing worldwide economic slowdown which reduced demand for these products.

Because of the large number and types of chemicals and products included in this industry, the effect on individual or similar groups of chemicals and products varied greatly during this period. The prices of large-volume commodity chemicals used in the depressed automotive and housing industries declined significantly during this period, and higher valued products such as drugs, pesticides, and certain specialty intermediate chemicals were less affected. Even within certain benzenoid product industries, the prices of certain products varied greatly. For example, certain dyes and pigments used in printing inks were less affected than those used in the textile industry.

1/ "Moving in on Drugs," Chemical Week, Apr. 14, 1982, pp. 44-48.

Benzenoid chemicals and products are generally marketed by domestic producers to customers on a contract basis. There are also a number of chemical dealers or brokers that buy and sell these chemicals and products on the open market when supplies become available. Some firms, depending upon their facilities, process their intermediate chemicals to finished products which they sell to their customers, and others sell only the intermediate or semifinished product for further processing.

The domestic benzenoid chemical industry basically markets its products in the United States. In 1982, approximately 7 percent of total U.S. production was exported (table 2). This percentage, however, varies greatly between different types of chemicals and products. For example, exports of drugs amounted to 15 percent of production in 1982, whereas exports of intermediate chemicals only amounted to 8 percent of production in 1982.

Intermediate chemicals

In the past few years many intermediate chemicals, especially large-volume commodity intermediates, have been subject to frequent price changes or discounting owing to low demand resulting in low capacity utilization rates. Domestic producers discounted their prices to keep their customers and plants running even at the lower rates. The discounts have varied depending upon market conditions and the producer's desire to remain competitive in the market. There is also a "spot" market price for these chemicals which is the open-market price of a certain chemical on a given day. It usually depends upon the amount of product offered on the open market by chemical dealers or brokers that acquire their supplies from the surplus of domestic producers or importers. The amount of a certain intermediate chemical in the open market at a given time can vary greatly. The greater majority of intermediate chemicals are usually sold by the domestic producers to consumers on a contract basis. The prices of specialty intermediate chemicals generally have not been subject to the frequent fluctuations experienced by commodity chemicals because of their limited end use and small numbers of producers. Price increases for these chemicals have occurred over the past few years owing to rising production costs, but discounting of prices due to oversupply are not usually experienced by these chemicals.

During 1978-81, the average unit value of intermediate chemicals increased from 34 cents per pound in 1978 to 46 cents per pound in 1981 (table 3). This increase was due primarily to rising costs of raw materials derived from petroleum, as well as increased energy, labor, construction, and transportation costs. Despite this increase in overall unit value, the prices obtained for many products were not sufficient to cover increased manufacturing costs. The overall unit value in 1982 is believed to have shown a slight decline from that in 1981, reflecting the lower prices required to maintain market shares for many products in times of low demand and increased competition among domestic and foreign producers.

The domestic producers of intermediate chemicals generally market their products directly to customers who buy varying quantities on a regular basis. There are also a number of chemical dealers or brokers that buy and sell these chemicals on the open market when the supplies are available. However, as previously stated, open market sales of these chemicals vary greatly and are usually small compared with sales on a contract basis.

Synthetic organic dyes and pigments

The pricing of dyes and pigments is largely based on their color, as well as on their performance in a given application. The higher priced organic dyes and pigments, such as those used for plastics, are specialty products made to meet customer specifications, and produced by a small number of producers. The lower priced organic dyes and pigments, such as textile dyes and printing-ink pigments, are usually the commodity products which require little or no customized production. These products are more competitively priced owing to the large number of producers.

The pricing of dyes and pigments is also influenced by a number of other factors, such as raw material and labor costs and demand for the end-use products of dyes and pigments. Starting with petrochemical feedstocks, the cost of which is about 20 cents per pound, the unit values of domestically finished dyes averaged $3.53 per pound in 1981 versus imports which averaged $4.77. Processing dyes into pigments and rolling in the value added with the average unit value of domestic dyes, the unit values of domestically finished pigments averaged $6.48 per pound in 1981 versus imports which averaged $6.25.

However, the pricing of dyes and pigments is almost always considered separately because they essentially serve different markets and seldom compete with one another. Unlike pigments, dyes of the same chemical structure are fungible. By the nature of their use, dyes have more demand elasticity than pigments, which are subject to chemical as well as to physical processing before use. The physical processing of pigments, such as establishing particle size and shape, limits their interchangeability. As a result, the pricing of domestic dyes may be more competitive and sensitive than pigments to other similar domestic products and imports. Dyes and pigments are largely end-use oriented, and customer approval of products is a prerequisite to sale. The most important marketing advantage of domestic dye and pigment distributors is a direct marketing force with technical knowledge of dyes, pigments, and customers' products.

Sales of dyes and pigments in the United States normally take place through any of three channels: (1) direct from original manufacturer or importer to dye or pigment consumers; (2) through dealers that distribute primarily to smaller consumers; or (3) through other manufacturers that may want to increase their product line without incurring production costs, principally the cost of conforming to environmental regulations.

Dyes and pigments are usually sold in dry form, either in full strength or premixed, as in dry dispersions, although liquid dyes are gaining acceptance and liquid pigment dispersions are not uncommon. Dyes and pigments are usually shipped by the truckload in 55-gallon drums. Liquid dyes and pigments may also be shipped in 500-gallon containers. Prices are often determined by the quantity of dyes or pigments purchased, as well as by the extent of services, such as technical assistance, required by the user.

Drugs and related products

Pricing drugs and related products is multifaceted because there are several significantly different markets for these products. Usually, the most costly drugs are those with unexpired patents produced by one firm. These drugs are priced to recover research and development and administrative costs, which include the costs associated with the discovery, development, testing, clinical trials, and other costs necessary to obtain FDA approval to market the drugs. The pricing problem is compounded by the fact that the patent life of a new drug starts before the FDA approval process begins, which may take several years to complete.

Frequently, producers of patented drugs will not sell the drug in bulk form, but will use it captively in the production of brand-name pharmaceutical preparations. In addition, such producers often transfer patented drugs in bulk form to their foreign subsidiaries for marketing in other countries.

After a drug patent expires, competition usually increases as other drug firms, both domestic and foreign, enter the market. Often, a three-tiered pricing structure develops, with the brand name product of the original developer at the highest level. Frequently, the original producer of a drug will sell the the drug in bulk form to other major firms, which market it under their own brand names. These so-called branded generics are usually priced close to the price of the brand name product, although they are sometimes discounted to gain, or retain, market share. At the lowest price level is the generic drug, which may be produced domestically or imported in bulk form and then packaged in dosage form, or other forms suitable for retail sale. Most producers of generic drugs do not have large and costly programs to develop new drugs and can, therefore, sell generic drugs at prices significantly below those of brand name products. 1/

The methods of marketing drugs and related products vary with the different markets. Manufacturers and importers marketing drugs and related products in bulk form have relatively small sales forces and sell to producers of pharmaceutical preparations, or to purchasers such as those that add vitamins and other drugs to animal feed. Many purchasers buy in large quantities, and quantity discounts are usually available. Large, plastic-lined fiber containers, each holding 50 kilograms (110 pounds) of pure bulk

1/ S. Urang, "No-Name Drugs are Making a Name for Themselves," Chemical Business, Mar. 7, 1983, pp. 9-16.

drugs, are a commonly used for bulk sales. Shipments of 10 to 20 of these containers usually containing 1,100 to 2,200 pounds of medicinal chemicals are not unusual. Consumers of smaller quantities usually purchase through distributors which repackage in smaller units and resell at a higher unit price which includes a profit in addition to packaging and handling cost. 1/

THE U.S. MARKET

U.S. Consumption

Apparent consumption of benzenoid chemicals and products was erratic during 1978-82, with a high of 74.4 billion pounds in 1979 and a low of 62.0 billion pounds in 1982 (table 2). This trend generally followed overall consumption of synthetic organic chemicals and products during this period which also peaked in 1979 at 214.1 billion pounds (table 1). During this period, domestic producers of synthetic organic chemicals and products were affected by the economic downturns in 1980 and late 1981 through 1982. The decline in consumption for benzenoid chemicals and products in 1982 compared with 1981 was slightly larger than for all synthetic organic chemicals and products because of the decline in demand for commodity intermediate chemicals used to manufacture products such as plastics, synthetic rubbers, synthetic fibers, and adhesives. These end-use products are consumed primarily in the housing and automotive industries which were adversely affected by rising interest rates. The decline in these two industries also resulted in a decline in consumption of dyes and pigments.

The value of benzenoid chemicals and products consumed during 1978-81 increased by 45 percent, from $31.7 billion in 1978 to $46.0 billion in 1981 despite lower production in 1981 than 1978 (table 2). Rising energy and raw-material costs due to the deregulation of domestic crude oil prices, inflation, and increased labor costs were the primary reasons for this increase. In 1982, the total value of these products is believed to have declined as continued low demand for these products resulted in declining prices for many products. Another indication of this expected decline is that the value of shipments of industrial organic chemicals, which consists of 17 percent benzenoid products and 82 percent acyclic products, declined by 20 percent in 1982 to $23.7 billion compared with $29.8 billion in 1981. 2/

1/ Summary of Trade and Tariff Information on drugs and related products, USITC Publication 841, Control No. 4-1,3-20, May 1983, pp. 41-42.

2/ U.S. Industrial Outlook 1983, . . ., p. 9-11.

Intermediate chemicals

Apparent U.S. consumption of benzenoid intermediate chemicals during 1978-82 overall declined by 16 percent, from 43.4 billion pounds in 1978 to approximately 36.6 billion pounds in 1982 (table 3). The trend during this period, however, was erratic as consumption peaked in 1979 at 46.7 million pounds only to decline in 1980 and then increase slightly in 1981. Demand for intermediate chemicals declined during April-July 1980, as rising interest rates slowed sales. In the last part of 1980 and the beginning of 1981, demand for certain intermediates recovered slowly from the mid-year slump, although not to the level of that in 1979. Commodity intermediate chemicals such as styrene, cumene, phenol, and cyclohexane, however, trailed 1979 levels by as much as 10 to 20 percent. Apparent consumption in 1981 was higher than in 1980 mainly because of demand by domestic consumers to replenish inventories in the first quarter of 1981. As 1981 continued, housing interest rates climbed again after a short-lived decline, reducing demand for intermediate chemicals. Continued low demand for intermediate chemicals and lower exports in 1982 resulted in the lowest apparent consumption since 1978.

The ratio of imports to apparent consumption on the basis of quantity during 1978-82 increased overall from 0.9 to 1.3 percent (table 3). This increase, was attributed to growth in the consumption of intermediate chemicals used to manufacture finished products such as pesticides, pigments, and drugs which were less affected by the economic downturn and to an influx of imports of less costly intermediates.

The value of consumption of intermediate chemicals during 1978-81 increased by 73 percent from $9.7 billion in 1978 to $16.7 billion in 1981. Despite the economic downturn in 1980-81, rising manufacturing costs due to inflation resulted in rising prices for these products. In 1982, the value of apparent consumption, however, is believed to have remained stagnant or declined slightly as increased pressure on domestic producers to maintain sales resulted in price declines, especially for commodity intermediate chemicals.

Synthetic organic dyes and pigments

Apparent U.S. consumption of organic dyes and pigments was erratic during 1978-82. Consumption increased from 301 million pounds, valued at $1.2 billion in 1978, to 322 million pounds, valued at $1.4 billion in 1979 (table 4). In 1980, as a result of diminished demand for textile fabrics, paints, and plastics, apparent consumption of organic dyes and pigments decreased to 284 million pounds, valued at $1.3 billion. Although the apparent consumption rose in 1981, it was still below the 1979 level because increased consumption of pigments in printing inks was not enough to offset the continued decline of dyes and pigments used in the textile, paint, and plastics markets. Consumption of dyes and pigments is believed to have decreased in 1982, as demand for their use remained low.

During 1978-80, the ratio of imports to consumption on the basis of quantity remained at about 12 percent. In 1981, this ratio increased to 15 percent. In 1982, this ratio remained at approximately the same level as 1981.

Drugs and related products

Apparent U.S. consumption of benzenoid drugs and related products in bulk form was erratic during 1978-82, ranging from 116 million to 139 million pounds in 1979 (table 5). Overall, consumption increased by 12 percent during this period. Consumption appears high in 1979 and low in 1980 when compared with other years. Though inventory data are not available, it is believed that excessive production, above average imports, and decreased exports led to excessive inventories in 1978. Inventories are believed to have been reduced in 1980, and actual consumption was probably less erratic than indicated by apparent consumption data. The ratio of imports to apparent consumption on the basis of quantity was also erratic during 1978-82, ranging from 15.0 percent in 1980 to 21.6 percent in 1982 (table 5).

The value of consumption of benzenoid drugs and related products in bulk form increased by 48 percent during 1978-82, from an estimated $937 million in 1978 to an estimated $1.4 billion in 1982 (table 5). Part of the increase in value of consumption is accounted for by inflation which was also true for value of production. As previously noted, another factor in the increased value of consumption was the marketing of new and more costly prescription drugs such as cephalosporin antibiotics during 1978-82. The ratio of imports to consumption based on value was relatively constant during 1978-82, ranging 27.1 to 30.6 percent (table 5).

U.S. Production

During 1978-82, U.S. production of benzenoid chemicals and products was erratic as it ranged from a high of 78.4 billion pounds in 1979 to a low of 64.7 billion pounds in 1982 (table 2). During this period, U.S. benzenoid chemical production was greatly affected by two economic downturns of varying durations occurring in mid-year 1980 and late 1981 through 1982. In 1982, output of benzenoid chemicals and products declined by 10 percent compared with the output of 1981, as a result of continued low demand by end users. This decline paralleled the drop in production of all synthetic organic chemicals and products which declined 11 percent (table 1). Production of certain benzenoid chemicals, primarily commodity intermediate chemicals such as styrene, phenol, and p-xylene, declined by more than 20 percent in many instances as demand for end-use products in the construction and automotive industries declined to low levels. In 1982, automobile production declined by 18 percent to 5.1 million units compared with that of 1981; housing starts amounted to approximately 1 million units, down 40 percent from that of

1979. 1/ Plant capacity use for chemicals and allied products also declined to low levels in 1982, averaging just 60 percent of nameplate capacity.

Although domestic production of benzenoid chemicals and products was erratic during 1978-81, the value of these chemicals and products increased steadily during this period. From 1978 to 1981, the value increased by 50 percent from $31.7 billion to $46.0 billion as a result of inflation and rising manufacturing and labor costs. The value of production in 1982 is estimated to have been the same or slightly lower than in 1981 owing to higher unit labor costs and low revenue from sales of these products. This is in contrast to the economic downturn in 1980 when low consumer demand was offset by higher selling prices.

Intermediate chemicals

During 1978-82, U.S. production of intermediate chemicals was erratic on the basis of quantity, increasing from 45.8 billion pounds in 1978 to peak at 49.6 billion pounds in 1979, then declining in 1980 and rising slightly in 1981, before declining again in 1982 to approximately 39.0 billion pounds (table 3). This erratic trend was due primarily to the two economic downturns occurring during this period. Production of intermediate chemicals, particularly commodity chemicals, declined by approximately 20 percent in the last few months of 1981 and continued at this low level of production throughout 1982 as a result of lower demand for the end-use products.

The value of production of intermediate chemicals increased 70 percent from $10.1 billion in 1978 to $17.7 billion in 1981 (table 3). This increase in value during a period of declining production is due to increased energy and raw-material costs resulting from the deregulation of domestic crude oil prices and inflation. These increased costs were reflected in the average unit value for intermediate chemicals which rose from 22 cents per pound to 39 cents per pound. The value of production in 1982 is believed to have remained the same as in 1981, or to have declined slightly, as producers of these chemicals, especially the commodity chemicals, discounted the prices of many chemicals to retain their customers.

Synthetic organic dyes and pigments.

During 1978-82, U.S. production of organic dyes and pigments increased from 327 million pounds, valued at $1.2 billion, in 1978 to 354 million pounds, valued at $1.4 billion, in 1979 and then decreased steadily to 290

1/ "World Chemical Outlook," Chemical and Engineering News, Dec. 20, 1982, p. 47.

million pounds, valued at $1.1 billion, in 1982 (table 4). This decline in production of dyes and pigments was the result of continued low demand in the major markets. During this period, the United States produced a variety of organic dyes and pigments--more than 1,000 different dyes and 160 different organic pigments.

Drugs and related products

U.S. production of benzenoid drugs and related products in bulk form was erratic during 1978-82, increasing from 112 million pounds in 1978 to 132 million pounds in 1979, before declining to an estimated 125 million pounds in 1982 (table 5). Part of the decline in production quantity was because of decreased demand for older bulk benzenoid drugs such as aspirin which are being replaced, to some extent, by newer more effective drugs such as other analgesics or by low-cost imports of bulk generic drugs. Also, foreign competition has increased in other bulk drug markets such as the market for drugs used in animal feed supplements and the veterinary drug market. Examples of such drugs are the anti-infective sulfonamides, vitamins, and certain penicillins.

The value of production of benzenoid drugs and related products in bulk form increased 46 percent during 1978-82, from $857 million in 1978 to $1.3 billion in 1982 (table 5). Part of the increase in value of production is accounted for by inflation in that the same products cost more to produce in 1982 than in 1978. Other factors were the introduction of new and more costly prescription drugs during that period and a decrease in the production of some low-cost "commodity-type" bulk drugs.

THE INTERNATIONAL MARKET

U.S. Imports

U.S. imports of benzenoid chemicals and products are analyzed to determine if tariff changes such as the loss of ASP which became effective July 1, 1980, or other factors had a significant effect on imports of these chemicals and products. This discussion includes not only overall changes in imports data during 1978-82, but also changes during 1978-80 before the loss of ASP and the reduction of duties and during 1980-82 after these tariff changes went into effect.

During 1978-82, U.S. imports of benzenoid chemicals and products were erratic, ranging from a low of 694 million pounds in 1978 to a high of 857 million pounds in 1981 (table 6). This trend was similar, however, to imports of all synthetic organic chemicals and products during this period with the high and low quantities recorded in the same years (table 7). Also, both groups recorded small declines in 1982 compared with that in 1981. The value of imports of benzenoid chemicals and products during this period overall increased by 33 percent, from $1.2 billion in 1978 to $1.6 billion in 1982. In the latter year, however, the value of these products declined by 2 percent compared with the value in 1981.

In 1982, West Germany was the principal source of U.S. imports of benzenoid chemicals and products on the basis of value and quantity with $321 million (21 percent of U.S. total) and 115 million pounds (14 percent of U.S. total). Japan, the United Kingdom, and Switzerland were other major sources of U.S. imports (table 6).

As a result of the Trade Agreements Act of 1979, certain benzenoid chemicals and products previously classified under the ASP method of customs valuation were placed in "basket" categories with duty rates based on the ad valorem equivalent 1/ of the chemicals or products classified in the specific "basket" item. Chemicals and products imported in these "basket" categories, known as "competitive" chemicals and products 2/ in this study, are analyzed seperately to determine if the tariff changes as a result of the MTN had a significant effect on imports of these products.

During 1978-82, U.S. imports of "competitive" benzenoid chemicals and products increased by 34 percent, from 516 million pounds to 689 million pounds (table 8). The value of these imports increased from 1978 to 1980 and then from 1980 to 1982 declined by 12 percent, from $992 million in 1980 to $874 million in 1982. The average unit value of these imports during this period declined from $1.66 per pound in 1980 to $1.27 per pound in 1982.

The quantity of "competitive" benzenoid imports increased in 1982 by 4 percent compared with a decline of 2 percent for imports of all benzenoid chemicals and products. This difference was due primarily to imports of low-cost mixtures of benzenoid chemicals from South American countries. In 1982, "competitive" benzenoid imports, on the basis of value, accounted for 56 percent of total imports of benzenoid chemicals and products.

Intermediate chemicals

During 1978-82, U.S. imports of intermediate chemicals increased erratically. A low of 357 million pounds was achieved in 1980 and a high of 500 million pounds attained in 1981. The overall increase during this period, was 23 percent, or from 390 million pounds in 1978 to 479 million pounds in 1982 (table 9). The value of these products also increased erratically during 1978-82, although the overall growth was 27 percent, or from $390 million in 1978 to $495 million in 1982.

In 1982, West Germany was the principal source of U.S. imports of intermediate chemicals on the basis of value with $112 million, or 23 percent of the total value of imports. Other major U.S. import sources in 1982 were Japan with $100 million, or 20 percent, and the United Kingdom with $86

1/ The ad valorem equivalent is an average figure based on the average unit value of imports in a specified "basket" category.

2/ See footnotes 1 and 2 on p. 2 of this study.

million, or 17 percent (table 9). The principal sources of intermediate chemical imports on the basis of quantity in 1982 were Venezuela and Argentina with 120 million pounds, or 25 percent and 104 million pounds or 22 percent, respectively. Imports from these countries were mainly low-valued mixtures containing benzenoid chemicals with limited use as an intermediate chemical and they were mainly consumed for fuel uses.

U.S. imports of "competitive" intermediate chemicals during 1978-82 increased overall by 37 percent, from 331 million pounds to 453 million pounds (table 10). The only break in this rising trend was registered in 1980 when "competitive" imports dropped to 319 million pounds, 12 percent lower than that in 1979. In 1982, imports of "competitive" intermediate chemicals accounted for approximately 95 percent of total intermediate chemical imports. The principal sources in terms of value in 1982 for these chemicals were the same as for total imports of intermediate chemicals; that is West Germany with 25 percent, Japan with 23 percent, and the United Kingdom with 11 percent. During 1980-82, imports of "competitive" intermediate chemicals increased by 42 percent compared with 34 percent for total imports of these chemicals.

Synthetic organic dyes and pigments

During 1978-82, U.S. imports of synthetic organic dyes and pigments followed the trend of apparent consumption of U.S. synthetic organic dyes and pigments, by increasing erratically from 38 million pounds, valued at $187 million, in 1978 to 44 million pounds, valued at $215 million, in 1981, and then decreasing slightly to 43 million pounds, valued at $209 million, in 1982 (table 11).

During 1978-82, West Germany, Japan, Switzerland, and the United Kingdom were the principal sources of dye and pigment imports. In 1982, these four countries accounted for 82 percent of the quantity and 86 percent of the value of total imports of these products (table 11).

Major importers of organic dyes and pigments are U.S. subsidiaries of foreign firms whose imports are actually intracompany transfers originating in West Germany, Switzerland, and the United Kingdom. Other importers include: (1) major trading companies, which are the primary importers of Japanese dyes and pigments; (2) small brokerage firms; and (3) other U.S. dye and/or pigment producers. Imports of dyes and pigments from U.S.-owned foreign subsidiaries are believed to be negligible.

During 1978-82, U.S. imports of "competitive" organic dyes and pigments followed the trend of total imports of dyes and pigments. Imports increased irregularly from 17 million pounds, valued at $60 million, in 1978 to 21 million pounds, valued at $86 million, in 1981, and then decreased to 18 million pounds, valued at $69 million, in 1982 (table 12). During this same

period, the principal sources of competitive dyes and pigments on the basis of value were the same as that for total imports of dyes and pigments: West Germany with 38 percent, Japan with 20 percent, the United Kingdom with 11 percent, and Switzerland with 7 percent.

Drugs and related products

The trend of imports of benzenoid drugs was erratic on the basis of quantity during 1978-82, ranging from 18.7 million pounds to 24.0 million pounds. For the 5-year period, however, the overall trend was upward with an increase of 16 percent, from 20.6 million pounds in 1978 to 24.0 million pounds in 1982 (table 13). On the basis of value, total imports of benzenoid drugs and related products increased 34 percent, from $286 million in 1978 to $384 million in 1982. Principal sources of imports of benzenoid drugs and related products in 1982 on the basis of value were the United Kingdom with 32 percent, West Germany with 11 percent, the Bahamas with 9 percent, Japan with 9 percent, Italy with 7 percent, Ireland with 6 percent, Belgium with 5 percent, and Switzerland with 4 percent (table 13).

