

UNITED STATES TARIFF COMMISSION

SYNTHETIC ORGANIC DYES AND PIGMENTS:
WORKERS OF THE
LINDEN, N.J., PLANT OF
GAF CORP.

Report to the President
on Worker Investigation No. TEA-W-214
Under Section 301(c)(2) of the Trade Expansion Act of 1962



TC Publication 628
Washington, D. C.
November 1973

UNITED STATES TARIFF COMMISSION

Catherine Bedell, *Chairman*

Joseph O. Parker, *Vice Chairman*

Will E. Leonard, Jr.

George M. Moore

J. Banks Young

Italo H. Ablondi

Kenneth R. Mason, *Secretary*

Address all communications to

United States Tariff Commission

Washington, D. C. 20436

CONTENTS

	<u>Page</u>
Report to the President-----	1
Finding of the Commission-----	2
Considerations supporting the Commission's finding-----	3
Information obtained in the investigation:	
Description of articles under investigation-----	A-1
Dyes-----	A-2
Pigments-----	A-9
U.S. Tariff treatment:	
Dyes-----	A-12
Pigments-----	A-13
U.S. producers:	
Dyes-----	A-14
Pigments-----	A-14
U.S. Consumption and trade:	
Dyes-----	A-14
Pigments-----	A-19
GAF Corp.:	
The corporation-----	A-23
The plant-----	A-28
Products of the Linden plant-----	A-32
* * * * * *	
Statistical appendix-----	A-63

FIGURES

1. Organizational components-----	A-25
2. Plant map-----	A-30

Appendix Tables

1. Synthetic organic dyes and pigments: U.S. rates of duty applicable to specified TSUS items, June 18, 1930, and GATT concessions to date-----	A-64
2. Acid black and other specified dyes, and colors, dyes and stains (items 406.10 and 406.50): U.S. rates of duty and imports for consumption, 1930, 1935-37, 1940, 1951, 1954, 1957, and 1959-72-----	A-66

3. Synthetic organic pigments (color lakes and toners) item 406.70: U.S. rates of duty and imports for consumption, 1930, 1935-37, 1940, 1951, 1954, 1957, and 1959-72----- A-67
4. Synthetic organic dyes: U.S. sales, imports for consumption, exports of domestic merchandise, and apparent consumption, 1968-72----- A-68
5. Dyes by application class: U.S. sales (including for export), general imports and ratio (percent) of imports to U.S. sales, 1968-72----- A-70
6. Synthetic organic dyes: U.S. imports for consumption, by selected TSUS items, 1968-72----- A-71
7. Synthetic organic pigments (color lakes and toners): U.S. sales, imports for consumption, exports of domestic merchandise, and apparent consumption, 1968-72----- A-72

Note.--The whole of the Commission's report to the President may not be made public since it contains certain information that would result in the disclosure of the operations of an individual concern. This published report is the same as the report to the President, except that the above-mentioned information has been omitted. Such omissions are indicated by asterisks.

REPORT TO THE PRESIDENT

U.S. Tariff Commission,
November 19, 1973.

To the President:

In accordance with sections 301(f)(1) and (f)(3) of the Trade Expansion Act of 1962 (76 Stat. 872; 19 U.S.C. 1801), the U.S. Tariff Commission herein reports the results of investigation No. TEA-W-211 made under section 301(c)(2) of the Act to determine whether, as a result in major part of concessions granted under trade agreements, articles like or directly competitive with synthetic organic dyes and pigments (of the types provided for in items 406.10, 406.50, and 406.70 of the Tariff Schedules of the United States) produced by the Linden, N.J. plant of the GAF Corp., New York, N.Y., are being imported into the United States in such increased quantities as to cause, or threaten to cause, the unemployment or underemployment of a significant number or proportion of the workers of such firm or an appropriate subdivision thereof.

The investigation was instituted on September 26, 1973, on the basis of a petition for adjustment assistance filed September 20, 1973, under section 301(a)(2) of the Act.

Public notice of the investigation was published in the Federal Register (38 F.R. 27340) on October 2, 1973. No public hearing was requested and none was held.

In the course of its investigation, the Commission obtained information from officials of GAF Corp., officials of the General Industrial Workers Union, customers of GAF Corp.'s Linden plant, fieldwork by the Commission's staff, official Government statistics, and its own files.

Finding of the Commission

On the basis of its investigation, the Commission 1/ finds unanimously that articles like or directly competitive with synthetic organic dyes and pigments (of the types provided for in items 406.10, 406.50, and 406.70 of the Tariff Schedules of the United States) produced by the Linden, N.J. plant of the GAF Corp., New York, N.Y., are not, as a result in major part of concessions granted under trade agreements, being imported into the United States in such increased quantities as to cause, or threaten to cause, the unemployment or underemployment of a significant number or proportion of the workers of that firm or an appropriate subdivision thereof.

1/ Chairman Bedell and Commissioner Moore did not participate in the decision.

Considerations Supporting the Commission's Finding

This investigation relates to a petition filed on behalf of certain workers of the Linden, N.J. plant of the GAF Corp. The Linden plant consists of a complex of buildings in which a variety of chemical products have been produced. Dyes, pigments, and intermediates therefor were manufactured in three of the buildings. In recent years the great bulk * * * of the output of dyes at the Linden plant have consisted of vat dyes of the anthraquinone class. Such dyes are used primarily to dye cotton and other cellulosic fibers. The pigments produced at the Linden plant have consisted primarily of those in the phthalocyanine class which are used in paints, printing inks, paper coatings, textile printing, and rubber and plastic colorations. The production of dyes, pigments, and related intermediates at Linden is being phased out by the GAF Corp.; output of those products at Linden will be completely ended in the spring of 1974.