Imports of "competitive" benzenoid drugs and related products were erratic during 1978-82, ranging from an estimated 14.4 million pounds in 1980 to a high of 20.0 million pounds in 1981. The value of "competitive" imports of benzenoid drugs and related products increased 34 percent, from an estimated $175 million in 1978 to $235 million in 1982 (table 14). Principal sources on the basis of value of imports of "competitive" benzenoid drugs and related products in 1982 were the United Kingdom with 16 percent, the Bahamas with 15 percent, Japan with 13 percent, West Germany with 12 percent, Ireland with 8 percent, France with 5 percent, and Switzerland with 5 percent (table 14).

Foreign Imports by Representative MTN Countries

Import data for three representative MTN countries, West Germany, Japan, and Switzerland, during 1978-81 are discussed in this study to determine the effect of their duty reductions which became effective in 1980 on their imports. These three countries were chosen because of their significant trade with the United States in this area. Changes in the level of imports of synthetic organic chemicals and products prior to and after duty reductions in particular, are discussed. A comparison of import changes of the representative countries as a result of their trade concessions and import changes of the United States as a result of U.S. trade concessions, including the loss of ASP should help determine the effect of the loss of ASP on U.S. trade.

Foreign import statistics on organic chemicals and products are classified by chemical structure such as amines and alcohols but do not distinguish between benzenoid and nonbenzenoid types. Therefore, for the purposes of this study, the item numbers known to contain mainly benzenoid

chemicals and products in the Standard International Trade Classification (SITC) system were used to obtain trade totals for three representative MTN countries. Trade totals for intermediate chemicals and dyes and pigments were also obtained in this same manner. Since these totals include some nonbenzenoid organic chemicals, the group is labeled under the more general category "all organic chemicals." Because trade of benzenoid chemicals usually follows the trend of all organic chemicals, however, it will be reflected in the following analysis of trade in all organic chemicals between the United States and the three representative major MTN countries.

During 1978-81, 1/ three representative MTN countries, West Germany, Japan, and Switzerland, were major importers of organic chemicals. During 1978-80, the trend was increasing for these countries. In 1981, the year after the provisions of the MTN became effective, imports of organic chemicals increased in Japan, but decreased in the European countries (tables 17-22).

During 1978-81, the major import source of all organic chemicals and intermediate chemicals for Japan was the United States. In the same period, the major import source for the European countries was West Germany. In 1981, U.S. organic chemicals accounted for 45 percent of total Japanese organic chemical imports (tables 15 and 16). In contrast, U.S. organic chemicals accounted for a small share of all organic chemicals imported by the European countries, averaging 8 percent (tables 18 and 21).

During 1978-81, imports of intermediate chemicals by these three countries were erratic, in terms of U.S. dollar value, generally increasing from 1978 to 1979, then decreasing in 1980, and increasing slightly in 1981. Of the three countries in 1981, Japan had the largest percentage of imports of these chemicals from the United States, with 52 percent (table 16). Exports of these chemicals from the United States to the other two countries accounted for only a small percent of each countries total imports (less than 10 percent). This share has not increased significantly as a result of the MTN (tables 19 and 22).

During 1978-81, the major foreign importers, by U.S. dollar value, of organic dyes and pigments were Switzerland, West Germany, and Japan. Imports of dyes and pigments for these countries generally increased between 1978 and 1979, but decreased between 1980 and 1981. The major foreign importers of dyes and pigments during this period were each other's principal source (tables 17, 20, and 23). U.S. dyes and pigments accounted for a small, but increasing share of the total dyes and pigments imported by most of these countries.

In general, drugs and related products in bulk form are treated in foreign trade statistics as organic chemicals and are classified on the basis of chemical structure. Exceptions include vitamins and provitamins,

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1/ Latest available data.

antibiotics, vegetable alkaloids, hormones, glycosides, organotherapeutic glands, vaccines, and toxins. All of the available data include natural products or nonbenzenoid chemicals which would not be classified as benzenoid under U.S. Tariff laws. Therefore, foreign trade data are not available for most benzenoid drugs in bulk form.

U.S. Exports

U.S. exports of benzenoid chemicals and products during 1978-82 are discussed in the following section to determine if duty reductions made by the participants in the MTN had an effect on the level of U.S. exports of these chemicals and products during this period. This discussion also examines the changes in exports prior to and after these duty reductions went into effect, generally in 1980.

In the U.S. trade classification system, the term "benzenoid" is used only for imports. U.S. export trade statistics for benzenoid chemicals and products are, therefore, not available. Reasonable estimates of total exports for these chemicals, however, can be obtained using item numbers containing chemicals and products derived primarily from benzenoid sources. In certain groupings such as intermediates and dyes and pigments, export data by country can also be obtained with a reasonable degree of accuracy; however, this was not possible for total benzenoid chemicals and products and drugs and related products.

During 1978-82, estimated exports of benzenoid chemicals and products were erratic, ranging from a low of 4.1 billion pounds in 1980 to a high of 4.7 billion pounds in 1979. Overall, U.S. exports of these chemicals and products remained essentially at the same level during this period (table 2). The estimated value of exports increased by 46 percent during 1978-82, from $2.2 billion to $3.2 billion. In 1982, the value of exports increased by 2 percent compared with the value in 1981 owing to demand for certain products despite higher prices. In contrast, the value of exports of synthetic organic chemicals and products in 1982 declined by 5 percent compared with that of 1981 (table 24). A more detailed analysis of the factors affecting these trends will be discussed in the final section of this study.

Intermediate chemicals

U.S. exports of intermediate chemicals are not classified according to their chemical origin and, therefore, exact statistics for this group are not available. Reasonable estimates, however, were obtained using the items containing products derived primarily from benzenoid raw materials.

During 1978-82, U.S. exports of intermediate chemicals were erratic, ranging from a low of 2.8 billion pounds in 1978 to a high of 3.4 billion pounds in 1980 (table 25). Overall, the quantity of exports during 1978-82

declined by 15 percent from 3.4 billion pounds to 2.9 billion pounds. The value of these exports increased by 96 percent during 1978-80, from $798 million to $1.5 billion, then declined by 19 percent to $1.3 billion in 1982.

Canada and Japan were the principal markets for U.S. exports of intermediate chemicals in 1982, on the basis of value with a combined total of $291 million, or 23 percent of the total value of exports. Other major export markets were the Netherlands with $128 million, or 10 percent, and Mexico with $113 million, or 9 percent. Japan was the principal export market on the basis of quantity in 1982 with 336 million pounds, or 12 percent of total export quantity. Exports to these countries were primarily commodity intermediate chemicals.

Synthetic organic dyes and pigments

U.S. exports of synthetic dyes and pigments were erratic during 1978-82, increasing from 63 million pounds, valued at $137 million, in 1978 to 71 million pounds, valued at $169 million, in 1979, and then decreasing thereafter to 49 million pounds, valued at $156 million, in 1982 (table 26).

During 1978-82, Canada, Japan, and many of the countries of the European Community were the principal export markets for U.S.-produced dyes and pigments. In 1982, these principal markets accounted for 63 percent of the total quantity and 58 percent of the total value of U.S. dye and pigment exports. The largest single market for exports of these products in 1982 was Canada with 31 percent of total quantity and 23 percent of total value.

In 1982, there were at least 10 U.S. producers of dyes and pigments that exported. Most of them distributed their products overseas through international marketing agencies; a few marketed their products through foreign affiliates. U.S. producers of dyes and pigments consider exports an important outlet to help maintain sales levels, particularly during 1981 and 1982 when the U.S. market, the principal outlet, was depressed.

Drugs and related products

The basic assumption used to arrive at estimates of U.S. exports of benzenoid drugs and related products is that the ratio of exports of benzenoid drugs to total exports of bulk drugs is the same as the ratio of U.S. production of benzenoid drugs to the total U.S. production of drugs in bulk form. Thus, subject to this caveat, estimated exports of benzenoid drugs and related products were erratic on the basis of quantity during 1978-82, ranging from 14.2 million to 20.0 million pounds. The estimated value of exports increased 21 percent during 1978-82, from $206 million in 1978 to $254 million in 1981, then declined slightly to $249 million in 1982. With the exception of the export quantity in 1980, the United States is estimated to have had a negative trade balance during 1978-82 on the basis of both quantity and value

for benzenoid drugs and related products in bulk form (table 5). Exports on a country-by-country basis could not be estimated with a reasonable degree of certainty. As previously mentioned, trade data are analyzed in the final section of this study.

Foreign Exports by Representative MTN Countries

Foreign trade statistics for benzenoid chemicals are included in the larger category "all organic chemicals," as noted in the section entitled "foreign imports." Again, the trend of benzenoid exports is usually reflected in exports of all organic chemicals. Changes in the level of foreign exports of these chemicals during 1978-81 are discussed for the three representative MTN countries with their major trading partners, especially the United States. This discussion also examines the level of exports of these chemicals from these countries during 1980-81 after duty reductions by their major trading partners, including the United States, became effective.

During 1978-81, these three representative MTN countries were among the major exporters of organic chemicals in the world. Although these exporting countries consider the United States as one of their top eight major markets, exports of organic chemicals from them to the United States account for a small share of their total exports. In 1981, this share averaged 7 percent and ranged from 4 percent by West Germany to 16 percent by Japan.

During 1978-81, these exporting countries of organic chemicals were also major exporters of intermediate chemicals and dyes and pigments. Exports of intermediate chemicals and dyes and pigments from these exporters to the United States reflect the trends of exports of organic chemicals, generally accounting for a small share of total exports. The largest markets for the West European nations are usually each other. Japan was the exception shipping 26 percent of its total exports of intermediate chemicals on the basis of value to the United States in 1981 (table 16). Exports of these products to the United States from the other sources ranged from 2 percent by West Germany to 8 percent by the Netherlands and averaged 6 percent of their total exports of chemical intermediates. In the same year, exports of dyes and pigments from Japan and the other sources to the United States ranged from less than 1 percent by France to 16 percent by Japan and averaged 6 percent of their total exports.

FACTORS AFFECTING INTERNATIONAL TRADE

United States

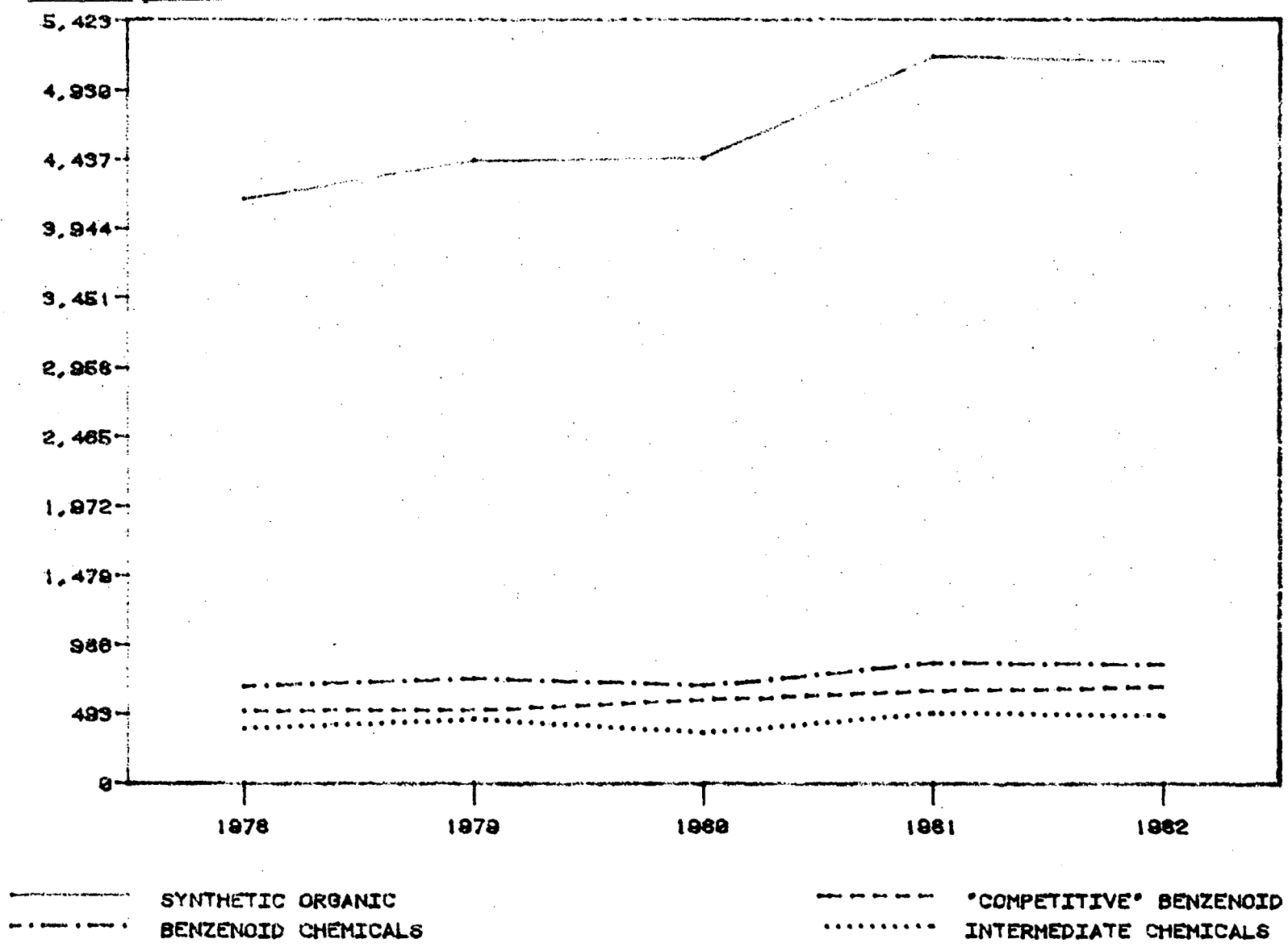
There are a number of factors which could have affected international trade in benzenoid chemicals and products during 1978-82. Prominent among these factors were the elimination of the ASP method of customs valuation by the United States and duty concessions granted during the Tokyo round of the MTN. As a result of the Trade Agreements Act of 1979, these changes became effective on July 1, 1980. In addition, there were other factors such as the worldwide economic downturns and the increasing value of the U.S. dollar relative to other world currencies concurrently affecting international trade in benzenoid chemicals and producers.

Loss of ASP

After the loss of ASP, industry sources expected the level of imports of these products to increase substantially compared with previous years. During 1979 and 1980, total imports of benzenoid chemicals and products on the basis of quantity declined by 7 percent and then increased by 23 percent in 1980 and 1981 (table 6). Imports of "competitive" benzenoid chemicals and products, those primarily subject to ASP prior to the Act of 1979, increased 15 percent during 1977-80 and then increased 11 percent in 1980 and 1981 (table 8). In 1982, total imports of these products declined by 2 percent compared with that of 1981, but "competitive" imports of these products, those primarily subject to ASP prior to the Act of 1979, increased by 4 percent. The increases registered by "competitive" imports during 1980-82 and by total imports of benzenoid chemicals and products were due primarily to large volume imports of mixtures of organic chemicals containing benzenoid chemicals from countries which did not participate in the MTN. Imports from the major U.S. trading partners increased slightly or declined during 1980-82. For example, imports of total benzenoid chemicals and products from West Germany remained essentially the same during this period with 116 million pounds in 1980 compared with 115 million pounds in 1982 (table 6). The import data for 1980 and the subsequent years do not show a sharp rise in imports which could have been attributed to the loss of ASP. However, this period was at a time of worldwide economic slowdown and changing exchange rates which also had an effect on imports. These data do not support the conclusion that the loss of ASP would have a major effect on all imports of benzenoid chemicals and products. As shown in the following graph, changes in import levels for benzenoid chemicals and products during 1978-82 did not differ significantly after the MTN changes became effective on July 1, 1980, compared with that of the previous years.

The apparent effect of the loss of ASP on imports of intermediate chemicals was basically the same as for total imports of benzenoid chemicals and products. Imports of total intermediate chemicals and "competitive" intermediate chemicals increased during 1980-82 on the basis of quantity by 34

U.S. imports of synthetic organic chemicals and products, and specified groups, 1978-82.



percent and 42 percent, respectively (tables 9 and 10). These increases, however, were due to large-volume imports of benzenoid mixtures for use primarily as fuel and not as an intermediate chemical from two South American countries. If these imports were omitted, imports of intermediate chemicals would have declined during this period. In 1982, imports of "competitive" intermediate chemicals from West Germany, the principal source, declined by 3 percent to 51 million pounds compared with 52 million pounds in 1981 (table 10). Import data for intermediate chemicals during 1980-82 do not tend to show any significant changes that could be at least partially attributed to the loss of ASP, especially from the principal import sources that participated in the MTN.

The removal of ASP was expected by industry sources to indirectly reduce the duty of "competitive" imports of dyes and pigments and to subsequently result in possible increased imports because the selling prices of most dyes and pigments in the United States in recent years have often been higher than European prices. However, the small rise in imports of certain "competitive" products which may be attributed to this fact were too erratic to draw any conclusions between the loss of ASP and increases in total and "competitive" imports of these products.

On the basis of quantity, total imports of benzenoid drugs and related products declined 12 percent during 1979 and 1980, and increased 25 percent during 1980 and 1981 (table 13). The same fluctation occurred with imports of "competitive" benzenoid drugs and related products. There was a decrease in the quantity imported during 1979 and 1980 and an increase during 1980 and 1981 (table 14). If the U.S. concession in giving up the ASP method of customs valuation had resulted in a substantial unilateral duty reduction, a continued increase in imports of benzenoid drugs and related products might have been expected in the year following 1980. Thus while there was an increase in imports from 1980 to 1981, there is little evidence to unequivocally state that the loss of ASP had a discernable effect on U.S. imports of benzenoid drugs and related products.

Duty changes

The total duty reductions made by the United States for most "competitive" benzenoid chemicals and products and TSUS items containing separately listed chemicals and products are staged over an extended period of time and, therefore, in any one year are relatively small. As previously discussed, imports of benzenoid chemicals and products were erratic on the basis of quantity during 1978-82. Therefore, any correlation between increased imports and decreased duty rates for benzenoid chemicals and products is difficult to determine. Similar import fluctuations were recorded for major groups of benzenoid chemicals and products, namely, intermediate chemicals, synthetic organic dyes and pigments, and drugs and related products. This is not to say that there are no import sensitive benzenoid chemicals and products; it is quite likely that on an individual basis there are some benzenoid

chemicals and products, particularly the finished products such as drugs, dyes and pigments, and pesticides, that are sensitive to relatively small changes in price.

Other factors

Two other factors affected U.S. and world trade of benzenoid chemicals and products in general: the economic conditions in the United States and in the countries considered to be its major trading partners, as well as the increasing value of the U.S. dollar compared with other major currencies.

During 1980-82, the United States experienced a major economic decline which greatly affected its balance of trade. In mid-1980, the U.S. economy began to decline as a result of rising interest rates and energy costs. U.S. imports of benzenoid chemicals and products, especially intermediate commodity chemicals and dyes and pigments, declined from the high levels recorded in 1979 owing to lower domestic consumer demand. Total U.S. exports of these chemicals and products also declined in 1980 compared with that of 1979 owing to the economic conditions of the U.S. trading partners. Despite the economic conditions in these markets, U.S. exports of some groups of chemicals and products such as intermediate chemicals and drugs and related products were able to maintain or slightly increase their overall level of imports compared with that of 1979 because of their competitive prices or the limited number of sources for particular products. In early 1981, the economy of the United States improved for a short period as inflation and interest rates declined. By August, however, the economy started to decline again and this continued through 1982, as interest rates rose again to high levels depressing demand in markets that are major end users of these chemicals and products. U.S. imports of benzenoid chemicals and products in 1981 and 1982 reflected these economic changes as they rose in 1981 compared with that of 1980 and then declined in 1982. U.S. exports of these chemicals and products during 1980-82, however, increased by 10 percent despite economic problems in the major export markets. This increase was attributed to consumer demand for certain products and chemicals such as plastics, specialty chemicals, and pesticides which were either not produced in the importing country or priced more competitively than other sources. U.S. exports of the remaining benzenoid chemicals and products, particularly intermediate commodity chemicals, declined in 1982 because the major end-use products were in markets greatly affected by the declining economies of the importing countries.

The economic downturns in the United States and its major trading partners must be considered as one of the major factors affecting U.S. trade during 1980-82 because of effect it has on the many aspects of a country's ability to remain viable in this area. Lower economic activity eventually results in declining imports as domestic demand drops. During periods of declining consumer demand, lower duty rates are generally not sufficient to reverse the declining trend of imports.

During 1980-82, U.S. trade in benzenoid chemicals and products was also affected by the rise in the value of the U.S. dollar which began in late 1980, as rising interest rates began to have an effect on the relatively high inflation rate in the United States. High interest rates also resulted in a high rate of return on dollar-dominated investments which attracted foreign investors. The strengthening U.S. dollar resulted in less costly imports and thus contributed to the increase in imports of benzenoid chemicals and products in 1981. This increase in the value of the U.S. dollar also resulted in higher costs for U.S. exports which should have resulted in a decline in exports of these chemicals and products in 1981. Such decline, however, did not occur in 1981 because U.S.-produced items were still less costly for some countries than products manufactured in their country or imported from other countries. One reason for this is the cost of crude petroleum which is based on the U.S. dollar. Countries dependent on imported crude petroleum had to buy it with their weaker currencies. In 1982, declining consumer demand in the United States due to the continuing economic slowdown resulted in lower U.S. imports of these chemicals and products despite the increasing value of the U.S. dollar.

Additional factors also affected U.S. and world trade of certain major groups of benzenoid chemicals and products, namely, intermediate chemicals, synthetic organic dyes and pigments, as well as drugs and related products. These factors include: (1) the restriction of imports into certain countries, (2) the multinational nature of many producers in the benzenoid chemicals and products industries, (3) the exports from Communist countries, and (4) imports under the Generalized System of Preferences (GSP). The imposition of import restrictions by many countries, especially the developing countries, has affected U.S. exports of intermediate chemicals. Through such restrictions, these countries attempt to control their mounting debt services charges which, in part, are caused by imports. The import restrictions ranged from import quotas and import fees to antidumping proceedings. It is difficult, however, to determine the quantitative effect on U.S. exports caused by these restrictions.

The multinational aspect of many major U.S. producers affected U.S. trade of synthetic organic dyes and pigments, as well as drugs and related products. These multinational producers, being subsidiaries of European companies, are among the largest U.S. importers and are leaders in many aspects of these industries. Many of their imports are "noncompetitive" products. Once these products become established in the U.S. market, the company decides whether to produce them domestically or continue importing them, depending, in part, on the duty rates. These firms often build "world scale" plants that are large enough to supply major portions of the world market requirements for certain dyes and pigments, as well as drugs and related products. Therefore, significant amounts of world trade in these products are intracompany product transfers which allow the parent firm to benefit from economies of scale in plant operations, tax advantages, and other advantages of multinational operations.

U.S. trade in drugs and related products, especially imports, was also affected by exports from some Communist countries, as well as by imports under the GSP. Individually, Communist countries do not account for a major share of overall imports of benzenoid drugs and related products. Collectively, however, these countries have become price and market leaders for some "commodity-type" benzenoid drugs. For example, imports of sulfonamide drugs from Czechoslovakia, Hungary, Poland, Romania, and Yugoslavia have captured a major portion of the U.S. market for these products. According to industry sources, sulfonamide drugs from these countries are frequently offered at prices below the U.S. cost of production, and 1982 production statistics show a further decline in U.S. production. When the People's Republic of China was granted "most-favored-nation" status, imports of some benzenoid drugs began to enter from that country. Also, imports of "competitive" benzenoid drugs and related products from the Bahamas, a designated beneficiary developing country for GSP purposes, amounted to $35 million in 1982 and were second only to the United Kingdom as a source of imports, based on value.

All of the factors discussed above affect the level of imports of benzenoid chemicals and products in some way. However, the factors are so interwoven and pervasive that they defy quantification.

Foreign

Duty changes

The principal trading partners of the United States, namely, Canada, the EC, and Japan, made duty concessions on organic chemicals and products similar to those made by the United States during the MTN. In general, duty reductions on these chemicals and products ranged from 30 to 35 percent depending upon the country and were usually staged over a period of time similar to the United States. Since most of the duty reductions for these chemicals and products are staged over a period of years, the yearly reduction is usually small. A quantitative assessment of the effect on trade changes by country, therefore, is not possible. The overall effect, however, is believed by industry sources to have been minimal, especially compared with certain other factors which had a more direct and immediate impact on international trade during 1980-82.

Other factors

One of the important factors affecting international trade during 1980-82 was the increasing value of the U.S. dollar relative to other currencies. From December 1980 to December 1982, the currencies of Japan, West Germany, and the United Kingdom, major trading partners of the United States, all declined significantly in comparison with the U.S. dollar. For example, the Japanese yen increased from approximately 205 yen per U.S. dollar to 235 yen per U.S. dollar; the British pound declined from approximately $2.39 per pound

to $1.60 per pound; and the West German mark (DM) increased from approximately 1.95 DM per U.S. dollar to 2.39 DM per U.S. dollar. 1/ These changes in currency exchange rates usually led to increased exports of chemicals by these countries to the United States, depending upon demand, because their chemicals became more competitive in the U.S. market. This was especially noticeable in 1981. In contrast, U.S. exports to these countries generally declined, in part, owing to these currency valuation changes.

One exception was Japan which continued to increase its imports from the United States despite the increasing value of the U.S. dollar compared with the yen. Japan must import crude petroleum for its chemical industry. In the past few years, the cost of raw materials derived from imported crude petroleum in Japan has risen dramatically owing to the rising cost of imported crude petroleum. It became evident to many Japanese consumers of organic chemicals and products that it was less costly to import these chemicals and products, even at higher prices, from the United States then purchase the more costly domestic products.

Another important factor which affected international trade during 1980-82 was the worldwide economic downturn. Rising raw materials and energy costs coupled with increasing inflation rates generally led to lower consumer demand for organic chemicals and products produced primarily by the United States and its major trading partners. Exports of these chemicals and products by the major trading partners declined in 1981 partly because of the declining economies in their major export markets which included the United States and each other. This decline was significant for chemicals particularly sensitive to changes in economic cycles such as intermediate chemicals and, to some degree, dyes and pigments.

International trade in drugs and related products is less sensitive to economic cycles than for most other products, but the worldwide economic downturn coupled with changes in the exchange currency rates may have accounted for the modest decline in estimated U.S. exports during 1980-82 (table 5).

The increase in estimated exports during 1978-80 reflects, at least in part, increased trade with Japan. Foreign companies including U.S. firms have been encouraged to market their drugs in Japan. This is believed by some industry observers to be part of an effort by the Japanese Government to encourage Japanese firms to enter into joint ventures with multinational drug firms to gain access to their markets. Ultimately, increased exports of drugs from Japan are expected to result from these efforts. 2/

1/ "International Economic Review," Value Line Selection & Opinion, Mar. 25, 1983, p. 388.

2/ Sally Urang, "Banzai! Here Come Japanese Pharmaceuticals," Chemical Business, Sept. 20, 1982, pp. 9-14.

Thus, as previously discussed, the multinational nature of the drug industry is believed to be the single most significant factor affecting international trade.

APPENDIX A

PART 1, SUBPARTS B AND C, SCHEDULE 4, OF THE TARIFF SCHEDULES OF THE UNITED STATES ANNOTATED (1983)

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part:				
A	402.00	00	Anthracene having a purity of 30% or more by weight	Lb.....	1.1¢ per lb. + 7.4% ad val.	0.8¢ per lb. + 5.5% ad val.	7¢ per lb. + 46.5% ad val.
A	402.04	00	Carbazole having a purity of 65% or more by weight	Lb.....	1.2¢ per lb. + 9.3% ad val.	0.8¢ per lb. 6.1% ad val.	7¢ per lb. + 40% ad val.
A	402.08	00	Naphthalene which after the removal of all water present has a solidifying point of 79° C. or above	Lb.....	0.6¢ per lb. + 3.4% ad val.	0.5¢ per lb. + 2.7% ad val.	7¢ per lb. + 40% ad val.
A*	402.12	00	Phthalic anhydride	Lb.....	1.2¢ per lb. + 8.6% ad val.		7¢ per lb. + 49% ad val.
A	402.16	00	Styrene	Lb.....	0.5¢ per lb. + 9% ad val.	7.4% ad val.	7¢ per lb. + 45% ad val.
			All distillates of coal tar, blast-furnace tar, oil-gas tar, and water-gas tar, which on being subjected to distillation yield in the portion distilling below 190° C. a quantity of tar acids equal to or more than 5% by weight of the original distillate or which on being subjected to distillation yield in the portion distilling below 215° C. a quantity of tar acids equal to or more than 75% by weight of the original distillate:				
A	402.20	00	Phenol (carbolic acid) which on being subjected to distillation yields in the portion distilling below 190° C. a quantity of tar acids equal to or more than 5% by weight of the original distillate	Lb.....	1.4¢ per lb. + 12.5% ad val.	1.3¢ per lb. + 12.5% ad val.	3.5¢ per lb. + 29.5% ad val.
A	402.24	00	Cresylic acid which on being subjected to distillation yields in the portion distilling below 215° C. a quantity of tar acids equal to or more than 75% by weight of the original distillate	Lb.....	0.6¢ per lb. + 4.2% ad val.	0.5¢ per lb. + 3.3% ad val.	3.5¢ per lb. + 20% ad val.
A	402.28	00	Metacresol, orthocresol, paracresol, and metaparacresol, all the foregoing having a purity of 75% or more by weight	Lb.....	0.6¢ per lb. + 4.5% ad val.	0.5¢ per lb. + 3.7% ad val.	7¢ per lb. + 42.5% ad val.
A	402.32	00	Other	Lb.....	1.3¢ per lb. + 6.7% ad val.	1¢ per lb. + 4.9% ad val.	7¢ per lb. + 33.5% ad val.
			Other:				
			Hydrocarbons:				
	402.36	00	Alkylbenzenes and polyalkylbenzenes	Lb.....	1.1¢ per lb. + 17.3% ad val.	0.5¢ per lb. + 17.3% ad val.	7¢ per lb. + 55% ad val.
	402.40	00	Bi- and polyphenyls	Lb.....	12.2% ad val.	7.6% ad val.	7¢ per lb. + 40% ad val.
	402.44	00	α-Methylstyrene	Lb.....	0.6¢ per lb. + 12.5% ad val.	9.5% ad val.	7¢ per lb. + 40% ad val.
	402.48	00	Vinyltoluene	Lb.....	12.5% ad val.	7.8% ad val.	7¢ per lb. + 40% ad val.
	402.52	00	Other: Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.....	18.2% ad val.	10.4% ad val.	7¢ per lb. + 68.5% ad val.
	402.54	00	Other	Lb.....	10.4% ad val.		7¢ per lb. + 68.5% ad val.

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part (con.):				
			Other (con.):				
			Halogenated hydrocarbons:				
	402.56	00	Benzyl chloride (α-Chlorotoluene).....	Lb.....	0.1¢ per lb. + 12.5% ad val.	7.9% ad val.	7¢ per lb. + 40% ad val.
	402.60	00	Benzotrichloride (α,α,α,-Trichlorotoluene).....	Lb.....	11.6% ad val.	7.4% ad val.	7¢ per lb. + 48% ad val.
			Chlorobenzenes, mono-, di-, and tri-:				
	402.64	00	Monochlorobenzene.....	Lb.....	0.3¢ per lb. + 28.6% ad val.	20% ad val.	7¢ per lb. + 91.5% ad val.
	402.68	00	Orthodichlorobenzene.....	Lb.....	26.3 ad val.	15.2% ad val.	7¢ per lb. + 84% ad val.
	402.72	00	Other.....	Lb.....	10% ad val.	6.8% ad val.	7¢ per lb. + 40.5% ad val.
	402.76	00	Chlorinated biphenyl.....	Lb.....	12.1% ad val.	7.6% ad val.	7¢ per lb. + 39% ad val.
			Other:				
	402.80	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	16% ad val.	9.1% ad val.	7¢ per lb. + 71% ad val.
	402.82	00	Other.....	Lb.....	9.1% ad val.		7¢ per lb. + 71% ad val.
			Other hydrocarbon derivatives:				
	402.84	00	Monochloromononitrobenzenes.....	Lb.....	17.5% ad val.	10% ad val.	7¢ per lb. + 59% ad val.
	402.88	00	4,4'-Dinitrostilbene-2,2'-disulfonic acid.....	Lb.....	0.7¢ per lb. + 15.6% ad val.	15% ad val.	7¢ per lb. + 50% ad val.
			Nitrated benzene, toluene, or naphthalene:				
	402.96	00	p-Nitrotoluene.....	Lb.....	0.2¢ per lb. + 10% ad val.	7.2% ad val.	7¢ per lb. + 40% ad val.
	402.98	00	Other.....	Lb.....	1.5¢ per lb. + 12.5% ad val.	1.3¢ per lb. + 12.5% ad val.	7¢ per lb. + 40% ad val.
	403.00	00	Nitrotoluenesulfonic acids.....	Lb.....	19% ad val.	10.8% ad val.	7¢ per lb. + 74.5% ad val.
	403.05	00	p-Toluenesulfonyl chloride.....	Lb.....	10.4% ad val.	7% ad val.	7¢ per lb. + 41.5% ad val.
			Other:				
	403.09	00	m-Benzenedisulfonic acid, sodium salt; 1-Bromo-2-nitrobenzene; 1-Chloro-3,4-dinitrobenzene; 1,2-Dichloro-4-nitrobenzene; o-Fluoronitrobenzene; 1,5-Naphthalenedisulfonic acid; p-Nitro-o-xylene; and o-(and p)-Toluenesulfonic acid, methyl ester.....	Lb.....	9.6% ad val.	5.8% ad val.	7¢ per lb. + 40% ad val.
			Other:				
	403.12	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	1.7¢ per lb. + 15.9% ad val.		7¢ per lb. + 51% ad val.
	403.14	00	Other.....	Lb.....	13.5% ad val.		7¢ per lb. + 51% ad val.

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part (con.):				
			Other (con.):				
			Alcohols, phenols, ethers (including epoxides and acetals), aldehydes, ketones, alcohol peroxides, ether peroxides, ketone peroxides, and their derivatives:				
	403.16	00	Alkyl cresols	Lb.	10.7% ad val.	7.1% ad val.	7¢ per lb. + 40.5% ad val.
	403.20	00	Alkyl phenols	Lb.	19.3% ad val.	11% ad val.	7¢ per lb. + 80% ad val.
	403.24	00	6-Chloro-m-cresol [OH=1]	Lb.	8.8% ad val.	6.3% ad val.	7¢ per lb. + 41% ad val.
	403.28	00	Naphthols	Lb.	0.2¢ per lb. + 22.7% ad val.	20% ad val.	7¢ per lb. + 73% ad val.
	403.32	00	2-Naphthol-3,6-disulfonic acid and its salts	Lb.	11% ad val.	7.2% ad val.	7¢ per lb. + 54% ad val.
	403.36	00	Nitrophenols	Lb.	13.6% ad val.	8.1% ad val.	7¢ per lb. + 51.5% ad val.
	403.41	00	Resorcinol	Lb.	10.7% ad val.	7.1% ad val.	7¢ per lb. + 40% ad val.
			Other:				
	403.45	00	Alcohols	Lb.	9.6% ad val.	6.6% ad val.	7¢ per lb. + 40% ad val.
			Phenols and phenol-alcohols:				
	403.49	00	4,4'-Isopropylidenediphenol (Bisphenol A)	Lb.	1.7¢ per lb. + 13.7% ad val.		7¢ per lb. + 44% ad val.
	403.51	00	Other	Lb.	11% ad val.	7.2% ad val.	7¢ per lb. + 44% ad val.
			Halogenated, sulfonated, nitrated, or nitrosated derivatives of phenols or phenol-alcohols:				
	403.52	00	m-Chlorophenol; 2,5-Dihydroxybenzene-sulfonic acid, potassium salt; 3,6-Dihydroxy-2,7-naphthalenedisulfonic acid; 3,6-Dihydroxy-2,7-naphthalenedisulfonic acid, sodium salt; Dinitro-o-cresol; 4-Hydroxy-1-naphthalene-sulfonic acid; 4-Hydroxy-1-naphthalene-sulfonic acid, sodium salt (1-Naphthol-4-sulfonic acid); 1-Naphthol-3,6-disulfonic acid; and 4-Nitro-m-cresol	Lb.	10.5% ad val.	6% ad val.	7¢ per lb. + 45.5% ad val.
			Other:				
	403.56	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	1.2¢ per lb. + 19.4% ad val.	0.7¢ per lb. + 19.4% ad val.	7¢ per lb. + 62% ad val.
	403.59	00	Other	Lb.	13.5% ad val.		7¢ per lb. + 62% ad val.

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part (con.):				
			Other (con.):				
			Alconols, phenols, ethers (including epoxides and acetals), aldehydes, ketones, alcohol peroxides, ether peroxides, ketone peroxides, and their derivatives (con.):				
			Other (con.):				
			Ethers, ether-alcohols, ether-phenols, ether-alcohol-phenols, peroxides of alcohols, ethers, and ketones, and their halogenated, sulfonated, nitrated, or nitrosated derivatives:				
	403.61	00	5-Chloro-2-nitroanisole; 6-Chloro-3-nitro-p-dimethoxybenzene; Dimethyl diphenyl ether; 4-Ethylguaiacol; and 2-(α-Hydroxyethoxy)-phenol.....	Lb.....	10.3% ad val.	6.9% ad val.	7c per lb. + 40% ad val.
			Other:				
	403.64	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	0.3c per lb. + 22% ad val.	20% ad val.	7c per lb. + 70.5% ad val.
	403.66	00	Other.....	Lb.....	13.5% ad val.		7c per lb. + 70.5% ad val.
	403.68	00	Epoxides, epoxyalcohols, epoxyphenols, and epoxy-ethers, with a three- or four-member ring, and their halogenated, sulfonated, nitrated, or nitrosated derivatives.....	Lb.....	10.3% ad val.	6.9% ad val.	7c per lb. + 40% ad val.
	403.72	00	Acetals and hemiacetals and single and complex oxygen-function acetals and hemi-acetals, and their halogenated, sulfonated, nitrated, or nitrosated derivatives.....	Lb.....	10.2% ad val.	6.9% ad val.	7c per lb. + 41.5% ad val.
			Aldehydes, aldehyde-alcohols, aldehyde-ethers, aldehyde-phenols, and other single or complex oxygen-function aldehydes; cyclic polymers of aldehydes and paraformal-dehyde:				
	403.74	00	Terephthalaldehyde.....	Lb.....	10.2% ad val.	6.9% ad val.	7c per lb. + 37% ad val.
	403.76	00	Other.....	Lb.....	11.9% ad val.	10.6% ad val.	7c per lb. + 41% ad val.

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part (con.):				
			Other (con.):				
			Alcohols, phenols, ethers (including epoxides and acetals), aldehydes, ketones, alcohol peroxides, ether peroxides, ketone peroxides, and their derivatives (con.):				
			Other (con.):				
	403.81	00	Halogenated, sulfonated, nitrated, or nitrosated derivatives of aldehydes, aldehyde-alcohols, aldehyde-ethers, aldehyde-phenols, and other single or complex oxygen-function aldehydes, cyclic polymers of aldehydes and paraformaldehyde.....	Lb.....	22.7% ad val.	20% ad val.	7¢ per lb. + 77.5% ad val.
			Ketones, ketone-alcohols, ketone-phenols, ketone-aldehydes, quinones, quinone-alcohols, quinone-phenols, quinone-aldehydes, and other single or complex oxygen-function ketones and quinones, and their halogenated, sulfonated, nitrated, or nitrosated derivatives:				
	403.88	00	2,3-Dichloro-1,4-naphthoquinone.....	Lb.....	9.9% ad val.	5.8% ad val.	7¢ per lb. + 52% ad val.
	403.92	00	1,8-Dihydroxy-4,5-dinitroanthraquinone.....	Lb.....	8.5% ad val.	6.1% ad val.	7¢ per lb. + 43% ad val.
	403.96	00	Other.....	Lb.....	12.4% ad val.	11% ad val.	7¢ per lb. + 42% ad val.
			Carboxylic acids, anhydrides, halides, acyl peroxides, peroxyacids, and their derivatives:				
	404.00	00	1,2,4-Benzenetricarboxylic acid, 1,2-dianhydride (Trimellitic anhydride).....	Lb.....	11.9% ad val.	7.5% ad val.	7¢ per lb. + 40% ad val.
	404.04	00	Benzoic acid.....	Lb.....	0.2¢ per lb. + 12.5% ad val.	8% ad val.	7¢ per lb. + 40% ad val.
	404.08	00	Benzoyl chloride.....	Lb.....	12.9% ad val.	7.9% ad val.	7¢ per lb. + 44% ad val.
	404.12	00	Isophthalic acid.....	Lb.....	0.3¢ per lb. + 12.5% ad val.	8.1% ad val.	7¢ per lb. + 40% ad val.
	404.16	00	Terephthalic acid.....	Lb.....	22.2% ad val.	20% ad val.	7¢ per lb. + 77% ad val.
	404.20	00	Terephthalic acid, dimethyl ester.....	Lb.....	1.5¢ per lb. + 13.1% ad val.	1.3¢ per lb. + 13.1% ad val.	7¢ per lb. + 42% ad val.

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part (con.):				
			Other (con.):				
			Carboxylic acids, anhydrides, halides, acyl peroxides, peroxyacids, and their derivatives (con.):				
			Other:				
			Monocarboxylic acids and their anhydrides, halides, peroxides, and peracids, and their halogenated, sulfonated, nitrated, or nitrosated derivatives:				
	404.24	00	Benzoic anhydride; tert-Butyl peroxybenzorate 4-Chloro-3-nitrobenzoic acid; m-Chloroperoxybenzoic acid; Metrizoic acid; p-Nitrobenzoyl chloride; 2-Nitro-m-toluic acid; 3-Nitro-o-toluic acid; and Phenylacetic acid (α-Toluic acid).....	Lb.....	9.8% ad val.	6.7% ad val.	7¢ per lb. + 40.5% ad val.
			Other:				
	404.28	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	1.7¢ per lb. + 17.9% ad val.		7¢ per lb. + 57% ad val.
	404.30	00	Other.....	Lb.....	13.5% ad val.		7¢ per lb. + 57% ad val.
			Polycarboxylic acids and their anhydrides, halides, peroxides, and peracids, and their halogenated, sulfonated, nitrated, or nitrosated derivatives:				
	404.32	00	Naphthalic anhydride; Phthalic acid; and 4-Sulfo-1,8-naphthalic anhydride.....	Lb.....	10.2% ad val.	6.9% ad val.	7¢ per lb. + 37% ad val.
			Other:				
	404.36	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	21.6% ad val.	20% ad val.	7¢ per lb. + 73% ad val.
	404.38	00	Other.....	Lb.....	13.5% ad val.		7¢ per lb. + 73% ad val.

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part (con.):				
			Other (con.):				
			Carboxylic acids, anhydrides, halides, acyl peroxides, peroxyacids, and their derivatives (con.):				
			Other (con.):				
			Carboxylic acids with alcohol, phenol, aldehyde, or ketone function and other single or complex oxygen-function carboxylic acids and their anhydrides, halides, peroxides, and peracids, and their halogenated, sulfonated, nitrated, or nitrosated derivatives:				
	404.40	00	p-Anisic acid; Benzilic acid; Benzilic acid, methyl ester; 2,3-Cresotic acid; 1-Formyl phenylacetic acid, methyl ester; 1,6-Hexanediol-bis(3,5-dibutyl-4-hydroxyphenyl)-propionate; m-Hydroxybenzoic acid; 2-Hydroxybenzoic acid, calcium salt; 1-Hydroxy-2-naphthoic acid; 2-Hydroxy-1-naphthoic acid; 1-Hydroxy-2-naphthoic acid, phenyl ester; 3-Phenoxybenzoic acid; α-Resorcylic acid; Y-Resorcylic acid; and 5-Sulfosalicylic acid.....	Lb.....	9.5% ad val.	5.8% ad val.	7¢ per lb. + 40% ad val.
	404.44	00	Gentisic acid; p-Hydroxybenzoic acid; and Hydroxycinnamic acid and its salts.....	Lb.....	10.4% ad val.	7% ad val.	7¢ per lb. + 48.5% ad val.
			Other:				
	404.46	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	1.7¢ per lb. + 17.9% ad val.		7¢ per lb. + 57% ad val.
	404.47	00	Other.....	Lb.....	13.5% ad val.		7¢ per lb. + 57% ad val.
	404.48		Esters of inorganic acids (except hydrocyanic acid, hydrogen halides, and hydrogen sulfide) and their derivatives.....	.....	11.1% ad val.	7.2% ad val.	7¢ per lb. + 43% ad val.
		50	Triphenyl phosphate.....	Lb.			
		51	Trixylyl phosphate.....	Lb.			
		52	Other.....	Lb.			

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part (con.):				
			Other (con.):				
			Amines and their derivatives:				
	404.52	00	7-Amino-1,3-naphthalenedisulfonic acid and its salts; 5-Amino-2-naphthalenesulfonic acid and its salts; 8-Amino-1-naphthalenesulfonic acid and its salts; 4-Amino-2-stilbenesulfonic acid and its salts; m-Phenylenediamine; o-Phenylenediamine; N-Phenyl-2-naphthylamine; Toluene-2,4-diamine; and 2,4-Xylidine	Lb.	10.2% ad val.	6.9% ad val.	7¢ per lb. + 48.5% ad val.
	404.56	00	8-Amino-2-naphthalenesulfonic acid and its salts	Lb.	8.1% ad val.	5.9% ad val.	7¢ per lb. + 39% ad val.
	404.60	00	Aniline	Lb.	1.7¢ per lb. + 13.6% ad val.		7¢ per lb. + 43.5% ad val.
	404.64	00	4,4'-Diamino-2,2'-stilbenedisulfonic acid	Lb.	18.5% ad val.	10.5% ad val.	7¢ per lb. + 80% ad val.
	404.68	00	N,N-Dimethylaniline	Lb.	0.8¢ per lb. + 12.5% ad val.	12.4% ad val.	7¢ per lb. + 40% ad val.
	404.72	00	N-Methylaniline; and 2,4,6-Trimethylaniline (Mesidine)	Lb.	8.5% ad val.	6.1% ad val.	7¢ per lb. + 37% ad val.
	404.76	00	4,4'-Methylenedianiline	Lb.	10.9% ad val.	7.1% ad val.	7¢ per lb. + 40% ad val.
	404.80	00	Nitrodiphenylamine	Lb.	10.4% ad val.	7% ad val.	7¢ per lb. + 40% ad val.
			Other:				
	404.84	00	5-Amino-2-(p-aminoanilino)-benzenesulfonic acid; o-Aminobenzenesulfonic acid (Orthanilic acid); 4-Amino-2-(N,N-diethylamino)-toluene hydrochloride; 3-Amino-2,7-naphthalene-disulfonic acid; 4-Amino-1-naphthalene-sulfonic acid, sodium salt; 5-Amino-1-naphthalene-sulfonic acid (Laurent's acid); 7-Amino-1,3,6-naphthalene-trisulfonic acid; 8-Anilino-1-naphthalene-sulfonic acid (Phenyl Peri acid); 6-Chlorometanilic acid; 2-Chloro-5-nitroaniline; 4-Chloro-3-nitroaniline; 3-Chloro-o-toluidine; 4-Chloro-o-toluidine [NH_2=1] and hydrochloride; 5-Chloro-o-toluidine [NH_2=1] (Chloro-o-toluidine [CH_3=1]); 6-Chloro-o-toluidine [NH_2=1];				

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part (con.):				
			Other (con.):				
			Amines and their derivatives (con.):				
	404.84 (con.)	00	Other (con.):				
			6-Chloro-2-toluidine-4-sulfonic acid;				
			4-Chloro-α,α,α,-trifluoro-o-toluidine;				
			4,4'-Diamino-3-biphenyl-sulfonic acid (3-Benzidine-sulfonic acid);				
			2,3-Dichloroaniline;				
			2,4-Dichloroaniline;				
			2,5-Dichloroaniline;				
			3,5-Dichloroaniline;				
			2,6-Dichloro-m-toluidine;				
			N,N-Diethylmetanilic acid;				
			N,N-Diethylmetanilic acid, sodium salt;				
			2,4-Difluoroaniline;				
			3,3'-Dimethylbenzidine (o-Tolidine);				
			3,3'-Dimethylbenzidine hydrochloride;				
			N,N-Dimethyl-p-toluidine;				
			p-Ethylaniline;				
			N-Ethyl-N-benzyl-m-toluidine;				
			Ethyl-(2-dimethylaminoethyl)-aniline;				
			N-Ethyl-N,N'-dimethyl-N'-phenylethylenediamine;				
			N-Ethyl-1-naphthylamine;				
			N-Ethyl-o-toluidine;				
			p-Fluoroaniline;				
			4,4'-Methylenebis(2-chloro-aniline);				
			1,8-Naphthalenediamine;				
			m-Nitroaniline;				
			4-Nitro-m-phenylenediamine;				
			Toluene-2,5-diamine;				
			Toluene-2,5-diamine sulfate;				
			2,4,5-Trichloroaniline;				
			2,3-Xylidine;				
			2,5-Xylidine; and				
			3,4-Xylidine.....	Lb.....	9.6% ad val.	5.8% ad val.	7¢ per lb. + 39.5% ad val.
			Other:				
	404.88	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	1.4¢ per lb. + 18.8% ad val.	1.1¢ per lb. + 18.8% ad val.	7¢ per lb. + 60% ad val.
	404.90	00	Other.....	Lb.....	13.5% ad val.		7¢ per lb. + 60% ad val.

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part (con.):				
			Other (con.):				
			Amines having one or more oxygen functions, and their derivatives:				
	404.92	00	2'-Aminoacetophenone;				
			m-Aminobenzoic acid, technical;				
			Aminobisphenol ester;				
			1-Amino-4-bromo-2-methylanthraquinone;				
			2-Amino-6-chloro-4-nitrophenol;				
			2-Amino-4-chlorophenol;				
			2-Amino-4-chlorophenol hydrochloride;				
			2-Amino-p-cresol;				
			4-Amino-o-cresol;				
			6-Amino-2,4-dichloro-3-methylphenol;				
			1-Amino-8-hydroxy-3,6-naphthalenedisulfonic acid;				
			4-Amino-5-hydroxy-1,3-naphthalenedisulfonic acid (Chicago acid);				
			4-Amino-5-hydroxy-1,3-naphthalenedisulfonic acid, potassium salt;				
			4-Amino-5-hydroxy-2,7-naphthalene-disulfonic acid, potassium salt (H acid, monopotassium salt);				
			4-Amino-5-hydroxy-2,7-naphthalenedisulfonic acid, monosodium salt (H acid, mono-sodium salt);				
			4-Amino-5-hydroxy-1,3-naphthalenedisulfonic acid, sodium salt;				
			4-Amino-3-hydroxy-1-naphthalenesulfonic acid;				
			2-(3-Amino-4-hydroxyphenyl-sulfonyl)ethanol;				
			2-Amino-4-nitrophenol;				
			2-Amino-5-nitrophenol;				
			2-Amino-4-nitrophenol, sodium salt;				
			m-Aminophenol;				
			2-(4'-Aminophenoxy)ethylsulfate;				
			1,4-Bis[1-anthraquinonylamino]-anthraquinone;				
			4,4'-Bis(dimethylamino)benzhydrol (Michler's hydrol);				
			5-Chloro-2-(2',4'-dichlorophenoxy)-aniline;				
			3,5-Diaminobenzoic acid;				
			Dibenzcarbinol;				
			dl-3-(3,4-Dihydroxyphenyl)alanine;				
			1,4-Dimesidinoanthraquinone;				
			3,4-Dimethoxyphenethylamine (Homoveratrylamine);				
			4-Dimethylaminobenzaldehyde;				
			3-(N-Ethylanilino)propionic acid, methyl ester;				
			2-Ethylamino-5-sulfobenzoic acid;				
			N-Ethyl-N-(2-methoxy-carbonylethyl)aniline;				
			2-Hydroxy-5-nitrometanilic acid;				
			β-(β-Methoxyethoxyethyl)-4-aminobenzoate;				
			4-Methoxymetanilic acid;				
			6'-Methoxymetanilic acid;				
			4-Methoxy-m-phenylenediamine;				
			5-Methoxy-m-phenylenediamine sulfate;				
			6-(Methylamino)-1-naphthol-3-sulfonic acid;				
			7-(Methylamino)-1-naphthol-3-sulfonic acid;				

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part (con.):				
			Other (con.):				
			Amines having one or more oxygen functions, and their derivatives (con.):				
	404.92 (con.)	00	2-Methyl-p-anisidine [NH_2=1]; 1-(p-Nitrophenyl)-2-amino-1, 3-propanediol; L-Phenylalanine; and Toluidine carbonate.....	Lb.....	9.3% ad val.	5.8% ad val.	7¢ per lb. + 39% ad val.
	404.96	00	3'-Aminoacetophenone; o-Anisidine; p-Anisidine; m-Diethylaminophenol; 3-Ethylamino-p-cresol; Iminodianthraquinone; 5-Methoxy-m-phenylenediamine; and *dl*-Phenylephrine base.....	Lb.....	12.6% ad val.	7.8% ad val.	7¢ per lb. + 65% ad val.
	405.00	00	p-Aminobenzoic acid; 6-Amino-1-naphthol-3-sulfonic acid and its salts; 8-Amino-1-naphthol-5-sulfonic acid and its salts; m-Dimethylaminophenol; and p-Phenetidine.....	Lb.....	10% ad val.	6.8% ad val.	7¢ per lb. + 51% ad val.
	405.01	00	4-Chloro-2,5-dimethoxyaniline [NH_2=1]; and 2,4-Dimethoxyaniline.....	Lb.....	8.5% ad val.	6.1% ad val.	7¢ per lb. + 41.5% ad val.
A	405.02	00	D(-)-para-hydroxyphenyl-glycine and its salts.....	Lb.....	1.7¢ per lb. + 15.6% ad val.		7¢ per lb. + 50% ad val.
			Other:				
	405.07	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	1.7¢ per lb. + 15.6% ad val. 1/		7¢ per lb. + 50% ad val.
	405.09	00	Other.....	Lb.....	13.5% ad val.		7¢ per lb. + 50% ad val.
			Amides and their derivatives:				
	405.12	00	4-Acetamido-2-aminophenol.....	Lb.....	10.3% ad val.	6.9% ad val.	7¢ per lb. + 40% ad val.
	405.16	00	2-Acetamido-3-chloroanthraquinone; o-Acetoacetanisidide; o-Acetoacetotoluidide; 2',4'-Acetoacetoxylidide; and 1-Amino-5-benzamidoanthraquinone.....	Lb.....	11% ad val.	7.2% ad val.	7¢ per lb. + 53% ad val.
	405.21	00	Benzanilide.....	Lb.....	9.9% ad val.	6.7% ad val.	7¢ per lb. + 40% ad val.
	405.24	00	Biligrafin acid; and 3,5-Diacetamido-2,4,6-triiodobenzoic acid.....	Lb.....	7% ad val.	5.3% ad val.	7¢ per lb. + 34% ad val.
			Other:				
	405.28	00	p-Acetaminobenzaldehyde; p-Acetanisidide; Acetoacetbenzylamide; Acetoacet-5-chloro-2-toluidide; p-Acetoacetophenetidide; p-Acetoacetotoluidide; N-Acetyl-2,6-xylidine (N-Acetyl-2,6-dimethylaniline);				

1/ Duty on trimethylene glycol di-p-aminobenzoate temporarily suspended. See item 907.05 in part 1B, Appendix to the Tariff Schedules and general headnote 3(d)(ii).

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suf-fix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part (con.):				
			Other (con.):				
			Amides and their derivatives (con.):				
			Other (con.):				
	405.28 (con.)	00	p-Aminobenzoic acid isooctylamide; p-Aminobenzoylaminonaphthalene-sulfonic acid; 2-Amino-4-chlorobenzamide; 3-Amino-4-chlorobenzamide; 4-Aminohippuric acid; 4'-Amino-N-methylacetanilide; p-Aminophenylurethane; 1-Benzamido-4-chloro-anthraquinone; 1-Benzamido-5-chloro-anthraquinone; 4'-Chloroacetoacetanilide; 3-(N,N-Dihydroxyethylamino)-benzanilide; 2,5-Dihydroxy-N-(2-hydroxy-ethyl)benzamide; 2,5-Dimethoxyacetanilide; Gentisamide; 2-(m-Hydroxyanilino)acetamide; N,N'-Hexamethylene bis-(3,5-di-tert-butyl-4-hydroxyhydrocinnamamide); N-(7-Hydroxy-1-naphthyl) acetamide; Nitra acid amide (1-amino-9, 10-dihydro-N-(3-methoxypropyl)-4-nitro-9,10-dioxo-2-anthramide); and Phenacetin, technical; and β-Resorcylamide	Lb.	9.5% ad val.	5.8% ad val.	7¢ per lb. + 39.5% ad val.
			Other:				
	405.32	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	1.7¢ per lb. + 18.1% ad val.		7¢ per lb. + 58% ad val.
	405.34	00	Other	Lb.	13.5% ad val.		7¢ per lb. + 58% ad val.
			Other nitrogen-function compounds (except those in which the only nitrogen function is a nitro ($-NO_2$) or a nitroso (-NO) group, or an ammonium salt of an organic acid) and their derivatives:				
	405.36	00	Benzonitrile	Lb.	11.3% ad val.	7.3% ad val.	7¢ per lb. + 40% ad val.
	405.41	00	Diazoaminobenzene(1,3-Diphenyl-triazene)	Lb.	9.6% ad val.	6.6% ad val.	7¢ per lb. + 40% ad val.
	405.44	00	Toluenediisocyanates (unmixed)	Lb.	11.1% ad val.	7.2% ad val.	7¢ per lb. + 40% ad val.
			Other:				
	405.48	00	Quaternary ammonium salts and hydroxides	Lb.	8.7% ad val.	6.2% ad val.	7¢ per lb. + 36% ad val.
	405.52	00	Carboxyimide-function compounds (including orthobenzoic sulfimide and its salts) and imine-function compounds	Lb.	18% ad val.	15% ad val.	7¢ per lb. + 61% ad val.

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part (con.):				
			Other (con.):				
			Other nitrogen-function compounds, etc. (con.):				
			Other (con.):				
			Nitrile-function compounds:				
	405.56	00	2-Amino-4-Chlorobenzonitrile (5-Chloro-2-cyanoaniline); 2-Amino-5-chlorobenzonitrile; 4-Amino-2-chlorobenzonitrile; (Cyanoethyl)(hydroxyethyl)-m-toluidine; 2-Cyano-4-nitroaniline; p-Cyanophenyl acetate; Dichlorobenzonitrile; Phthalonitrile; and Tetrachloro-3-cyanobenzoic acid, methyl ester....	Lb.....	10.1% ad val.	6.8% ad val.	7¢ per lb. + 41% ad val.
			Other:				
	405.60	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	0.6¢ per lb. + 20.5% ad val.	20% ad val.	7¢ per lb. + 65.5% ad val.
	405.62	00	Other.....	Lb.....	13.5% ad val.		7¢ per lb. + 65.5% ad val.
			Diazo-, azo-, and azoxy-compounds:				
	405.64	00	p-Aminoazobenzenedisulfonic acid; 4-Aminoazobenzenedisulfonic acid, monosodium salt; 6-Amino-3,4'-azodibenzenesulfonic acid (C.I. acid yellow 9); and 6-Bromo-5-methyl-1H-imidazo[4,5-b]pyridine.....	Lb.....	9.3% ad val.	5.8% ad val.	7¢ per lb. + 40.5% ad val.
			Other:				
	405.68	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	0.9¢ per lb. + 19.9% ad val.	19.9% ad val.	7¢ per lb. + 63.5% ad val.
	405.70	00	Other.....	Lb.....	13.5% ad val.		7¢ per lb. + 63.5% ad val.
	405.72	00	Organic derivatives of hydrazine or hydroxylamine.....	Lb.....	10.9% ad val.	7.2% ad val.	7¢ per lb. + 43.5% ad val.
			Compounds with other nitrogen functions:				
	405.76	00	Bitolylene diisocyanate (TODI); o-Isocyanic acid, o-tolyl ester; and Xylene diisocyanate.....	Lb.....	9.4% ad val.	5.8% ad val.	7¢ per lb. + 40% ad val.
			Other:				
	405.80	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	1.5¢ per lb. + 16.2% ad val.	1.3¢ per lb. + 16.2% ad val.	7¢ per lb. + 52% ad val.

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part (con.):				
			Other (con.):				
			Other nitrogen-function compounds, etc. (con.):				
			Other (con.):				
			Compounds with other nitrogen functions (con.):				
			Other (con.):				
	405.82	00	Other	Lb.	13.5% ad val.		7¢ per lb. + 52% ad val.
			Organo-inorganic compounds (i.e., compounds having an atom other than carbon, hydrogen, oxygen, nitrogen, chlorine or other halogen attached directly to a carbon atom), and their derivatives:				
	405.84	00	Benzenethiol (Thiophenol)	Lb.	9.9% ad val.	6.7% ad val.	7¢ per lb. + 38.5% ad val.
	405.85	00	4,4'-Diphenyl-bis-phosphonous acid, di(2',2",4',4"-di-tert-butyl)phenyl ester	Lb.	1.7¢ per lb. + 12.5% ad val.		7¢ per lb. + 40% ad val.
	405.88	00	Phenylsulfone	Lb.	11.3% ad val.	7.3% ad val.	7¢ per lb. + 53% ad val.
	405.92	00	Sodium tetraphenylboron	Lb.	7.9% ad val.	5.8% ad val.	7¢ per lb. + 40% ad val.
	405.96	00	2,4,4',5'-Tetrachlorophenylsulfone	Lb.	8.5% ad val.	6.1% ad val.	7¢ per lb. + 41.5% ad val.
			Other:				
	406.00	00	Organo-sulfur compounds	Lb.	9.9% ad val.	6.7% ad val.	7¢ per lb. + 40.5% ad val.
	406.05	00	Organo-mercury compounds	Lb.	9.6% ad val.	6.6% ad val.	7¢ per lb. + 40% ad val.
			Other:				
	406.08	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	19.9% ad val.	17.7% ad val.	7¢ per lb. + 68.5% ad val.
	406.09	00	Other	Lb.	13.5% ad val.		7¢ per lb. + 68.5% ad val.
			Heterocyclic compounds and their derivatives (including lactones and lactams but excluding epoxides with three membered rings, anhydrides and imides of polybasic acids, and cyclic esters of polyhydric alcohols with polybasic acids):				
	406.12	00	1,2-Dihydro-2,2,4-trimethylquinoline	Lb.	10.3% ad val.	6.9% ad val.	7¢ per lb. + 40% ad val.
	406.16	00	2,2'-Dithiobisbenzothiazole	Lb.	0.1¢ per lb. + 17.9% ad val.	15% ad val.	7¢ per lb. + 57% ad val.
A*	406.20	00	Ethoxyquin (1,2-Dihydro-6-ethoxy-2,2, 4-trimethylquinoline)	Lb.	12.5% ad val.	10% ad val.	7¢ per lb. + 55% ad val.
	406.24	00	1-Hydroxy-2-carbazolecarboxylic acid; 2-Hydroxy-3-dibenzofurancarboxylic acid; and 7-Nitronaphth[1,2]oxadiazole-5-sulfonic acid and its salts	Lb.	12.8% ad val.	7.8% ad val.	7¢ per lb. + 66.5% ad val.
	406.28	00	2-Mercaptobenzothiazole, sodium salt (2-Benzothiazolethiol, sodium salt)	Lb.	1¢ per lb. + 12.5% ad val.	0.4¢ per lb. + 12.5% ad val.	7¢ per lb. + 40% ad val.

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part (con.):				
			Other (con.):				
			Heterocyclic compounds and their derivatives, etc. (con.):				
	406.32	00	2-Pyridinecarboxaldehyde; and Vinylcarbazole, mono.....	Lb.....	7.9% ad val. 1/	5.8% ad val. 1/	7c per lb. + 40% ad val.
			Other:				
	406.36	00	4-Aminoantipyrine; 2-Amino-6-methoxybenzothiazole; 2-Amino-6-methylbenzothiazole; Aminomethylphenylpyrazole (Phenylmethylaminopyrazole); 3-(5-Amino-3-methyl-1-H-pyrazol-1-yl)benzenesulfonic acid; 5-Amino-3-phenyl-1,2,4-thiadiazole (3-phenyl-5-amino-1,2,4-thiadiazole); Amino-J-pyrazolone; 3-Amino-1-(2,4,6-trichlorophenyl)-5-pyrazolone; 4-[[4,6-Bis(octylthio)-1,3,5-triazine-2-yl]amino]-2,6-di-tert-butyl-phenol; Benzointetrahydropyranyl ether; 2-sec-Butyl-4-tert-butyl-6-(benzotriazol-2-yl)phenol; 2-tert-Butyl-4-methyl-6-(5-chlorobenzotriazol-2-yl)-phenol; p-Chloro-2-benzylpyridine; 4-Chloro-3-(3-methyl-5-oxo-2-pyrazolin-1-yl)benzene-sulfonic acid; 1-(m-Chlorophenyl)-3-methyl-2-pyrazolin-5-one; p-Chloropyrazolone; 2,4-Di-tert-butyl-6-(benzo-triazol-2-yl)phenol; 2,4-Di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol; 1-(2',5'-Dichlorophenyl)-3-methyl-2-pyrazolin-5-one; 2,3-Dichloro-6-quinoxaline-carbonyl chloride; 6-Ethoxy-2-benzothiazolethiol; 1-(o-Ethylphenyl)-3-methyl-2-pyrazolin-5-one; 2-Hydroxybenzoxazole (Benzoxazolone); 2-Hydroxy-3-carbazolecarboxylic acid; 2-Hydroxy-3-carbazolecarboxylic acid, sodium salt; Iminodibenzyl(10,11-dihydro-5H-dibenz[b,f]azepine); 5-Imino-3-methyl-1-(m-sulfophenyl)pyrazole; 5-Imino-3-methyl-1-phenyl-pyrazole; Indoline; Isoquinoline; 3-Methylbenzo[f]quinoline; 3-Methylbenzothiazole-2-hydrazone; 2,4-Methylcarboxypyrazolic acid; 2-Methyl-5-ethylpyridine;				

1/ Duty on certain chemicals used in the production of photographic couplers temporarily suspended. See item 907.10 in part 1B, Appendix to the Tariff Schedules and general headnote 3 (d)(ii).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part (con.):				
			Other (con.):				
			Heterocyclic compounds and their derivatives, etc. (con.):				
			Other (con.):				
	406.36 (con.)	00	2-Methylindoline; 2-Methylmercaptobenzimidazole; 1-Methyl-2-phenylindole; Methyl phenylpyrazolone; Methylpyrazine; 2,4-Methylpyrazolic acid; 8-Methylquinoline; 3-Methyl-1-(p-tolyl)-2-pyrazolin-5-one (p-Tolyl methyl pyrazolone); 2-Phenylbenzimidazole; p-Phenylimidazole; 2-Phenylimidazole; 2-Phenylindole; 4-Phenylmorpholine; 4-Phenylpropylpyridine; p-Phenylpyridylacetic acid, methyl ester; Picolinic acid; Primuline base; Pyrazole (3-carboxy-1-4-sulphophenylpyrazol-5-one); 2,5-Pyridinedicarboxylic acid; Tetramethylpyrazine; 1,9-Thianthrenedicarboxylic acid; Thioxanthen-9-one (Thioxanthone); 1-(2,4,6-Trichlorophenyl)-3-aminopyrazolone; 2-(Trifluoromethyl)phenothiazine; 2,3,5-Triphenyltetrazolium chloride; *dl*-Tryptophan; and Xanthen-9-one.....	Lb.....	9.3% ad val.	5.8% ad val.	7¢ per lb. + 39.5% ad val.
			Other:				
	406.40	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	1.7¢ per lb. + 16.2% ad val.		7¢ per lb. + 52% ad val.
	406.42	00	Other.....	Lb.....	13.5% ad val.		7¢ per lb. + 52% ad val.
			Sulfonamides, sultones, sultams, and other organic compounds:				
	406.44	00	Copper phthalocyanine ([Phthalocyanato(2-)]copper).....	Lb.....	19.8% ad val.	17.5% ad val.	7¢ per lb. + 67% ad val.
			Sulfonamides:				
	406.48	00	4-Amino-6-chloro-m-benzenedisulfonamide; 2-Amino-N-ethylbenzene-sulfonanilide; 5-Amino-α,α,α-tri-fluorotoluene-2,4-disulfonamide; Benzenesulfonamide; Benzenesulfonyl hydrazide; 2-Chloro-4-amino-5-hydroxybenzenesulfonamide; 2,5-Dimethoxysulfanilide; and Metanilamide.....	Lb.....	10% ad val.	6.8% ad val.	7¢ per lb. + 41% ad val.
	406.52	00	o-Toluenesulfonamide.....	Lb.....	11.5% ad val.	7.4% ad val.	7¢ per lb. + 57.5% ad val.

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Cyclic organic chemical products in any physical form having a benzenoid, quinoid, or modified benzenoid structure, not provided for in subpart A or C of this part (con.):				
			Other (con.):				
			Sulfonamides, sultones, sultams, and other organic compounds (con.):				
			Sulfonamides (con.):				
			Other:				
	406.56	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	1.7¢ per lb. + 18% ad val.		7¢ per lb. + 57.5% ad val.
	406.58	00	Other	Lb.	13.5% ad val.		7¢ per lb. + 57.5% ad val.
			Other:				
	406.61	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	1.7¢ per lb. + 14.5% ad val.		7¢ per lb. + 46.5% ad val.
	406.63	00	Other	Lb.	13.5% ad val.		7¢ per lb. + 46.5% ad val.
			All other products, by whatever name known, not provided for in subpart A or C of this part, including acyclic organic chemical products, which are obtained, derived, or manufactured in whole or in part from any of the cyclic products having a benzenoid, quinoid, or modified benzenoid structure provided for in the foregoing provisions of this subpart or in subpart A of this part:				
	406.64	00	Acetone	Lb.	0.9¢ per lb. + 18.7% ad val.	0.1¢ per lb. + 18.7% ad val.	7¢ per lb. + 60% ad val.
	406.68	00	Adipic acid	Lb.	0.9¢ per lb. + 19.8% ad val.	0.1¢ per lb. + 19.8% ad val.	7¢ per lb. + 63% ad val.
A	406.72	00	Caprolactam monomer	Lb.	1.5¢ per lb. + 10% ad val.		7¢ per lb. + 40% ad val.
	406.73	00	4-Chloro-1-methylpiperidine hydrochloride; 1,4-Dimethyl-6-hydroxy-3-cyanopyridone-2; Di(2,2,6,6-tetramethyl-4-hydroxypiperidine)-sebacate; and 3-Quinuclidinol	Lb.	9.3% ad val.	5.8% ad val.	7¢ per lb. + 39.5% ad val.
	406.76	00	Cyclohexane	Lb.	1.3¢ per lb. + 12.5% ad val.	0.9¢ per lb. + 12.5% ad val.	7¢ per lb. + 40% ad val.
	406.81	00	Cyclohexanone	Lb.	1.4¢ per lb. + 12.5% ad val.	1.1¢ per lb. + 12.5% ad val.	7¢ per lb. + 40% ad val.
	406.82	00	Dehydrolinalool and Isophytol	Lb.	1.7¢ per lb. + 12.5% ad val.		7¢ per lb. + 40% ad val.
	406.83	00	Dimethylsuccinoyl succinate	Lb.	1.7¢ per lb. + 12.5% ad val.		7¢ per lb. + 40% ad val.
	406.84	00	Fumaric acid	Lb.	0.1¢ per lb. + 27.2% ad val.	20% ad val.	7¢ per lb. + 87% ad val.
A	406.86	00	Hexamethylene adipamide	Lb.	10.7% ad val.	7.1% ad val.	7¢ per lb. + 46% ad val.
	406.92	00	Hexamethylenediamine	Lb.	0.6¢ per lb. + 20.8% ad val.	20% ad val.	7¢ per lb. + 66.5% ad val.
A*	406.96	00	Maleic anhydride	Lb.	1.3¢ per lb. + 15.6% ad val.	1¢ per lb. + 15.6% ad val.	7¢ per lb. + 50% ad val.
A	407.00	00	Methylcyclohexanone	Lb.	8.1% ad val.	5.9% ad val.	7¢ per lb. + 40% ad val.
			Other:				
	407.05	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	1.7¢ per lb. + 16.8% ad val.		7¢ per lb. + 53.5% ad val.
	407.07	00	Other	Lb.	13.5% ad val.		7¢ per lb. + 53.5% ad val.

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Mixtures in whole or in part of any of the products provided for in this subpart:				
A*	407.09	00	Solvents which contain over 25 percent by weight of any of the products provided for in this subpart	Lb.	11.6% ad val., but not less than the highest rate applicable to any component material	7.4% ad val., but not less than the highest rate applicable to any component material	7¢ per lb. + 43.5% ad val., but not less than the highest rate applicable to any component material
			Other:				
	407.14	00	Mixtures of 1,3,6-Naphthalenetrisulfonic acid and 1,3,7-Naphthalenetrisulfonic acid	Lb.	1.7¢ per lb. + 12.5% ad val.		7¢ per lb. + 40% ad val.
A	407.16		Other	.....	1.7¢ per lb. + 13.6% ad val., but not less than the highest rate applicable to any component material		7¢ per lb. + 43.5% ad val., but not less than the highest rate applicable to any component material
		05	Mixtures of 2,4 and 2,6-toluendiisocyante	Lb.			
		10	Other	Lb.			

Subpart C. - Finished Organic Chemical Products 1/

Subpart C headnotes:

1. The provisions of this subpart providing for products obtained, derived, or manufactured in whole or in part from products described in subpart A or B of this part shall also apply to products of like chemical composition having a benzenoid, quinoid, or modified benzenoid structure artificially produced by synthesis, whether or not obtained, derived, or manufactured in whole or in part from products described in the said subpart A or B.

2. For the purposes of the Tariff Schedules, the term "pesticides" means products, such as insecticides, rodenticides, fungicides, herbicides, fumigants, and seed disinfectants, chiefly used to destroy undesired animal or plant life.

3. The term "plastics materials" in items 408.44 to 409.18, inclusive, embraces products formed by the condensation, polymerization, or copolymerization of organic chemicals and to which plasticizers, fillers, colors, or extenders may have been added.

1/ Articles exported to the United States prior to July 1, 1980, must be appraised under the valuation standards provided for in sections 402 and 402a of the Tariff Act of 1930 in effect on June 30, 1980, and are subject to classification under the items of the Tariff Schedules in effect on that date.

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty		
					1	LDDC	2
			The term includes, but is not limited to, phenolic and other tar-acid resins, styrene resins, alkyd and polyester resins based on phthalic anhydride, coumarone-indene resins, urethane, epoxy, toluene sulfonamide, maleic, fumaric, aniline, and polyamide resins, and other synthetic resins. The plastics materials may be in solid, semi-solid, or liquid condition, such as flakes, powders, pellets, granules, solutions, emulsions, and other basic forms not further processed. 4. For the purpose of the classification of merchandise provided for under items 408.44 to 409.18, inclusive, the following provisions shall apply: (a) The term "thermoplastic resins" means those materials in unfinished forms which in their final state as finished articles are capable of being repeatedly softened by increase of temperature and hardened by decrease of temperature. (b) The term "thermosetting resins" (or thermosets) means those materials in unfinished forms which in their final state as finished articles are substantially infusible. Thermosetting resins are often liquids at some stage in their manufacture or processing and are cured by heat, catalysis, or other chemical means. After being fully cured, thermosets cannot be resoftened by heat. (c) Copolymers and terpolymers not specially provided for shall be classified as if they consisted entirely of that monomer which is present in the largest amount by weight on a resin content basis (i.e., excluding the weight of plasticizers, liquid diluents, fillers, or other additives). Any polymer consisting of two or more monomers which are present in equal amounts shall be classified as if it consisted entirely of that monomer whose polymer is listed first under the thermoplastic or thermosetting resins, as appropriate. 5. The term "paints and enamel paints" in this subpart covers dispersions of pigments or pigment-like materials with a liquid (vehicle) which are suitable for application to surfaces as a thin layer, and which dry (harden) to an opaque, solid film. The vehicle of paints consists of drying oils or resins which bind the pigment particles together in the film; the vehicle of enamel paints is principally varnish. Paints and enamel paints may also contain thinners, driers, plasticizers, or other agents. 6. The term "stains" in this subpart covers liquids containing transparent or semi-transparent pigments, dyes, or chemicals, chiefly used to deepen or otherwise alter the color of wood, but which will not obscure its grain, texture, or markings. 7. For the purposes of this subpart -- (a) The term "surface-active agents" means synthetic organic compounds, or mixtures thereof, which function as surface tension modifiers and are chiefly used for any one or combination of the following purposes: as detergents, wetting agents, emulsifiers, dispersants, or foaming agents.				

GSP	Item	Stat. Suf-fix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty 2
			(b) The term "synthetic detergents" embraces formulated materials which are used chiefly for household, laundry, and industrial cleaning purposes, and which consist of one or more surface-active agents as the active ingredients in combination with colors, brighteners, perfumes, inert diluents, builders, and extenders such as inorganic salts, polyphosphates, polysilicates or sodium carboxymethylcellulose. 8. The term "plasticizers" in item 409.34 means substances which may be incorporated into a material (usually a plastic, resin material, or an elastomer) to increase its softness, flexibility, workability, or distensibility. 9. The term "drugs" in this subpart means those substances having therapeutic or medicinal properties and chiefly used as medicines or as ingredients in medicines. 10. For the purposes of the provisions of this subpart relating to "colors, dyes, stains, and related products" (except products provided for in items 410.36 to 410.44, inclusive) -- (a) the specific duties shall be based on standards of strength which shall be established by the Secretary of the Treasury, and upon all importations of such articles which exceed such standards of strength the specific duty shall be computed on the weight which the article would have if it were diluted to the standard strength, but in no case shall any such articles of whatever strength be subject to a less specific duty than that provided in the respective items of this subpart; (b) it shall be unlawful to import or bring into the United States any such product unless the invoice shall bear a plain, conspicuous, and truly descriptive statement of the identity and percentage, exclusive of diluents, of such product; (c) it shall be unlawful to import or bring into the United States any such product, if the immediate container or the invoice bears a statement, design, or device regarding the product or the ingredients or substances contained therein which is false, fraudulent, or misleading in any particular; and (d) in the enforcement of the foregoing provisions of this headnote the Secretary of the Treasury shall adopt a standard of strength for each dye or other product which shall conform as nearly as practicable to the commercial strength in ordinary use in the United States prior to July 1, 1914. If a dye or other product has been introduced into commercial use since said date then the standard of strength for such dye or other product shall conform as nearly as practicable to the commercial strength in ordinary use. If a dye or other product was or is ordinarily used in more than one commercial strength, then the lowest commercial strength shall be adopted as the standard of strength for such dye or other product. 11. Any product described in two or more of the items under items 411.30 to 412.70, inclusive, is to be classified in the first applicable item. 12. The term "Dyes containing, by weight" in items 409.62, 409.86, and 410.04, means those products which contain as the only dye components the specified components listed therewith, each of which must be present in the product. A tolerance of plus or minus 2 percentage points from the named percentages is allowable.			

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Products obtained, derived, or manufactured in whole or in part from any product provided for in subpart A or B of this part:				
			Explosives:				
			Trinitrotoluene:				
A	408.00	00	Valued not over 15 cents per pound	Lb.	0.6¢ per lb. + 11% ad val.	8.9% ad val.	7¢ per lb. + 45% ad val.
	408.04	00	Valued over 15 cents per pound	Lb.	Free		7¢ per lb. + 45% ad val.
A	408.08	00	Other	Lb.	9.4% ad val.	6.5% ad val.	7¢ per lb. + 45% ad val.
A	408.12	00	Ink powders	Lb.	8.7% ad val.	6.2% ad val.	7¢ per lb. + 45% ad val.
			Pesticides:				
			Not artificially mixed:				
A	408.16	00	Fungicides	Lb.	12.5% ad val.	11.1% ad val.	7¢ per lb. + 40% ad val.
			Herbicides (including plant growth regulators):				
A	408.21	00	5-Amino-4-chloro-alpha-phenyl-3-pyridazinone; 2-tert-Butyl-4-(2,4-dichloro-5-isopropoxyphenyl)-Δ^2-1,3,4-oxadiazolin-5-one; S-(4-Chlorobenzyl)-N,N-diethyl-thiocarbamate (Benthiocarb); 4-(4-Chloro-2-methylphenoxy)-butyric acid; 2-(4-Chloro-2-methylphenoxy)-propionic acid and its salts; p-Chlorophenoxyacetic acid; 3-(p-Chlorophenyl)-1,1-dimethylurea (Monuron); 3,5-Dibromo-4-hydroxybenzonitrile (Bromoxynil); 2-(2,4-Dichlorophenoxy)propionic acid; 1,1-Dimethyl-3-(α,α,α-trifluoro-m-tolyl)urea (Fluometuron); o-Diquat dibromide(1,1'-Ethylene-2,2'-dipyridylium dibromide); 3-Ethoxycarbonylaminophenyl-N-phenylcarbamate (Desmedipham); 2-Ethoxy-2,3-dihydro-3,3-dimethyl-5-benzofuranylmethanesulfonate; 3-Isopropyl-1H-2,1,3-benzothiadiazin-4(3H)-one-2,2-dioxide (Bentazon); Isopropyl-N-(3-chlorophenyl) carbamate (CIPC); Methyl-4-aminobenzenesulfonyl-carbamate (Asulam); and o-Paraquat dichloride	Lb.	10.1% ad val.	6.8% ad val.	7¢ per lb. + 40.5% ad val.
			Other:				
A	408.22	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	0.1¢ per lb. + 15.1% ad val.	13.5% ad val.	7¢ per lb. + 48.5% ad val.
A	408.23	00	Other	Lb.	13.5% ad val.		7¢ per lb. + 48.5% ad val.

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Products obtained, derived, or manufactured in whole or in part from any product provided for in subpart A or B of this part (con.):				
			Pesticides (con.):				
			Not artificially mixed (con.):				
			Insecticides:				
A	408.24	00	N'-(4-Chloro-o-tolyl)-N,N-dimethylformamidine; 1,1-Dichloro-2,2-bis(p-ethylphenyl)ethane; 0,0-Diethyl-S-[(6-chloro-2-oxobenzoxazolin-3-yl)methyl]phosphorodithioate (Phosalone); 2,2-Dimethyl-1,3-benzodioxol-4-yl methylcarbamate (Bendiocarb); and 0,0-Dimethyl-0-(4-nitro-m-tolyl)phosphorothioate (Fenitrothion)	Lb.	10.3% ad val.	6.9% ad val.	7¢ per lb. + 41% ad val.
			Other:				
A	408.28	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	17.3% ad val.	12.5% ad val.	7¢ per lb. + 64.5% ad val.
A	408.29	00	Other	Lb.	12.5% ad val.		7¢ per lb. + 64.5% ad val.
			Other:				
A	408.31	00	1,2-Benzisothiazolin-3-one	Lb.	10.3% ad val.	6.9% ad val.	7¢ per lb. + 41% ad val.
A	408.32	00	Other	Lb.	12.1% ad val.		7¢ per lb. + 40% ad val.
			Other:				
A	408.36	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	1.3¢ per lb. + 9.7% ad val.	0.8¢ per lb. + 9.7% ad val.	7¢ per lb. + 31% ad val.
A	408.38	00	Other	Lb.	0.8¢ per lb. + 9.7% ad val.		7¢ per lb. + 31% ad val.
A	408.41		Photographic chemicals		14.9% ad val.	8.5% ad val.	7¢ per lb. + 50% ad val.
		40	Not artificially mixed	Lb.			
		80	Other	Lb.			
			Plastics materials:				
A	408.44	00	Concentrated dispersions of pigments in plastics materials	Lb.	8.1% ad val.	5.9% ad val.	7¢ per lb. + 45% ad val.
A	408.48	00	Paints and enamel paints	Lb.	8.1% ad val.	5.9% ad val.	7¢ per lb. + 45% ad val.
			Other:				
			Thermoplastic resins:				
A	408.54	00	Petroleum hydrocarbon and coumarone-indene resins	Lb.	8.5% ad val.	6.1% ad val.	7¢ per lb. + 49% ad val.
A	408.61	00	Polyamide resins, nylon type	Lb.	9% ad val.	6.3% ad val.	7¢ per lb. + 51.5% ad val.
A	408.64	00	Polycarbonate resins	Lb.	7.8% ad val.	5.8% ad val.	7¢ per lb. + 45% ad val.
A	408.68	00	Polyester resins, saturated	Lb.	1.4¢ per lb. + 9% ad val.		7¢ per lb. + 45% ad val.
A	408.72	00	Acrylonitrile-butadiene-styrene (ABS) resins	Lb.	0.8¢ per lb. + 9.4% ad val.	0.3¢ per lb. + 9.4% ad val.	7¢ per lb. + 47% ad val.
A	408.76	00	Methyl methacrylate-butadiene-styrene (MBS) resins	Lb.	12.2% ad val.	7.6% ad val.	7¢ per lb. + 67.5% ad val.
A	408.81	00	Styrene-acrylonitrile (SAN) resins	Lb.	0.9¢ per lb. + 9.1% ad val.	0.5¢ per lb. + 9.1% ad val.	7¢ per lb. + 45.5% ad val.

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Products obtained, derived, or manufactured in whole or in part from any product provided for in subpart A or B of this part (con.):				
			Plastics materials (con.):				
			Other (con.):				
			Thermoplastic resins (con.):				
A	408.84		Polystyrene resins and styrene copolymers, terpolymers, (except ABS, MBS, and SAN resins).....	.....	0.9¢ per lb. + 9.2% ad val.	0.4¢ per lb. + 9.2% ad val.	7¢ per lb. + 46% ad val.
		20	Polystyrene homopolymer resins.	Lb.			
		50	Other.....	Lb.			
A	408.88	00	Other.....	Lb.....	8.5% ad val.	6.1% ad val.	7¢ per lb. + 49% ad val.
			Thermosetting resins:				
A	408.92	00	Alkyd resins.....	Lb.....	1.4¢ per lb. + 9% ad val.		7¢ per lb. + 45% ad val.
A	408.96	00	Allyl resins (e.g., diallyl phthalate).....	Lb.....	7.9% ad val.	5.8% ad val.	7¢ per lb. + 45% ad val.
A	409.02	00	Epoxy resins.....	Lb.....	8.4% ad val.	6.1% ad val.	7¢ per lb. + 47% ad val.
A	409.06	00	Phenolic resins.....	Lb.....	9.4% ad val.	6.5% ad val.	7¢ per lb. + 48% ad val.
A	409.10	00	Polyester resins, unsaturated.....	Lb.....	0.9¢ per lb. + 9% ad val.	0.4¢ per lb. + 9% ad val.	7¢ per lb. + 45% ad val.
A	409.14	00	Polyurethane resins.....	Lb.....	8.9% ad val.	6.3% ad val.	7¢ per lb. + 51.5% ad val.
A	409.18	00	Other.....	Lb.....	7.9% ad val.	5.8% ad val.	7¢ per lb. + 45% ad val.
			Products chiefly used as assistants in preparing or finishing textiles:				
A	409.22		Surface-active agents and synthetic detergents.....	.....	9.6% ad val.	6.6% ad val.	7¢ per lb. + 53.5% ad val.
		15	Surface-active agents, anionic.....	Lb.			
		25	Surface-active agents, cationic and amphoteric.....	Lb.			
		35	Surface-active agents, nonionic.....	Lb.			
		45	Synthetic detergents.....	Lb.			
			Other:				
A	409.26	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	8.5% ad val.	6.1% ad val.	7¢ per lb. + 49.5% ad val.
A	409.28	00	Other.....	Lb.....	6.1% ad val.		7¢ per lb. + 49.5% ad val.
A	409.30		Products (except those in items 409.22, 409.26 and 409.28) chiefly used for any one or combination of the following purposes: As detergents, wetting agents, emulsifiers, dispersants, or foaming agents.....	.....	12.5% ad val.	7.7% ad val.	7¢ per lb. + 44.5% ad val.
		20	Surface-active agents, anionic.....	Lb.			
		40	Surface-active agents, cationic and amphoteric.....	Lb.			
		60	Surface-active agents, nonionic.....	Lb.			
		80	Other.....	Lb.			
A	409.34		Products chiefly used as plasticizers.....	.....	0.9¢ per lb. + 17.7% ad val.	0.1¢ per lb. + 17.7% ad val.	7¢ per lb. + 57% ad val.
		10	Phthalic acid esters.....	Lb.			
		20	Other.....	Lb.			
A	409.38	00	Sodium benzoate.....	Lb.....	14% ad val.	8.2% ad val.	7¢ per lb. + 65.5% ad val.
A	409.42	00	Synthetic tanning materials.....	Lb.....	0.2¢ per lb. + 24.4% ad val.	14.3% ad val.	7¢ per lb. + 48.5% ad val.

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Colors, dyes, stains, and related products:				
	409.46	00	Sulfur black, "Colour Index Nos. 53185, 53190, and 53195"	Lb.	1.5¢ per lb. + 14% ad val.		3¢ per lb. + 28% ad val.
	409.50	00	Vat blue 1 (synthetic indigo), "Colour Index No. 73000"	Lb.	1.5¢ per lb. + 14.4% ad val.		3¢ per lb. + 29% ad val.
	409.54		Acid blue 45, 106; Acid yellow 116; Basic blue 3; Basic red 14; Basic yellow 1, 11, 13; Direct blue 86; Direct red 83; Direct yellow 28; Disperse red 4; Fluorescent brightening agent 32; Solvent orange 11; Solvent yellow 25; Vat brown 3; Vat orange 2, 7; and Vat violet 9, 13; all the foregoing obtained, derived, or manufactured in whole or in part from any product provided for in subpart A or B of this part	.....	21.3% ad val.	20% ad val.	7¢ per lb. + 63.5% ad val.
		10	Specified acid dyes	Lb.			
		30	Specified basic dyes	Lb.			
		50	Specified direct dyes	Lb.			
		70	Specified vat dyes	Lb.			
		90	Other	Lb.			
	409.58		Acid black 31, 50, 94, 129; Acid blue 54, 127, 129, 143; Acid brown 44, 46, 48, 58, 188, 189; Acid green 40; Acid red 130, 145, 174, 211; Acid violet 19, 31, 41, 48; Acid yellow 2, 75; Basic orange 22; Basic red 13; Direct black 62, 91; Direct blue 92, 106, 108, 109, 160, 172; Direct brown 103, 115, 116; Direct green 5, 29, 31; Direct orange 37; Disperse blue 30; Fluorescent brightening agent 18, 24; Ingrain blue 2; Mordant black 8; Mordant green 47; Mordant red 17, 27; Reactive black 1; Reactive blue 1, 2, 4; Reactive orange 1; Reactive red 1, 2, 3, 5, 6; Reactive yellow 1; Vat blue 2; Vat red 44; Vat solubilized orange 3; and Vat yellow 4, 20; all the foregoing obtained, derived, or manufactured in whole or in part from any product provided for in subpart A or B of this part	.....	16% ad val.	14.2% ad val.	7¢ per lb. + 50% ad val.
		10	Specified acid dyes	Lb.			
		30	Specified basic dyes	Lb.			
		50	Specified direct dyes	Lb.			
		70	Specified vat dyes	Lb.			
		90	Other	Lb.			

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Colors, dyes, stains, and related products (con.):				
			Colors, dyes, and stains (except toners), whether soluble or not in water, obtained, derived, or manufactured in whole or in part from any product provided for in subpart A or B of this part:				
			Acid dyes:				
	409.62	00	Acid black 61; 63, 76, 83, 117, 127, 131, 132, 139, 164, 170, 177, 183, 188, 194, 199, 211; Acid blue 1, 47, 60, 61, 66, 72, 81, 82, 83, 90, 98, 102, 112, 123, 126, 127:1, 130, 133, 140, 142, 147, 151, 172, 175, 182, 185, 193, 204, 205, 208, 209, 221, 225, 229, 239, 242, 247, 250, 252, 254, 260, 261, 264, 266, 268, 280, 284, 288, 290, 296, 312, 317, 318; Acid brown 10, 11, 12, 30, 33, 45, 50, 68, 83, 85, 100, 101, 103, 104, 105, 106, 126, 127, 147, 158, 160, 161, 162, 163, 165, 180, 191, 195, 224, 226, 227, 235, 237, 239, 248, 266, 267, 270, 276, 282, 283, 289, 290, 291, 298, 304, 311, 314, 315, 321, 322, 324, 325, 330, 331, 355, 357, 358, 359, 360, 361, 362, 384; Acid green 9, 26, 28, 41, 43, 60, 68, 70, 71, 73, 80, 82, 84, 89, 92, 93, 94, 108, 112; Acid orange 3, 19, 28, 33, 43, 47, 61, 86, 89, 92, 94, 102, 107, 126, 135, 142, 144; Acid red 37, 42, 48, 52, 57, 58, 92, 111, 118, 127, 131, 138, 143, 155, 161, 183, 199, 213, 215, 216, 226, 227, 228, 249, 252, 257, 259, 260, 261, 263, 274, 281, 282, 283, 301, 303, 310, 315, 330, 331, 332, 336, 347, 357, 359, 360, 361, 362, 380, 392, 394, 396; Acid violet 9, 34, 36, 47, 66, 75, 80, 90, 103, 109, 111, 121; Acid yellow 7, 35, 64, 70, 72, 96, 98, 111, 127, 136, 155, 167, 183, 184, 194, 195, 199, 218, 221, 223, 227; Copper phthalocyanine-3,3', 4, 4'-tetrasulfonic acid; Copper phthalocyanine-4, 4', 4'', 4'''-tetrasulfonic acid; Dyes containing, by weight-- 24.2% Acid Yellow 135, 21.7% Acid Orange 51, and 54.1% Acid Blue 113; Dyes containing, by weight-- 10.1% Acid Yellow 64, 11.6% Acid Orange 51, 26.3% Acid Blue 113, 50.5% Acid Black 172, and 1.5% Acid Green 25.....	Lb.....	16.1% ad val.	9.2% ad val.	7¢ per lb. + 52% ad val.
			Other:				
	409.66	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	25.4% ad val.	20% ad val.	7¢ per lb. + 69.5% ad val.
	409.68	00	Other.....	Lb.....	16% ad val.	15% ad val.	7¢ per lb. + 69.5% ad val.

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	LDDC	2
			Colors, dyes, stains, and related products (con.): Colors, dyes, and stains (except toners), whether soluble or not in water, etc. (con.): Basic dyes:				
	409.70	00	Basic black 7; Basic blue 41, 45, 48, 55, 62, 66, 70, 71, 78, 80, 81, 120, 141; Basic green 6, 8; Basic orange 30, 35, 36, 37, 43, 44, 48; Basic red 22, 23, 28, 29, 43, 44, 46, 58, 75, 100; Basic violet 2, 22, 25, 37, 38; and Basic yellow 19, 23, 24, 25, 39, 40, 45, 54, 56, 63, 70, 77.....	Lb.....	15.8% ad val.	9% ad val.	7¢ per lb. + 51% ad val.
			Other:				
	409.74	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	25.5% ad val.	20% ad val.	7¢ per lb. + 70% ad val.
	409.76	00	Other.....	Lb.....	16% ad val.	15% ad val.	7¢ per lb. + 70% ad val.
			Direct dyes:				
	409.78	00	Direct black 51, 69, 112, 114, 118, 122; Direct blue 74, 77, 90, 137, 156, 158, 158:1, 207, 211, 225, 244, 267; Direct brown 97, 113, 157, 169, 170, 200, 212, 214; Direct green 33, 59, 67, 68; Direct orange 17, 60, 105, 106, 107, 118; Direct red 9, 89, 92, 95, 111, 127, 173, 207, 221; Direct violet 47, 93; and Direct yellow 27, 39, 68, 93, 95, 96, 98, 109, 110, 133, 134.....	Lb.....	16.7% ad val.	9.5% ad val.	7¢ per lb. + 53.5% ad val.
			Other:				
	409.82	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	24.3% ad val.	20% ad val.	7¢ per lb. + 64.5% ad val.
	409.84	00	Other.....	Lb.....	16% ad val.	15% ad val.	7¢ per lb. + 64.5% ad val.
			Disperse dyes:				
	409.86	00	Disperse blue 19, 26, 26:1, 35, 55, 56, 58, 72, 73, 79, 83, 84, 93, 95, 122, 125, 126, 128, 148, 154, 165, 180, 183, 185, 200, 284, 285, 288, 289, 295, 296; Disperse brown 19; Disperse green 9; Disperse orange 7, 13, 20, 31, 32, 42, 47, 48, 54, 56, 60, 63, 70, 80, 96, 127, 137, 139; Disperse red 44, 46, 72, 73, 90, 93, 107, 118, 121, 122, 131, 133, 134, 151, 169, 184, 185, 202, 203, 224, 277, 278, 279, 282, 288, 303, 310; Disperse violet 23, 33, 35, 48, 57, 63; and Disperse yellow 13, 44, 58, 63, 65, 82, 85, 91, 107, 119, 122, 124, 126, 139, 182, 183, 184, 202, 204; Dyes containing, by weight-- 12.7% Disperse Yellow 1, 32.3% Disperse Orange 1, 19.8% Disperse Blue 35, and 35.2% Disperse Blue 3; Dyes containing, by weight-- 39.0% Disperse Yellow 39, 28.0% Disperse Orange 25, and 33.0% Disperse Violet 27;				

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Colors, dyes, stains, and related products (con.):				
			Colors, dyes, and stains (except toners), whether soluble or not in water, etc. (con.):				
			Disperse dyes (con.):				
	409.86 (con.)		Dyes containing, by weight-- 89.4% Disperse Violet 27, and 10.6% Disperse Green 9; Dyes containing, by weight-- 67.7% Disperse Blue 35, 14.2% Disperse Yellow 1, and 18.1% Disperse Orange 1; Dyes containing, by weight-- 74.3% Disperse Blue 285, 18.0% Disperse Brown 19, and 7.7% Disperse Yellow 126	Lb.....	15.8% ad val.	9% ad val.	7¢ per lb. + 51% ad val.
			Other:				
	409.90	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.....	23.9% ad val.	20% ad val.	7¢ per lb. + 62.5% ad val.
	409.92	00	Other	Lb.....	16% ad val.	15% ad val.	7¢ per lb. + 62.5% ad val.
	409.94	00	Fluorescent brighteners	Lb.....	13.6% ad val.	8.1% ad val.	7¢ per lb. + 43% ad val.
			Solvent dyes:				
	409.96	00	Solvent black 2, 3, 27, 28, 29, 34, 35; Solvent blue 45, 49, 51, 53, 56, 67, 97; Solvent brown 1, 28, 42, 43, 44; Solvent green 4, 5, 7, 19, 27, 28, 213; Solvent orange 45, 54, 59, 62, 63, 67; Solvent red 7, 18, 19, 23, 27, 35, 89, 92, 100, 110, 118, 119, 124, 125, 127, 129, 130, 131, 132, 160, 162; Solvent violet 2, 23, 24; and Solvent yellow 1, 30, 32, 48, 64, 89, 93, 98, 160	Lb.....	14.1% ad val.	8.2% ad val.	7¢ per lb. + 45% ad val.
			Other:				
	410.00	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.....	24% ad val.	20% ad val.	7¢ per lb. + 63% ad val.
	410.02	00	Other	Lb.....	16% ad val.	15% ad val.	7¢ per lb. + 63% ad val.

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Colors, dyes, stains, and related products (con.): Colors, dyes, and stains (except toners), whether soluble or not in water, etc. (con.): Reactive dyes:				
	410.04	00	Dyes containing, by weight-- 71.0% Reactive Yellow 85, and 29.0% Reactive Orange 13; Dyes containing, by weight-- 50.0% Reactive Red 120, and 50.0% Reactive Yellow 84; Dyes containing, by weight-- 50.0% Reactive Blue 74, and 50.0% Reactive Blue 63; Dyes containing, by weight-- 66.7% Reactive Orange 12, and 33.3% Reactive Red 32; Dyes containing, by weight-- 57.9% Reactive Blue 13, and 42.1% Reactive Black 41; Reactive black 4, 10, 13, 21, 23, 26, 34, 35, 41; Reactive blue 6, 7, 8, 10, 13, 18, 19, 21, 22, 23, 24, 26, 27, 29, 34, 38, 39, 40, 41, 42, 43, 44, 50, 51, 52, 63, 65, 66, 67, 69, 73, 74, 75, 77, 78, 79, 82, 94, 99, 103, 104, 114, 116, 118, 136, 137, 139, 140, 156, 157, 160, 162, 163, 167, 170; Reactive brown 2, 5, 7, 12, 16, 18, 19, 23, 26; Reactive green 5, 6, 8, 12, 15, 16, 19; Reactive orange 3, 5, 9, 10, 11, 15, 20, 29, 33, 34, 35, 41, 42, 44, 45, 62, 64, 67, 68, 69, 70, 71, 82, 84, 89; Reactive red 4, 7, 8, 10, 12, 13, 16, 17, 19, 21, 24, 29, 30, 32, 40, 42, 44, 45, 49, 55, 56, 66, 78, 80, 82, 83, 84, 85, 86, 99, 104, 116, 118, 119, 121, 122, 123, 124, 132, 134, 141, 151, 152, 159, 179; Reactive violet 3, 6, 12, 23, 24; and Reactive yellow 2, 4, 5, 6, 11, 12, 15, 25, 27, 29, 35, 37, 39, 41, 42, 52, 57, 58, 64, 81, 82, 85, 87, 110, 125, 135	Lb.	14.4% ad val.	8.3% ad val.	7¢ per lb. + 46.5% ad val.
			Other:				
	410.08	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	23.9% ad val.	20% ad val.	7¢ per lb. + 62.5% ad val.
	410.10	00	Other	Lb.	16% ad val.	15% ad val.	7¢ per lb. + 62.5% ad val.

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Colors, dyes, stains, and related products (con.): Colors, dyes, and stains (except toners), whether soluble or not in water, etc. (con.): Vat dyes:				
	410.12	00	Solubilized vat blue 5; Solubilized vat orange 1; Solubilized vat yellow 7, 45, 47; Vat black 19, 30, 31; Vat blue 5, 16, 19, 21, 66, 67; Vat brown 33, 50, 57; Vat green 28, 48; Vat orange 5, 13; Vat red 10, 15, 32, 41; and Vat yellow 46	Lb.	14.7% ad val.	8.4% ad val.	7¢ per lb. + 47.5% ad val.
			Other:				
	410.16	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	26.5% ad val.	20% ad val.	7¢ per lb. + 74.5% ad val.
	410.18	00	Other	Lb.	16% ad val.	15% ad val.	7¢ per lb. + 74.5% ad val.
			Other:				
	410.19	00	Mordant black 75; Mordant blue 1; Mordant brown 79; and Mordant red 81, 84	Lb.	15.5% ad val.		7¢ per lb. + 49.5% ad val.
			Other:				
	410.20	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	21% ad val.	20% ad val.	7¢ per lb. + 49.5% ad val.
	410.22	00	Other	Lb.	16% ad val.	15% ad val.	7¢ per lb. + 49.5% ad val.
	410.24		Natural alizarin and natural indigo; colors, dyes, and stains (except toners), whether soluble or not in water, obtained, derived, or manufactured in whole or in part from natural alizarin or natural indigo; color acids, color bases, indoxyl, indoxyl compounds, and leuco-compounds (whether colorless or not), obtained, derived, or manufactured in whole or in part from natural alizarin, natural indigo, or any product provided for in subpart A or B of this part		25.6% ad val.	20% ad val.	7¢ per lb. + 70% ad val.
		20	Color acids, color bases, indoxyl, indoxyl compounds and leuco-compounds (whether colorless or not), obtained, derived, or manufactured in whole or in part from any product provided for in subpart A or B of this part	Lb.			
		40	Other	Lb.			

TARIFF SCHEDULES OF THE UNITED STATES ANNOTATED (1983)

SCHEDULE 4. - CHEMICALS AND RELATED PRODUCTS
Part 1. - Benzenoid Chemicals and Products

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Colors, dyes, stains, and related products (con.): Color lakes and toners, obtained, derived, or manufactured in whole or in part from natural alizarin, natural indigo, or any product provided for in subpart A or B of this part:				
	410.28	00	Pigment black 1; Pigment blue 16, 18; Pigment brown 22, 23, 25, 32; Pigment green 8; Pigment orange 31, 34, 36, 51; Pigment red 9, 14, 34, 48:3, 52, 68, 112, 139, 144, 146, 151, 166, 169, 170, 171, 175, 176, 177, 178, 180, 185, 188, 192, 199, 208, 209, 216, 220, 221; Pigment violet 32; and Pigment yellow 16, 24, 49, 62:1, 81, 93, 95, 97, 101, 108, 109, 110, 113, 117, 127, 138, 153	Lb.	14.4% ad val.	8.3% ad val.	7¢ per lb. + 46% ad val.
			Other:				
	410.32	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	25.7% ad val.	20% ad val.	7¢ per lb. + 70.5% ad val.
	410.34	00	Other	Lb.	16% ad val.	15% ad val.	7¢ per lb. + 70.5% ad val.
A	410.36	00	Fast color bases	Lb.	0.1¢ per lb. + 13.3% ad val.	12.5% ad val.	7¢ per lb. + 53% ad val.
A	410.40	00	Fast color salts	Lb.	13.1% ad val.	12.5% ad val.	7¢ per lb. + 54.5% ad val.
A	410.44	00	Naphthol AS and derivatives	Lb.	14.9% ad val.	14% ad val.	7¢ per lb. + 60% ad val.
			Products suitable for medicinal use, and drugs: Obtained, derived, or manufactured in whole or in part from any product provided for in subpart A or B of this part:				
			Products suitable for medicinal use:				
A	410.48	00	Acetanilide	Lb.	18.9% ad val.	10.8% ad val.	7¢ per lb. + 45% ad val.
A	410.52	00	Benzaldehyde	Lb.	11.1% ad val.	7.2% ad val.	7¢ per lb. + 45% ad val.
A	410.56	00	Benzoic acid	Lb.	15% ad val.	8.6% ad val.	7¢ per lb. + 69.5% ad val.
A	410.60	00	2-Naphthol (Beta-Naphthol)	Lb.	10.5% ad val.	7% ad val.	7¢ per lb. + 45% ad val.
A	410.64	00	Resorcinol	Lb.	8% ad val.	5.9% ad val.	7¢ per lb. + 34% ad val.
A	410.66	00	Salicylic acid and its salts	Lb.	15.3% ad val.	8.7% ad val.	7¢ per lb. + 72% ad val.

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty		
					1	LDDC	2
			Products suitable for medicinal use, and drugs (con.): Obtained, derived, or manufactured in whole or in part from any product provided for in subpart A or B of this part (con.): Drugs:				
A	410.68	00	Acetphenetidine (Phenacetin).....	Lb.....	9.8% ad val.	6.7% ad val.	7¢ per lb. + 54.5% ad val.
A	410.72	00	Acetylsalicylic acid (Aspirin).....	Lb.....	17.9% ad val.	10.2% ad val.	7¢ per lb. + 82% ad val.
A	410.76	00	Antipyrine.....	Lb.....	11.1% ad val.	7.2% ad val.	7¢ per lb. + 49.5% ad val.
A	410.80	00	5-Chloro-7-iodo-8-quinolinol (Iodochlorhydroxyquin) and 2-[1-(p-chlorophenyl)-3-dimethylaminopropyl]pyridine maleate (Chlorpheniramine maleate).....	Lb.....	12% ad val.	7.6% ad val.	7¢ per lb. + 73.5% ad val.
A	410.84	00	Diethylaminoacetoxylidide (Lidocaine)....	Lb.....	17.6% ad val.	10% ad val.	7¢ per lb. + 101.5% ad val.
A	410.88	00	5-Ethyl-5-phenylhexahydropyrimidine-4,6-dione (Primidone).....	Lb.....	6.9% ad val.	5.3% ad val.	7¢ per lb. + 45% ad val.
			Hydantoin derivatives:				
A	410.92	00	Methylphenethylhydantoin (Mephenytoin).....	Lb.....	9.9% ad val.	6.7% ad val.	7¢ per lb. + 63% ad val.
A	410.96	00	Other.....	Lb.....	9.9% ad val.	6.7% ad val.	7¢ per lb. + 63% ad val.
			Imidazoline derivatives:				
A	411.00	00	2-Benzyl-4,5-imidazoline hydrochloride (Tolazoline hydrochloride).....	Lb.....	9.1% ad val.	6.4% ad val.	7¢ per lb. + 58.5% ad val.
A	411.04	00	Phenylbenzylaminoethylimidazoline hydrochloride.....	Lb.....	8.1% ad val.	5.9% ad val.	7¢ per lb. + 51% ad val.
			Other:				
A	411.08	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	8.1% ad val.	6% ad val.	7¢ per lb. + 51% ad val.
A	411.10	00	Other.....	Lb.....	6% ad val.		7¢ per lb. + 51% ad val.
	411.12	00	Phenolphthalein.....	Lb.....	11.5% ad val.	7.4% ad val.	7¢ per lb. + 53% ad val.
	411.16	00	Phenylephrine hydrochloride.....	Lb.....	10% ad val.	6.8% ad val.	7¢ per lb. + 58.5% ad val.
A	411.20	00	Salol (Phenyl salicylate).....	Lb.....	10.1% ad val.	6.8% ad val.	7¢ per lb. + 45% ad val.
	411.24	00	Sulfamethazine.....	Lb.....	13.3% ad val.	8% ad val.	7¢ per lb. + 80% ad val.

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	LDDC	2
			Products suitable for medicinal use, and drugs (con.): Obtained, derived, or manufactured in whole or in part from any product provided for in subpart A or B of this part (con.): Drugs (con.):				
	411.28	00	Sulfadiazine, sulfaguanidine, sulfamerazine, sulfapyridine, and salicylazosulfapyridine (Sulfasalazine).....	Lb.....	20.3% ad val.	11.6% ad val.	7c per lb. + 128.5% ad val.
			Other: Alkaloids and their salts and other derivatives:				
	411.30	00	Pseudoephedrine and its salts.....	Lb.....	12.1% ad val.	7.6% ad val.	7c per lb. + 59% ad val.
	411.31	00	Ephedrine, racephedrine, and their salts.....	Lb.....	4.4% ad val.	3.7% ad val.	7c per lb. + 59% ad val.
			Papaverine and its salts:				
	411.40	00	Products provided for in the Chemical Appendix to the Tariff Schedules...	Lb.....	20.4% ad val.	11.6% ad val.	7c per lb. + 104% ad val.
	411.42	00	Other.....	Lb.....	11.6% ad val.		7c per lb. + 104% ad val.
			Other:				
	411.44	00	Arecoline, hydrobromide; Deserpidine; Ergonovine maleate; Ethaverine hydrochloride; Lobeline sulfate; Meperidine hydrochloride; Nicotinyl alcohol tartrate; and Quinacrine hydrochloride.....	Lb.....	10.5% ad val.	7% ad val.	7c per lb. + 50% ad val.
			Other:				
	411.48	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	17.2% ad val.	9.8% ad val.	7c per lb. + 88% ad val.
	411.50	00	Other.....	Lb.....	9.8% ad val.		7c per lb. + 88% ad val.

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Products suitable for medicinal use, and drugs (con.): Obtained, derived, or manufactured in whole or in part from any product provided for in subpart A or B of this part (con.): Drugs (con.): Other (con.):				
			Antihistamines, including those chiefly used as antinauseants:				
	411.52	00	Clemastine hydrogen fumarate; Diphenhydramine; Etymenabine chlorhydrate; Promethazine hydrochloride; and Triprolidine hydrochloride.....	Lb.....	9.6% ad val.	6.6% ad val.	7¢ per lb. + 45% ad val.
			Other:				
	411.56	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	16.1% ad val.	9.2% ad val.	7¢ per lb. + 82% ad val.
	411.58	00	Other.....	Lb.....	9.2% ad val.		7¢ per lb. + 82% ad val.
			Anti-infective agents:				
			Antibiotics:				
	411.60	00	Ampicillin and its salts.....	Lb.....	10.2% ad val.	6.9% ad val.	7¢ per lb. + 48.5% ad val.
A	411.64	00	Penicillin G salts.....	Lb.....	10.3% ad val.	6.9% ad val.	7¢ per lb. + 49% ad val.
			Penicillin, not specially provided for:				
	411.68	00	Carfecillin, sodium; Cloxacillin, sodium; Dicloxacillin, sodium; Flucloxacillin, (Floxacillin); and Oxacillin, sodium.....	Lb.....	9.2% ad val.	5.8% ad val.	7¢ per lb. + 45% ad val.
			Other:				
	411.72	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	11.6% ad val.	7.4% ad val.	7¢ per lb. + 56.5% ad val.
	411.74	00	Other.....	Lb.....	7.4% ad val.		7¢ per lb. + 56.5% ad val.
	411.76	00	Other.....	Lb.....	9.6% ad val.	6.6% ad val.	7¢ per lb. + 45% ad val.

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Products suitable for medicinal use, and drugs (con.): Obtained, derived, or manufactured in whole or in part from any product provided for in subpart A or B of this part (con.): Drugs (con.): Other (con.): Anti-infective agents (con.): Anti-infective sulfonamides:				
	411.80	00	Sulfathiazole and sulfathiazole, sodium.....	Lb.....	26.5% ad val.	15% ad val.	7¢ per lb. + 133% ad val.
			Other:				
	411.84	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	18.9% ad val.	10.8% ad val.	7¢ per lb. + 96% ad val.
	411.86	00	Other.....	Lb.....	10.8% ad val.		7¢ per lb. + 96% ad val.
			Anti-infective agents, not specially provided for:				
	411.90	00	Acriflavine; Acriflavine hydrochloride; Bismuth tribromophenate; Bunamidine hydrochloride; Carbadox; Clopidol; Crotamiton; Decoquinate; Diiodohydroxyquin; Ethionamide; Nicarbazin; Niclosamide; Oxyquinoline sulfate; Pentamidine; Phenylmercuric nitrate; Pyrazinamide; Stibophen; Thimerosal; Thymol iodide; Tolnaftate; and Trimethoprim.....	Lb.....	9.8% ad val.	6.7% ad val.	7¢ per lb. + 46% ad val.
			Other:				
	411.94	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	13.8% ad val.	8.1% ad val.	7¢ per lb. + 67.5% ad val.
	411.96	00	Other.....	Lb.....	8.1% ad val.		7¢ per lb. + 67.5% ad val.

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Products suitable for medicinal use, and drugs (con.): Obtained, derived, or manufactured in whole or in part from any product provided for in subpart A or B of this part (con.): Drugs (con.): Other (con.): Autonomic drugs, except alkaloids and their derivatives:				
	411.98	00	Cromolyn, sodium; Furosemide; Glipizide; Isoetharine hydrochloride; Isoxsuprine hydrochloride; Nylidrin hydrochloride; Procyclidine; Propanolol hydrochloride; Salbutamol (Albuterol); and Terbutaline sulfate.....	Lb.....	9.9% ad val.	6.7% ad val.	7¢ per lb. + 47% ad val.
			Other:				
	412.02	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	14.1% ad val.	8.2% ad val.	7¢ per lb. + 71.5% ad val.
	412.04	00	Other.....	Lb.....	8.2% ad val.		7¢ per lb. + 71.5% ad val.
			Cardiovascular drugs, except alkaloids and their derivatives:				
	412.06	00	Clofibrate; Hydralazine hydrochloride; Sulfinpyrazone; and Warfarin, sodium.....	Lb.....	9.5% ad val.	5.8% ad val.	7¢ per lb. + 47.5% ad val.
			Other:				
	412.10	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	13.5% ad val.	8% ad val.	7¢ per lb. + 65% ad val.
	412.12	00	Other.....	Lb.....	8% ad val.		7¢ per lb. + 65% ad val.
	412.14	00	Dermatological agents and local anesthetics.....	Lb.....	11.1% ad val.	7.2% ad val.	7¢ per lb. + 51.5% ad val.
			Drugs primarily affecting the central nervous system, except alkaloids and their derivatives: Analgesics, antipyretics, and nonhormonal anti-inflammatory agents:				
	412.18	00	Propoxyphene hydrochloride.....	Lb.....	23.4% ad val.	13.4% ad val.	7¢ per lb. + 119.5% ad val.
A	412.22	00	Other.....	Lb.....	10.1% ad val.	6.8% ad val.	7¢ per lb. + 47.5% ad val.
	412.26	00	Anticonvulsants, hypnotics, and sedatives.....	Lb.....	10.3% ad val.	6.9% ad val.	7¢ per lb. + 48.5% ad val.

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Products suitable for medicinal use, and drugs (con.): Obtained, derived, or manufactured in whole or in part from any product provided for in subpart A or B of this part (con.): Drugs (con.): Other (con.): Drugs primarily affecting the central nervous system, except alkaloids and their derivatives (con.): Antidepressants, tranquilizers, and other psychotherapeutic agents:				
	412.30	00	Amitriptyline; Butaperazine maleate; Chloropromazine; Clozapine; Droperidol; Fluphenazine decanoate; Fluphenazine enanthate; Imipramine hydrochloride; Mesoridazine besylate; Piperacetazine; Prochlorperazine maleate; Promazine hydrochloride; and Trifluoperazine hydrochloride.....	Lb.....	9.6% ad val.	6.6% ad val.	7¢ per lb. + 45.5% ad val.
A	412.31	00	Amitriptyline hydrochloride.....	Lb.....	30.5% ad val.	16.6% ad val.	7¢ per lb. + 149.5% ad val.
			Other:				
	412.35	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	30.5% ad val.	16.6% ad val.	7¢ per lb. + 149.5% ad val.
	412.36	00	Other.....	Lb.....	16.6% ad val.		7¢ per lb. + 149.5% ad val.
			Other:				
	412.38	00	Products provided for in the Chemical Appendix to the Tariff Schedules.....	Lb.....	12.1% ad val.	7.6% ad val.	7¢ per lb. + 58.5% ad val.
	412.40	00	Other.....	Lb.....	7.6% ad val.		7¢ per lb. + 58.5% ad val.
			Hormones, synthetic substitutes, and antagonists:				
	412.42	00	Desonide; Dienestrol; Epinephrine; Epinephrine hydrochloride; Estradiol benzoate; Estradiol cyclopentylpropionate (Estradiol cypionate); Nandrolone phenpropionate; Tamoxifen citrate; and l-Thyroxine (Levothyroxine), sodium.....	Lb.....	10.3% ad val.	6.9% ad val.	7¢ per lb. + 49% ad val.

Note: For explanation of the symbol "A" or "A*" or in the column entitled "GSP", see general headnote 3(c).

SCHEDULE 4. - CHEMICALS AND RELATED PRODUCTS
Part 1. - Benzenoid Chemicals and Products

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Products suitable for medicinal use, and drugs (con.): Obtained, derived, or manufactured in whole or in part from any product provided for in subpart A or B of this part (con.): Drugs (con.): Other (con.): Hormones, synthetic substitutes, and antagonists (con.): Other:				
	412.48	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	15.2% ad val.	8.7% ad val.	7¢ per lb. + 78.5% ad val.
	412.50	00	Other	Lb.	8.7% ad val.		7¢ per lb. + 78.5% ad val.
			Vitamins, provitamins, and their analogs and derivatives used primarily for their vitamin activity:				
	412.52	00	Vitamin B_2 (Riboflavin and its salts and esters)	Lb.	12.7% ad val.	7.8% ad val.	7¢ per lb. + 62% ad val.
	412.56	00	Vitamin B_{12} (Cyanocobalamin and related compounds with vitamin B_{12} activity)	Lb.	28.3% ad val.	16.2% ad val.	7¢ per lb. + 145.5% ad val.
	412.60	00	Vitamin E (*dl*-α-Tocopherol and its esters)	Lb.	12.9% ad val.	7.9% ad val.	7¢ per lb. + 63.5% ad val.
			Other:				
	412.64		Products provided for in the Chemical Appendix to the Tariff Schedules	.....	10.3% ad val.	6.9% ad val.	7¢ per lb. + 49% ad val.
		10	Folic acid	Lb.			
		20	Other	Lb.			
	412.66	00	Other	Lb.	6.9% ad val.		7¢ per lb. + 49% ad val.
			Other:				
	412.68	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	10.3% ad val.	6.9% ad val.	7¢ per lb. + 45% ad val.
	412.70	00	Other	Lb.	6.9% ad val.		7¢ per lb. + 45% ad val.
			Drugs, from whatever source obtained, produced or manufactured:				
A	412.72	00	Guaiacol and its derivatives	Lb.	15.9% ad val.	9.1% ad val.	7¢ per lb. + 79% ad val.

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty		
					1	LDDC	2
			Aromatic or odoriferous compounds including flavors, not marketable as cosmetics, perfumery, or toilet preparations, and not mixed, and not containing alcohol:				
			Obtained, derived, or manufactured in whole or in part from any product provided for in subpart A or B of this part:				
A	412.76	00	p-Anisaldehyde	Lb.	13.3% ad val.	8% ad val.	7¢ per lb. + 36% ad val.
A	412.80	00	Benzyl acetate	Lb.	44.7% ad val.	23.5% ad val.	7¢ per lb. + 104.5% ad val.
A	412.84	00	Benzyl benzoate	Lb.	35.9% ad val.	18.9% ad val.	7¢ per lb. + 84% ad val.
A	412.88	00	Diphenyl oxide	Lb.	20.6% ad val.	11.8% ad val.	7¢ per lb. + 42.5% ad val.
A	412.92	00	Ethyl vanillin	Lb.	28.5% ad val.	16.3% ad val.	7¢ per lb. + 80% ad val.
A	412.96	00	Heliotropin	Lb.	10.5% ad val.	7% ad val.	7¢ per lb. + 56.5% ad val.
A	413.00	00	Methyl anthranilate	Lb.	9.5% ad val.	6.6% ad val.	7¢ per lb. + 22.5% ad val.
A	413.04	00	α-Methylbenzyl alcohol	Lb.	21.4% ad val.	12.2% ad val.	7¢ per lb. + 51% ad val.
A	413.08	00	Musk, artificial	Lb.	9.3% ad val.	6.5% ad val.	7¢ per lb. + 57% ad val.
A	413.12	00	α-Pentylcinnamaldehyde	Lb.	16.5% ad val.	9.4% ad val.	7¢ per lb. + 45% ad val.
A	413.16	00	Phenylacetaldehyde	Lb.	14.6% ad val.	8.4% ad val.	7¢ per lb. + 40.5% ad val.
A*	413.20	00	Phenethyl alcohol	Lb.	28.6% ad val.	16.3% ad val.	7¢ per lb. + 77% ad val.
A*	413.24	00	Saccharin	Lb.	10.3% ad val.	6.9% ad val.	7¢ per lb. + 61% ad val.
			Other:				
A	413.28	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	19.8% ad val.	11.9% ad val.	7¢ per lb. + 58% ad val.
A	413.30	00	Other	Lb.	11.9% ad val.		7¢ per lb. + 58% ad val.
			From whatever source obtained, derived, or manufactured:				
A	413.32	00	Coumarin	Lb.	22.5% ad val.	20% ad val.	7¢ per lb. + 48% ad val.
A	413.36	00	Methyl salicylate	Lb.	27.5% ad val.	15.7% ad val.	7¢ per lb. + 68.5% ad val.
A	413.40	00	Vanillin	Lb.	9.6% ad val.	8.5% ad val.	7¢ per lb. + 48% ad val.

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

SCHEDULE 4. - CHEMICALS AND RELATED PRODUCTS
Part 1. - Benzenoid Chemicals and Products

4 - 1 - C
413.50 - 413.51

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty		
					1	LDDC	2
			Mixtures in whole or in part of any of the products provided for in this subpart:				
A	413.50	00	Paints and enamel paints and stains.....	Lb.....	17.5% ad val.	10% ad val.	7¢ per lb. + 46% ad val.
A	413.51	00	Other.....	Lb.....	17.5% ad val., but not less than the highest rate applicable to any component material	10% ad val., but not less than the highest rate applicable to any component material	7¢ per lb. + 46% ad val., but not less than the highest rate applicable to any component material

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

APPENDIX B

STATISTICAL TABLES

Table 1.--Synthetic organic chemicals and products: U.S. production, exports of domestic merchandise, imports for consumption, and apparent consumption, 1978-82

(Quantity in thousands of pounds; value in thousands of dollars; unit value per pound)

Year	Production 1/	Exports	Imports	Apparent consumption	Ratio (percent) of imports to consumption
			Quantity		
1978	186,657,000	13,826,576	4,154,340	176,984,764	2.4
1979	228,191,000	18,493,485	4,429,575	214,126,090	2.1
1980	215,125,000	18,203,780	4,449,918	201,371,138	2.2
1981	217,340,000	17,474,604	5,164,005	205,029,401	2.5
1982	2/ 196,000,000	17,918,354	5,121,966	183,203,612	2.8
			Value		
1978	63,463,380	5,760,040	2,517,275	60,220,615	4.2
1979	86,712,580	8,349,862	2,935,757	81,298,475	3.6
1980	94,655,000	9,672,860	3,197,157	88,179,297	3.6
1981	99,976,400	9,608,946	3,678,103	94,054,557	3.9
1982	3/	9,124,644	3,614,572	3/	3/
			Unit value		
1978	$0.34	$0.42	$0.61	$0.34	-
1979	.38	.45	.66	.38	-
1980	.44	.53	.72	.44	-
1981	.46	.55	.71	.46	-
1982	-	.51	.71	-	-

1/ Production data excludes tar, tar crudes, and primary products from petroleum and natural gas.

2/ Estimated by the staff of the U.S. International Trade Commission.

3/ Not available.

Source: Production, compiled from the U.S. International Trade Commission, Synthetic Organic Chemicals, United States Production and Sales, 1978-81, except as noted; exports and imports, compiled from official statistics of the U.S. Department of Commerce.

Table 2.--Benzenoid chemicals and products: U.S. production, exports of domestic merchandise, imports for consumption, and apparent consumption, 1978-82

(Quantity in thousands of pounds; value in thousands of dollars; unit value per pound)

Year	Production 1/	Exports 2/	Imports	Apparent consumption	Ratio (percent) of imports to consumption
			Quantity		
1978	73,750,270	4,425,000	693,745	70,019,015	1.0
1979	78,361,733	4,702,000	747,157	74,406,890	1.0
1980	68,487,528	4,109,000	697,224	65,075,752	1.1
1981	71,880,379	4,313,000	856,748	68,424,127	1.3
1982	2/ 64,692,300	4,529,000	842,360	61,005,660	1.4
			Value		
1978	31,712,616	2,168,250	1,176,996	30,721,362	3.8
1979	39,180,867	2,680,140	1,376,336	37,877,063	3.6
1980	42,622,267	2,876,300	1,444,087	41,190,054	3.5
1981	46,003,443	3,105,360	1,603,929	44,502,012	3.6
1982	3/	3,170,300	1,569,253	3/	-
			Unit value		
1978	$0.43	$0.49	$1.70	$0.44	-
1979	.50	.57	1.84	.51	-
1980	.62	.70	2.07	.63	-
1981	.64	.72	1.87	.65	-
1982	-	.70	1.86	-	-

1/ Production data excludes tar, tar crudes, and primary products from petroleum and natural gas.

2/ Estimated by the staff of the U.S. International Trade Commission.

3/ Not available.

Source: Production, compiled from the U.S. International Trade Commission, Synthetic Organic Chemicals, United States Production and Sales, 1978-81, except as noted; exports and imports, compiled from official statistics of the U.S. Department of Commerce.

Table 3.--Intermediate chemicals: U.S. production, exports of domestic merchandise, imports for consumption, and apparent consumption, 1978-82

(Quantity in thousands of pounds; value in thousands of dollars; unit value per pound)

Year	Production	Exports 1/	Imports 2/	Apparent consumption	Ratio (percent) of imports to consumption
			Quantity		
1978	45,808,491	2,784,263	389,669	43,413,897	0.9
1979	49,574,216	3,347,695	453,239	46,679,760	1.0
1980	45,069,670	3,396,844	357,003	42,029,829	.9
1981	45,323,048	3,284,343	499,632	42,538,337	1.2
1982	3/ 39,000,000	2,903,698	478,622	36,574,924	1.3
			Value		
1978	10,077,868	798,193	389,765	9,669,440	4.0
1979	15,368,007	1,335,297	493,773	15,063,587	3.3
1980	16,225,081	1,563,476	469,540	15,131,145	3.1
1981	17,675,989	1,512,060	511,190	16,675,119	3.1
1982	4/	1,271,779	495,341	4/	-
			Unit value		
1978	$0.22	$0.29	$1.00	$0.22	-
1979	.31	.40	1.09	.32	-
1980	.36	.46	1.32	.36	-
1981	.39	.46	1.02	.39	-
1982	-	.44	1.04	-	-

1/ Export data includes small amounts of nonbenzenoid cyclic chemicals.

2/ Import data includes small amounts of benzenoid-derived intermediate chemicals (i.e., acyclic chemicals).

3/ Estimated by the staff of the U.S. International Trade Commission.

Source: Production, compiled from the U.S. International Trade Commission, Synthetic Organic Chemicals, United States Production and Sales, 1978-81, except as noted; exports and imports, compiled from official statistics of the U.S. Department of Commerce.

Table 4.--Synthetic organic dyes and pigments: U.S. production, exports of domestic merchandise, imports for consumption, and apparent consumption, 1978-82

(Quantity in thousands of pounds; value in thousands of dollars; unit value per pound)

Year	Production	Exports	Imports	Apparent consumption	Ratio (percent) of imports to consumption
			Quantity		
1978	326,696	63,040	37,731	301,387	12.5
1979	354,129	71,097	39,124	322,156	12.1
1980	314,721	65,431	34,827	284,117	12.3
1981	305,465	55,744	43,804	293,525	14.9
1982	1/ 290,000	49,495	43,339	1/ 283,844	15.3
			Value		
1978	1,177,888	136,807	186,524	1,227,605	15.2
1979	1,375,126	168,870	215,537	1,421,793	15.2
1980	1,266,580	176,825	203,603	1,293,358	15.7
1981	1,301,887	167,443	215,095	1,349,539	15.9
1982	1/ 1,100,000	156,151	209,025	1/ 1,152,874	18.1
			Unit value		
1978	$3.61	$2.17	$4.94	-	-
1979	3.88	2.38	5.51	-	-
1980	4.02	2.70	5.85	-	-
1981	4.26	3.00	4.91	-	-
1982	1/ 3.79	3.15	4.82	-	-

1/ Estimated.

Source: U.S. production, compiled from Synthetic Organic Chemicals, United States Production and Sales, 1978-81; exports and imports, compiled from official statistics of the U.S. Department of Commerce.

Table 5.--Drugs and related products: U.S. production, exports of domestic merchandise, imports for consumption, and apparent consumption, 1978-82

(Quantity in thousands of pounds; value in thousands of dollars; unit value per pound)

Year	Production 1/	Exports	Imports	Apparent consumption	Ratio (percent) of imports to consumption
	Quantity				
1978	111,878	1/ 16,500	20,622	2/ 116,000	2/ 17.8
1979	132,313	1/ 14,200	21,354	2/ 139,467	2/ 15.3
1980	126,018	1/ 20,000	18,733	2/ 124,751	2/ 15.0
1981	125,285	1/ 19,000	23,440	2/ 129,725	2/ 18.1
1982	1/ 125,000	1/ 18,850	23,986	2/ 130,136	2/ 21.6
	Value				
1978	856,587	1/ 206,000	286,229	2/ 936,816	2/ 30.6
1979	989,130	1/ 210,000	318,218	2/ 1,097,348	2/ 29.0
1980	1,084,940	1/ 233,000	317,268	2/ 1,169,208	2/ 27.1
1981	1,158,866	1/ 254,000	346,911	2/ 1,251,777	2/ 27.7
1982	1/ 1,250,000	1/ 249,000	383,760	2/ 1,384,760	2/ 27.7
	Unit value				
1978	$7.66	1/ $12.48	$13.88	-	-
1979	7.48	1/ 14.79	14.90	-	-
1980	8.61	1/ 11.65	16.94	-	-
1981	9.25	1/ 13.36	14.80	-	-
1982	1/ 10.00	1/ 13.21	15.99	-	-

1/ Estimated by the staff of the U.S. International Trade Commission.
2/ Partly estimated by the staff of the U.S. International Trade Commission.

Source: Production, compiled from the U.S. International Trade Commission, Synthetic Organic Chemicals, United States Production and Sales, 1978-81, except as noted; exports and imports, compiled from official statistics of the U.S. Department of Commerce.

Table 6.--Benzenoid chemicals and products: U.S. imports for consumption, by principal sources, 1978-82

Source	1978	1979	1980	1981	1982
	Quantity (1,000 pounds)				
West Germany	130,519	127,998	116,434	116,290	115,421
Japan	106,281	97,624	83,637	105,493	108,420
United Kingdom	51,747	54,308	54,224	53,306	54,279
Switzerland	35,621	49,079	61,566	73,431	69,212
Italy	24,352	22,153	23,303	22,301	18,301
France	39,298	49,523	41,672	45,086	45,509
Canada	119,886	196,452	147,343	136,419	69,063
Netherlands	60,612	35,867	14,810	19,477	19,333
All other	125,430	114,153	154,235	284,946	342,820
Total	693,745	747,157	697,224	856,748	842,360
	Value (1,000 dollars)				
West Germany	334,800	368,396	358,437	340,043	321,344
Japan	174,655	211,090	228,797	287,972	285,566
United Kingdom	146,958	165,696	185,970	231,273	262,502
Switzerland	120,774	144,019	166,073	177,423	170,191
Italy	87,489	89,522	90,646	105,184	81,414
France	58,216	64,850	64,296	72,306	68,565
Canada	65,384	95,577	91,433	88,007	63,646
Netherlands	32,220	35,446	34,862	43,729	40,496
All other	156,499	201,767	223,574	257,994	275,529
Total	1,176,996	1,376,336	1,444,087	1,603,929	1,569,253
	Unit value (per pound)				
West Germany	$2.57	$2.88	$3.09	$2.92	$2.78
Japan	1.64	2.16	2.74	2.73	2.63
United Kingdom	2.84	3.05	3.43	4.34	4.84
Switzerland	3.39	2.94	2.70	2.42	2.46
Italy	3.59	4.04	3.89	4.72	4.45
France	1.48	1.31	1.54	1.60	1.51
Canada	.55	.49	.62	.65	.92
Netherlands	.53	.99	2.35	2.25	2.10
All other	1.25	1.77	1.45	.91	.80
Average	1.70	1.84	2.07	1.87	1.86

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 7.--Synthetic organic chemicals and products: U.S. imports for consumption, by principal sources, 1978-82

Source	1978	1979	1980	1981	1982
	Quantity (1,000 pounds)				
West Germany	390,674	438,297	435,767	430,868	442,040
Japan	532,047	347,949	260,767	299,575	304,751
Canada	1,266,212	1,832,676	2,047,927	2,409,376	1,862,623
United Kingdom	415,819	420,158	390,555	376,913	437,715
France	288,577	277,131	262,122	274,557	356,151
Switzerland	64,557	78,449	80,621	92,471	87,795
Netherlands	535,117	432,755	357,768	378,686	409,026
Italy	135,938	99,083	75,885	100,049	122,146
All other	525,398	503,077	538,505	801,510	1,099,718
Total	4,154,340	4,429,575	4,449,918	5,164,005	5,121,966
	Value (1,000 dollars)				
West Germany	506,368	596,452	615,666	607,260	584,664
Japan	411,736	448,342	464,194	579,248	547,561
Canada	308,911	421,521	514,031	641,551	542,338
United Kingdom	267,603	335,780	375,960	443,204	479,869
France	173,174	227,434	238,341	266,691	294,320
Switzerland	169,306	205,725	228,608	224,228	219,655
Netherlands	141,016	139,068	144,477	184,826	180,337
Italy	133,391	137,036	127,441	156,037	135,149
All other	405,771	424,399	488,439	584,057	630,679
Total	2,517,275	2,935,757	3,197,157	3,687,103	3,614,572
	Unit value (per pound)				
West Germany	$1.30	$1.36	$1.41	$1.41	$1.32
Japan	.78	1.29	1.78	1.93	1.80
Canada	.24	.23	.25	.27	.29
United Kingdom	.64	.80	.96	1.18	1.10
France	.60	.82	.91	.97	.83
Switzerland	2.62	2.62	2.84	2.43	2.50
Netherlands	.26	.32	.40	.49	.44
Italy	.98	1.38	1.68	1.56	1.11
All other	.77	.84	.91	.73	.57
Average	.61	.66	.72	.71	.71

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 8.--"Competitive" benzenoid chemicals and products: U.S. imports for consumption, by principal sources, 1978-82

Source	1978	1979	1980 1/	1981	1982
	Quantity (1,000 pounds)				
West Germany	2/	2/	16,588	79,484	82,643
Japan	2/	2/	23,287	84,617	87,399
United Kingdom	2/	2/	14,411	39,674	43,550
Canada	2/	2/	66,608	128,716	62,514
France	2/	2/	10,474	38,745	40,235
Italy	2/	2/	4,014	17,779	15,687
Switzerland	2/	2/	4,642	9,169	9,286
Bahamas	2/	2/	117	238	309
All other	2/	2/	27,191	262,486	347,746
Total	3/ 515,668	3/ 519,431	3/ 597,568	660,908	689,370
	Value (1,000 dollars)				
West Germany	2/	2/	44,667	180,469	181,225
Japan	2/	2/	51,340	181,205	169,341
United Kingdom	2/	2/	29,390	108,756	85,435
Canada	2/	2/	35,573	75,547	53,867
France	2/	2/	14,281	52,381	48,200
Italy	2/	2/	20,217	55,583	41,136
Switzerland	2/	2/	14,735	47,304	39,354
Bahamas	2/	2/	12,967	27,904	34,635
All other	2/	2/	47,459	209,524	221,172
Total	3/ 629,380	3/ 696,595	3/ 992,297	938,674	874,367
	Unit value (per pound)				
West Germany	-	-	$2.69	$2.27	$2.19
Japan	-	-	2.20	2.14	1.94
United Kingdom	-	-	2.04	2.74	1.96
Canada	-	-	.53	.59	.86
France	-	-	1.36	1.35	1.20
Italy	-	-	5.04	3.13	2.62
Switzerland	-	-	3.17	5.16	4.24
Bahamas	-	-	110.72	117.40	112.10
All other	-	-	1.75	.80	.64
Average	$1.22	$1.34	1.66	1.42	1.27

1/ July-December.
2/ Not Available.
3/ Estimated by the staff of the U.S. International Trade Commission.

Source: Compiled from the official statistics of the U.S. Department of Commerce, except as noted.

Table 9.--Intermediate chemicals: U.S. imports for consumption, by principal sources, 1978-82

Source	1978	1979	1980	1981	1982
	Quantity (1,000 pounds)				
West Germany	59,900	65,727	59,144	63,944	59,961
Japan	62,138	58,632	44,226	50,862	48,414
United Kingdom	25,836	28,203	19,890	22,385	25,704
Italy	19,988	13,426	15,041	12,297	10,287
Switzerland	8,419	8,148	11,846	8,850	7,530
France	28,911	34,861	27,530	29,041	32,548
Argentina	20,749	29,599	20,671	177,949	104,331
Venezuela	3,293	1,432	0	1,102	119,619
All other	160,434	213,210	158,656	133,202	70,228
Total	389,669	453,239	357,003	499,632	478,622
	Value (1,000 dollars)				
West Germany	118,944	151,939	140,845	128,123	111,596
Japan	80,264	95,504	90,886	99,411	99,874
United Kingdom	40,358	46,580	38,330	58,971	85,722
Italy	29,611	32,533	35,516	43,309	34,680
Switzerland	27,025	37,117	44,298	40,815	32,376
France	30,000	28,394	25,358	28,778	26,772
Argentina	3,461	6,535	5,244	31,145	17,808
Venezuela	888	379	0	326	15,254
All other	59,213	94,790	89,062	80,312	71,259
Total	389,765	493,773	469,540	511,190	495,341
	Unit value (per pound)				
West Germany	$1.99	$2.31	$2.38	$2.00	$1.88
Japan	1.29	1.63	2.06	1.96	2.04
United Kingdom	1.56	1.65	1.93	2.63	3.34
Italy	1.48	2.42	2.36	3.52	3.37
Switzerland	3.21	4.56	3.74	4.61	4.30
France	1.04	.82	-	.99	.82
Argentina	.17	.22	.25	.18	.17
Venezuela	.27	.27	.92	.30	.13
All other	.37	.45	.56	.60	1.02
Average	1.00	1.09	1.32	1.02	1.04

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 10.--"Competitive" intermediate chemicals: U.S. imports for consumption, by principal sources, 1978-82

Source	1978	1979	1980 1/	1981	1982
	Quantity (1,000 pounds)				
West Germany	2/	2/	9,639	52,261	50,919
Japan	2/	2/	11,124	43,801	44,092
United Kingdom	2/	2/	4,566	16,985	22,994
France	2/	2/	6,955	25,323	29,562
Switzerland	2/	2/	848	4,974	5,340
Argentina	2/	2/	7,082	160,738	104,331
Venezuela	2/	2/	0	1,102	119,619
Italy	2/	2/	1,521	10,054	8,405
All other	2/	2/	3/ 61,115	128,635	68,146
Total	3/ 331,200	3/ 362,600	3/ 319,250	443,873	453,409
	Value (1,000 dollars)				
West Germany	2/	2/	21,791	86,032	83,123
Japan	2/	2/	17,411	75,545	74,447
United Kingdom	2/	2/	6,820	29,669	34,432
France	2/	2/	4,535	19,884	20,423
Switzerland	2/	2/	3,759	24,862	18,352
Argentina	2/	2/	1,651	27,946	17,808
Venezuela	2/	2/	0	326	15,254
Italy	2/	2/	3,900	19,620	11,371
All other	2/	2/	3/ 22,953	64,299	52,451
Total	3/ 253,300	3/ 296,300	3/ 351,619	348,182	327,661
	Unit value (per pound)				
West Germany	-	-	$2.26	$1.65	$1.63
Japan	-	-	1.57	1.73	1.69
United Kingdom	-	-	1.44	1.75	1.50
France	-	-	.65	.79	.69
Switzerland	-	-	4.49	5.00	3.44
Argentina	-	-	.23	.17	.17
Venezuela	-	-	-	.30	.13
Italy	-	-	2.56	1.95	1.35
All other	-	-	.38	.50	.77
Average	$0.77	$0.82	1.10	.78	.72

1/ July-December.
2/ Not available.
3/ Estimated by the staff of the U.S. International Trade Commission.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 11.--Synthetic organic dyes and pigments: U.S. imports for consumption, by principal sources, 1978-82

Source	1978	1979	1980	1981	1982
	Quantity (1,000 pounds)				
West Germany	15,082	15,607	14,327	16,815	16,741
Japan	4,422	6,087	5,410	9,410	10,738
Switzerland	6,821	5,430	5,567	5,360	5,092
United Kingdom	4,173	5,092	3,467	3,948	3,022
France	1,176	1,114	1,195	1,518	1,430
India	684	906	964	820	966
Netherlands	573	558	403	948	1,131
Italy	1,664	1,894	1,151	1,521	921
All other	3,137	2,435	2,344	3,464	3,296
Total	37,731	39,124	34,827	43,804	43,339
	Value (1,000 dollars)				
West Germany	82,287	95,317	81,955	86,372	79,068
Japan	16,320	26,450	34,058	46,460	55,666
Switzerland	40,794	38,568	41,092	34,819	31,108
United Kingdom	18,744	23,608	17,045	15,432	13,839
France	5,759	6,249	7,505	9,193	8,045
India	5,106	7,674	6,404	4,626	4,388
Netherlands	2,579	2,498	2,323	3,559	3,879
Italy	4,889	6,169	4,680	4,988	2,366
All other	10,046	9,004	8,542	9,646	10,666
Total	186,524	215,537	203,603	215,095	209,025
	Unit value (per pound)				
West Germany	$5.46	$6.11	$5.72	$5.14	$4.72
Japan	3.69	4.35	6.30	4.94	5.18
Switzerland	5.98	7.10	7.38	6.50	6.11
United Kingdom	4.49	4.64	4.92	3.91	4.58
France	4.90	5.61	6.28	6.06	5.63
India	7.47	8.47	6.64	5.64	4.54
Netherlands	4.50	4.48	5.77	3.75	3.43
Italy	2.94	3.26	4.07	3.28	2.57
All other	3.20	3.70	3.64	2.78	3.24
Average	4.94	5.51	5.85	4.91	4.82

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 12.--"Competitive" synthetic organic dyes and pigments: U.S. imports for consumption, by principal sources, 1978-82

Source	1978	1979	1980 1/	1981	1982
	Quantity (1,000 pounds)				
West Germany	2/	2/	1,848	7,283	6,628
Japan	2/	2/	1,368	6,042	4,171
United Kingdom	2/	2/	339	1,928	1,564
Switzerland	2/	2/	449	936	749
France	2/	2/	244	710	646
India	2/	2/	163	536	665
Netherlands	2/	2/	71	643	780
Italy	2/	2/	161	1,051	600
All other	2/	2/	504	1,949	1,772
Total	3/ 16,914	3/ 18,895	3/ 15,880	21,079	17,574
	Value (1,000 dollars)				
West Germany	2/	2/	6,032	29,320	26,431
Japan	2/	2/	7,338	25,202	13,723
United Kingdom	2/	2/	1,224	7,593	7,676
Switzerland	2/	2/	3,084	6,196	5,025
France	2/	2/	1,816	4,418	4,267
India	2/	2/	1,224	3,346	3,475
Netherlands	2/	2/	287	2,089	2,173
Italy	2/	2/	447	3,291	1,340
All other	2/	2/	1,441	4,995	4,972
Total	3/ 60,042	3/ 69,555	3/ 61,432	86,449	69,082
	Unit value (per pound)				
West Germany	-	-	$3.26	$4.03	$3.99
Japan	-	-	5.36	4.17	3.29
United Kingdom	-	-	3.61	3.94	4.91
Switzerland	-	-	6.86	6.62	6.71
France	-	-	7.45	6.22	6.60
India	-	-	7.52	6.24	5.23
Netherlands	-	-	4.04	3.25	2.78
Italy	-	-	2.77	3.13	2.23
All other	-	-	2.86	2.56	2.81
Average	$3.55	$3.68	3.87	4.10	3.93

1/ July-December.
2/ Not available.
3/ Estimated by the staff of the U.S. International Trade Commission.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 13.--Drugs and related products: U.S. imports for consumption, by principal sources, 1978-82

Source	1978	1979	1980	1981	1982
	Quantity (1,000 pounds)				
United Kingdom	3,423	2,897	2,420	2,991	3,360
West Germany	3,054	2,740	2,346	3,126	4,538
Bahamas	167	173	253	239	313
Japan	1,642	1,566	1,797	2,463	2,632
Italy	1,332	1,488	1,511	1,531	1,215
Ireland	578	373	631	405	389
Belgium	95	206	150	254	186
Switzerland	519	245	212	519	470
All other	9,810	11,666	9,414	11,911	10,883
Total	20,622	21,354	18,733	23,440	23,986
	Value (1,000 dollars)				
United Kingdom	66,177	72,301	77,396	103,314	123,510
West Germany	27,042	25,696	23,521	25,379	40,648
Bahamas	14,970	16,514	27,276	28,019	34,921
Japan	23,350	25,562	28,740	33,314	33,652
Italy	49,205	40,344	37,070	37,904	27,210
Ireland	7,098	14,329	19,949	19,761	22,232
Belgium	6,841	10,270	15,369	22,756	20,171
Switzerland	16,051	15,909	7,575	8,782	16,140
All other	75,496	97,294	80,371	67,682	65,275
Total	286,229	318,218	317,268	346,911	383,760
	Unit value (per pound)				
United Kingdom	$19.33	$24.95	$31.98	$34.54	$36.76
West Germany	8.85	9.38	10.03	8.12	8.96
Bahamas	89.56	95.54	107.62	117.11	111.69
Japan	14.22	16.32	15.99	13.52	12.78
Italy	36.93	27.12	24.53	24.76	22.39
Ireland	12.27	38.40	31.64	48.75	57.17
Belgium	71.94	49.93	102.68	89.63	108.63
Switzerland	30.94	65.02	35.73	16.91	34.33
All other	7.70	8.34	8.54	5.68	6.00
Average	13.88	14.90	16.94	14.80	16.00

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.

Table 14.--"Competitive" drugs and related products: U.S. imports for consumption, by principal sources, 1978-82

Source	1978	1979	1980 1/	1981	1982
	Quantity (1,000 pounds)				
United Kingdom	2/	2/	676	1,995	2,254
Bahamas	2/	2/	117	238	309
Japan	2/	2/	744	2,348	2,371
West Germany	2/	2/	366	2,292	3,772
Ireland	2/	2/	227	180	181
Italy	2/	2/	395	1,249	1,019
France	2/	2/	933	4,915	2,702
Switzerland	2/	2/	60	443	408
All other	2/	2/	1,895	6,355	6,506
Total	3/ 17,900	3/ 17,100	3/ 14,400	20,014	19,522
	Value (1,000 dollars)				
United Kingdom	2/	2/	6,101	35,086	37,193
Bahamas	2/	2/	12,967	27,877	34,635
Japan	2/	2/	10,465	29,865	31,316
West Germany	2/	2/	3,199	15,015	27,598
Ireland	2/	2/	4,729	16,215	18,306
Italy	2/	2/	12,375	19,062	13,482
France	2/	2/	4,035	12,582	12,554
Switzerland	2/	2/	734	4,351	11,707
All other	2/	2/	22,857	58,964	48,414
Total	3/ 174,900	3/ 147,300	3/ 172,000	219,017	235,204
	Unit value (per pound)				
United Kingdom	-	-	$9.03	$17.59	$16.50
Bahamas	-	-	110.71	117.34	112.10
Japan	-	-	14.07	12.72	13.21
West Germany	-	-	8.73	6.55	7.32
Ireland	-	-	20.85	89.90	101.16
Italy	-	-	31.31	15.26	13.23
France	-	-	4.32	2.56	4.65
Switzerland	-	-	12.23	9.81	28.72
All other	-	-	12.06	9.28	7.44
Average	3/ 9.77	3/ 8.61	3/ 11.94	10.94	12.05

1/ July-December.
2/ Not available.
3/ Estimated by the staff of the U.S. International Trade Commission.

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.

Table 15.--All organic chemicals: Japanese imports and exports, by sources and by markets, 1978-81

(In thousands of U.S. dollars)

Source or market	1978	1979	1980	1981
	Imports			
United States	447,444	694,925	683,681	754,137
West Germany	149,701	188,385	153,563	150,873
Republic of Korea	15,769	42,761	70,835	97,076
France	52,050	82,738	81,538	75,532
United Kingdom	46,945	60,317	58,968	67,796
Singapore	60,472	56,179	70,183	62,684
Switzerland	72,613	91,938	70,124	61,198
Italy	33,060	53,382	59,962	50,709
Other	137,999	236,812	296,642	343,252
Total	1,016,053	1,507,437	1,545,496	1,663,257
	Exports			
United States	244,910	250,684	306,529	424,855
Republic of Korea	291,548	355,994	255,435	261,836
Hong Kong	147,754	188,676	180,178	177,554
Indonesia	121,305	157,288	163,773	163,837
China	83,367	94,980	133,630	159,100
U.S.S.R	76,980	91,603	156,453	127,634
Singapore	65,450	96,513	108,314	107,786
Australia	68,188	91,066	98,587	106,373
Other	882,334	1,064,147	1,238,729	1,165,940
Total	1,981,836	2,390,951	2,641,628	2,694,915

Source: Compiled from official statistics of the United Nations.

Table 16.--Intermediate chemicals: Japanese imports and exports, by sources and by markets, 1978-81

(In thousands of U.S. dollars)

Source or market	1978	1979	1980	1981
	Imports			
United States	94,585	243,508	187,503	208,082
Netherlands	784	24,084	17,115	37,607
Republic of Korea	392	20,881	20,813	33,557
Canada	883	4,783	33,914	20,809
China	968	13,178	12,429	14,304
West Germany	4,480	11,496	4,485	11,425
United Kingdom	1,329	2,201	4,545	10,958
Australia	1,700	3,634	12,864	10,109
Other	13,700	36,169	44,577	52,039
Total	118,821	359,934	338,245	398,890
	Exports			
United States	36,931	21,450	47,839	89,913
Republic of Korea	75,179	134,510	89,850	66,393
Australia	11,334	22,884	35,454	32,208
Netherland	7,607	14,105	41,665	26,263
Philippines	16,207	17,853	11,865	16,643
Indonesia	12,505	18,902	20,982	15,086
Thailand	8,597	16,861	18,055	13,907
Singapore	8,684	7,198	11,404	11,391
Other	71,340	90,578	112,716	76,037
Total	248,384	344,341	389,830	347,841

Source: Compiled from official statistics of the United Nations.

Table 17.--Synthetic organic dyes and pigments: Japanese imports and exports, by sources and by markets, 1978-81

(In thousands of U.S. dollars)

Source or market	1978	1979	1980	1981
	Imports			
West Germany	70,794	89,424	64,932	62,043
Switzerland	48,115	62,619	43,156	40,380
United Kingdom	11,931	19,057	13,743	15,291
United States	8,216	10,827	7,831	9,799
France	4,871	6,997	4,726	4,642
Republic of Korea	4,064	6,532	6,652	4,597
Italy	2,828	5,055	2,742	1,820
China	93	841	1,280	1,210
Other	2,207	4,802	4,478	4,463
Total	153,119	206,154	149,540	144,245
	Exports			
United States	17,681	27,223	27,116	33,699
Republic of Korea	26,067	25,711	26,407	30,353
China	10,372	15,482	8,046	20,562
Indonesia	10,569	13,514	14,910	15,351
Hong Kong	13,405	14,833	14,879	11,322
Thailand	12,379	9,981	13,115	9,595
Philippines	6,102	5,387	5,578	6,141
Switzerland	2,471	5,477	5,670	5,026
Other	62,065	79,968	93,528	77,509
Total	161,111	196,576	209,249	209,558

Source: Compiled from official statistics of the United Nations.

Table 18.--All organic chemicals: Swiss imports and exports, by sources and by markets, 1978-81

(In thousands of U.S. dollars)

Source or market	1978	1979	1980	1981
	Imports			
West Germany	360,058	484,910	551,991	468,890
France	128,287	188,961	212,198	201,179
Italy	77,280	95,483	122,743	111,769
United Kingdom	84,055	109,695	126,939	109,254
Netherlands	56,387	78,530	94,627	81,214
United States	41,089	52,820	64,949	58,749
Belgium-Luxembourg	38,326	59,290	61,609	55,043
Austria	25,316	34,312	45,219	41,702
Other	67,528	89,311	117,460	102,869
Total	878,326	1,193,312	1,397,735	1,230,669
	Exports			
West Germany	267,127	323,776	328,293	296,263
France	225,373	214,304	208,302	217,392
Italy	128,826	153,427	142,920	140,523
United States	103,674	100,969	104,339	109,256
United Kingdom	78,671	84,749	75,774	74,282
Japan	79,203	98,426	68,998	70,744
Austria	65,238	73,390	75,865	66,709
Spain	62,172	52,296	42,599	51,007
Other	666,586	753,023	784,430	774,338
Total	1,676,870	1,854,360	1,831,520	1,800,514

Source: Compiled from official statistics of the United Nations.

Table 19.--Intermediate chemicals: Swiss imports and exports, by sources and by markets, 1978-81

(In thousands of U.S. dollars)

Source or market	1978	1979	1980	1981
	Imports			
West Germany	20,738	27,973	28,877	22,699
Netherlands	5,460	10,317	14,636	12,491
France	9,620	11,226	11,750	9,356
Italy	3,084	3,707	4,044	4,135
Japan	1,718	2,690	3,215	3,890
Czechoslovakia	1,747	2,533	3,577	3,656
United Kingdom	1,605	1,700	2,502	2,892
United States	2,440	2,852	3,599	2,673
Other	5,658	7,803	7,670	8,483
Total	52,070	70,801	79,870	70,275
	Exports			
West Germany	5,981	6,733	2,385	1,609
France	934	1,230	1,632	1,285
Ireland	1/	1/	99	712
United Kingdom	412	1,065	871	710
Italy	771	775	924	598
United States	563	783	677	540
Nigeria	91	104	273	316
Austria	283	231	276	248
Other	2,757	1,957	3,814	2,124
Total	11,792	12,878	10,951	8,142

1/ Less than $500.

Source: Compiled from official statistics of the United Nations.

Table 20.--Synthetic organic dyes and pigments: Swiss imports and exports, by sources and by markets, 1978-81

(In thousands of U.S. dollars)

Source or market	1978	1979	1980	1981
	Imports			
France	33,555	52,996	59,860	70,267
West Germany	56,018	74,563	79,143	59,763
United Kingdom	35,778	50,996	59,381	46,638
Spain	2,889	5,042	5,193	5,731
Japan	2,345	5,124	6,829	5,239
United States	1,652	2,618	4,962	2,372
Italy	1,546	2,409	4,068	2,299
Netherlands	624	1,016	980	1,006
Other	1,848	2,523	3,954	2,574
Total	136,255	197,287	224,370	195,889
	Exports			
West Germany	67,619	83,016	72,852	62,780
France	56,111	66,517	74,380	62,576
Japan	51,269	65,617	41,136	45,733
United States	49,413	43,098	43,384	43,585
United Kingdom	44,166	40,343	33,020	36,559
Italy	34,175	42,462	38,536	36,516
Hong Kong	27,517	22,235	20,972	27,914
Czechoslovakia	19,546	20,363	24,626	21,060
Other	336,980	377,647	370,217	345,039
Total	686,796	761,298	719,123	681,762

Source: Compiled from official statistics of the United Nations.

Table 21.--All organic chemicals: West German imports and exports, by sources and by markets, 1978-81

(In thousands of U.S. dollars)

Source or market	1978	1979	1980	1981
	Imports			
Netherlands	975,516	1,484,991	1,498,347	1,367,638
Belgium-Luxembourg	606,307	965,951	1,074,266	858,980
France	553,200	850,380	912,827	757,008
Italy	269,136	373,544	413,031	345,712
United Kingdom	218,616	342,611	348,734	345,515
United States	230,658	319,049	359,366	308,004
Switzerland	266,974	325,787	332,293	302,039
Austria	67,590	94,591	140,469	140,373
Other	339,347	487,199	608,149	627,926
Total	3,527,344	5,244,103	5,687,482	5,053,195
	Exports			
France	794,733	1,077,295	1,197,651	1,015,758
Italy	613,419	935,691	1,025,245	856,285
Belgium-Luxembourg	547,612	804,224	850,361	785,793
Netherlands	607,796	867,512	900,404	742,908
Austria	360,893	508,876	574,089	467,916
Switzerland	366,486	502,321	570,625	461,101
United Kingdom	384,073	573,460	524,662	544,679
United States	386,744	333,281	339,027	319,995
Other	2,863,052	3,715,943	4,056,383	3,584,480
Total	6,824,808	9,318,603	10,038,453	8,778,915

Source: Compiled from official statistics of the United Nations.

Table 22.--Intermediate chemicals: West German imports and exports, by sources and by markets, 1978-81

(In thousands of U.S. dollars)

Source or market	1978	1979	1980	1981
	Imports			
Netherlands	230,848	486,930	442,263	497,057
Belgium-Luxembourg	173,194	304,782	308,428	224,760
United Kingdom	33,593	82,477	69,314	97,009
France	48,178	103,262	88,596	70,652
United States	49,994	83,571	101,318	60,921
Czechoslovakia	9,675	16,702	20,505	48,035
Hungary	3,300	10,949	21,174	27,051
Finland	8,766	15,100	19,562	24,503
Other	57,359	86,457	83,128	111,685
Total	614,907	1,190,230	1,154,288	1,161,673
	Exports			
Belgium-Luxembourg	188,674	329,269	344,061	353,089
Netherlands	108,501	205,195	213,727	171,649
France	70,048	110,778	111,591	83,039
Austria	49,307	86,968	89,545	70,970
United Kingdom	27,585	55,743	55,831	61,486
Italy	37,786	67,947	79,314	57,840
Switzerland	18,941	26,807	31,113	23,510
United States	15,807	22,628	21,050	16,928
Other	150,014	-	-	-
Total	666,663	1,092,007	1,152,311	1,004,417

Source: Compiled from official statistics of the United Nations.

Table 23.--Synthetic organic dyes and pigments: West German imports and exports, by sources and by markets, 1978-81

(In thousands of U.S. dollars)

Source or market	1978	1979	1980	1981
	Imports			
Switzerland	69,508	82,912	74,357	67,796
United Kingdom	26,408	38,680	34,602	28,007
France	24,023	27,268	28,574	25,560
United States	6,134	10,319	9,289	8,540
Japan	4,577	8,570	10,038	6,608
Belgium-Luxembourg	7,230	7,068	8,652	6,604
Denmark	4,701	6,549	7,036	6,332
Netherlands	3,922	5,731	6,510	4,192
Other	11,404	15,067	20,114	13,063
Total	157,907	202,146	199,172	166,702
	Exports			
Italy	77,546	122,882	101,308	82,862
France	64,577	77,705	78,774	69,754
Japan	71,549	83,741	59,889	61,731
United Kingdom	60,184	76,168	55,384	55,299
Switzerland	53,809	70,379	75,803	54,220
Hong Kong	23,562	28,681	29,017	32,142
Belgium-Luxembourg	22,789	31,484	33,669	28,631
Netherlands	31,269	41,627	34,284	28,473
Other	586,743	694,061	729,013	654,805
Total	992,028	1,226,728	1,197,141	1,067,917

Source: Compiled from official statistics of the United Nations.

Table 24.--Synthetic organic chemicals and products: U.S. exports of domestic merchandise, by principal markets, 1978-82

Market	1978	1979	1980	1981	1982
	Quantity (1,000 pounds)				
Canada	2,147,753	2,232,876	1,866,884	1,922,278	1,513,248
Japan	1,209,821	2,010,847	1,586,028	1,886,904	2,287,637
Netherlands	1,369,416	1,836,932	1,812,743	1,706,581	1,706,098
Mexico	1,391,156	1,647,563	1,893,069	1,892,029	1,619,730
Belgium	773,713	943,940	798,660	708,196	697,165
United Kingdom	325,399	398,671	368,911	299,615	354,038
Brazil	830,170	810,587	733,162	398,669	464,234
Taiwan	644,190	1,024,151	1,153,385	1,209,844	1,209,484
All other	5,134,956	7,587,918	7,990,937	7,450,488	8,066,719
Total	13,826,576	18,493,485	18,203,780	17,474,604	17,918,354
	Value (1,000 dollars)				
Canada	866,307	1,015,590	1,082,330	1,237,058	1,061,258
Japan	455,332	725,425	812,717	965,150	968,511
Netherlands	479,107	656,886	738,337	756,438	730,548
Mexico	394,286	603,593	793,872	838,082	622,618
Belgium	449,376	579,450	579,348	536,908	562,103
United Kingdom	275,225	328,875	333,764	300,853	331,690
Brazil	351,976	426,411	465,164	322,816	328,525
Taiwan	151,735	311,561	373,351	339,530	312,268
All other	2,336,697	3,702,073	4,493,976	4,312,111	4,207,123
Total	5,760,040	8,349,862	9,672,860	9,608,946	9,124,644
	Unit value (per pound)				
Canada	$0.40	$0.46	$0.58	$0.64	$0.70
Japan	.38	.36	.51	.51	.42
Netherlands	.35	.36	.41	.44	.43
Mexico	.28	.37	.42	.44	.38
Belgium	.58	.61	.73	.76	.81
United Kingdom	.85	.83	.91	1.00	.94
Brazil	.42	.53	.64	.81	.71
Taiwan	.24	.30	.32	.28	.26
All other	.46	.49	.56	.58	.52
Average	.42	.45	.53	.55	.51

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 25.--Intermediate chemicals: U.S. exports of domestic merchandise, by principal sources, 1978-82

Market	1978	1979	1980	1981	1982
	Quantity (1,000 pounds)				
Canada	241,635	293,632	320,401	389,745	273,103
Japan	195,661	291,290	424,494	534,915	336,254
Netherlands	557,477	553,677	549,187	303,468	331,705
Mexico	218,247	341,996	300,690	333,171	326,287
Taiwan	134,805	199,797	234,203	282,888	259,055
Belgium	190,698	271,628	180,537	114,940	108,974
Republic of Korea	79,579	100,544	139,851	164,238	131,402
Hong Kong	100,957	70,808	34,384	106,223	146,561
All other	1,065,205	1,224,323	1,213,098	1,054,754	990,356
Total	2,784,263	3,347,695	3,396,844	3,284,343	2,903,698
	Value (1,000 dollars)				
Canada	86,095	131,304	163,647	201,805	151,095
Japan	57,256	115,595	180,147	213,736	140,127
Netherlands	114,585	165,751	196,781	128,792	127,598
Mexico	55,792	134,336	137,347	151,163	113,439
Taiwan	27,392	65,574	90,701	94,807	76,297
Belgium	49,835	89,067	73,979	60,449	66,997
Republic of Korea	16,096	37,724	61,693	59,920	47,825
Hong Kong	16,516	17,541	13,027	35,813	41,395
All other	374,626	578,405	646,153	565,575	507,006
Total	798,193	1,335,297	1,563,476	1,512,060	1,271,779
	Unit value (per pound)				
Canada	$0.36	$0.45	$0.51	$0.52	$0.55
Japan	.29	.40	.42	.40	.42
Netherlands	.21	.30	.36	.42	.39
Mexico	.26	.39	.46	.45	.35
Taiwan	.20	.33	.39	.34	.30
Belgium	.26	.33	.41	.53	.62
Republic of Korea	.20	.38	.44	.37	.36
Hong Kong	.16	.25	.38	.34	.28
All other	.35	.47	.53	.54	.51
Average	.29	.40	.46	.46	.44

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 26.--Synthetic organic dyes and pigments: U.S. exports of domestic merchandise, by principal markets, 1978-82

Market	1978	1979	1980	1981	1982
	Quantity (1,000 pounds)				
Canada	15,639	16,838	16,396	17,389	15,125
United Kingdom	5,155	5,472	4,205	3,155	3,887
Japan	3,150	3,983	2,501	2,463	3,163
Netherlands	3,439	3,355	2,639	2,766	2,473
West Germany	3,266	3,776	3,362	2,432	2,399
Belgium	4,598	2,961	2,205	1,813	1,027
France	3,288	4,271	3,656	2,958	2,866
Hong Kong	2,214	2,316	1,740	1,099	1,431
All other	22,290	28,125	28,727	21,669	17,124
Total	63,040	71,097	65,431	55,744	49,495
	Value (1,000 dollars)				
Canada	29,734	34,344	35,558	43,249	35,286
United Kingdom	10,916	13,295	11,122	11,111	13,425
Japan	9,560	14,032	9,310	11,780	12,406
Netherlands	6,282	7,312	7,348	10,503	9,448
West Germany	5,924	7,755	8,804	7,542	7,959
Belgium	10,925	9,307	10,934	7,143	6,852
France	4,332	5,137	5,575	3,623	5,584
Hong Kong	4,555	4,739	6,152	4,076	5,230
All other	54,580	72,948	82,023	68,417	59,962
Total	136,807	168,870	176,825	167,443	156,151
	Unit value (per pound)				
Canada	$1.90	$2.04	$2.17	$2.49	$2.33
United Kingdom	2.12	2.43	2.64	3.52	3.45
Japan	3.04	3.52	3.72	4.78	3.92
Netherlands	1.83	2.18	2.78	3.80	3.82
West Germany	1.81	2.05	2.62	3.10	3.32
Belgium	2.38	3.14	4.96	3.94	6.67
France	1.32	1.20	1.52	1.22	1.95
Hong Kong	2.06	2.05	3.54	3.71	3.66
All other	2.45	2.59	2.86	3.16	3.50
Average	2.17	2.38	2.70	3.00	3.15

Source: Compiled from official statistics of the U.S. Department of Commerce.

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