Sales of vat dyes in the United States by domestic producers increased from 52.2 million pounds in 1968 to 56.3 million pounds in 1972. Imports of vat dyes increased from 4.6 million pounds in 1968 to 10.2 million pounds in 1972. The increase in both sales of domestic producers and imports is attributable to increased demand for synthetic indigo (vat blue 1) and vat blue 43. Both synthetic indigo and vat blue 43 are less expensive than other vat dyes and both fade more quickly than other vat dyes. Because of these characteristics, the two dyes are used in the manufacture of the ordinary denim fabrics, which consumers prefer to fade quickly. In recent years, the consumption of denim

fabrics has grown greatly. Consequently, the use of synthetic indigo and vat blue 43 in 1972 was about 2 1/2 times that in 1968; both domestic production and imports rose sharply in that period. During the period 1968-72, however, the Linden plant did not produce either synthetic indigo or vat blue 43.

The U.S. market for vat dyes other than synthetic indigo and vat blue 43 has weakened in recent years. As indicated above, vat dyes are used mostly to dye cotton and other cellulosic fibers, which has not been a growing market. Consequently, sales of vat dyes (excluding synthetic indigo and vat blue 43) by domestic producers declined from * * * million pounds in 1968 to * * * million pounds in 1972. Imports of such vat dyes also declined--from 1.8 million pounds in 1968 to 1.5 million pounds in 1972. Such imports, moreover, have not constituted a large part of the U.S. supply of such dyes. In the declining market, sales of vat dyes by the Linden plant decreased from * * * million pounds in 1968 to * * * million pounds in 1972. According to industry sources, the U.S. consumption of vat dyes by the textile industry will decline in the future from the 1972 level. In the face of the decreased demand for the types of vat dyes produced at Linden and the prospects of a continued decline in demand, the GAF Corp. determined and announced that it would discontinue the production of dyes at Linden. Other types of dyes which were made at Linden (disperse dyes), as well as some vat dyes, will be produced at GAF's plant located at Rensselaer, N.Y., which produces dyes used primarily in the synthetic fiber market.

In addition to the decrease in demand for vat dyes of the types produced at the Linden plant, the GAF Corp. has been faced with increased

costs of production at that plant. The buildings devoted to dye and pigment production at the Linden plant are all more than 35 years old. * * * * *

Although the equipment for pigment production is modern, its use is dependent upon dye operations. Moreover, since 1969, the Linden plant has depended upon imports of intermediates for its production of vat dyes and pigments, as have most other domestic producers. According to company officials, however, the Linden plant has faced higher costs for its intermediates than major domestic competitors which are subsidiaries of foreign companies that produce such intermediates or which have subsidiaries abroad producing the intermediates.

* * * * *

Finally, the Linden plant has had serious problems with acidic and mercuric pollution. Although GAF has developed the technology to reduce such pollution to acceptable levels, the cost of installing such equipment at the Linden plant has to be weighed against a decline in demand for the types of vat dyes produced. The anticipation of such costs undoubtedly entered into the company decision to cease the production of dyes and pigments at, and shift of production of some dyes from, the Linden plant.

On the basis of the foregoing, we have determined that synthetic organic dyes and pigments are not, as a result in major part of concessions granted under trade agreements, being imported into the United States in such increased quantities as to cause, or threaten to cause, the unemployment or underemployment of a significant number or proportion of the workers at the Linden, N.J., plant of the GAF Corp.

INFORMATION OBTAINED IN THE INVESTIGATION

Description of Articles Under Investigation

The Linden, N.J., plant of GAF, where the petitioning workers are employed, produces a variety of chemical products, including synthetic organic dyes, toners (i.e., pigments), surfactants (surface-active agents), intermediates used in the production of these products, and agricultural chemicals.

During the period beginning the last 2 months of 1973 and the first 3 months of 1974, the Linden plant will discontinue the production of all synthetic organic dyes, toners, and intermediates used in the manufacture of those dyes and pigments. One surfactant also will be discontinued. The products to be discontinued accounted for about * * * percent of the value of the plant's sales in 1972. The Linden plant will continue to operate, producing mainly surfactants, agricultural chemicals, and intermediates used in the production of surfactants and agricultural chemicals.

In 1972, the dyes produced at the Linden plant accounted for * * * percent of the quantity and * * * percent of the value of the plant's sales of articles being discontinued; pigments accounted for * * * percent, and * * * percent, respectively; intermediates, * * * percent and * * * percent, respectively. The surfactant to be discontinued accounted for about * * * percent of the quantity and * * * percent of the value of sales of the products being discontinued.

The principal class of dyes at GAF's Linden plant are vat dyes; in 1972, vat dyes accounted for about * * * percent of the plant's total quantity of dye sales and about * * * percent of the total value of the plant's

dye sales. Disperse dyes accounted for about * * * percent of the plant's dye sales quantity in 1972, and about * * * percent of the 1972 dye sales value. Most of the disperse dye operations will be transferred to the GAF Corp's plant at Rensselaer, N.Y., while the vat dye operations will be discontinued.

The most important pigments being discontinued at Linden belong to a family of compounds known as phthalocyanines. In 1972, the principal phthalocyanine pigments (Blue 15 and Green 7) accounted for about * * * percent and about * * * percent of the Linden's plant's total pigment sales quantity and value, respectively. These two pigments are used mainly in paints sold to the automobile industry.

Dyes

Dyes are color-producing substances that are used to impart color to other materials. Dyes are mainly used (about two-thirds) in the coloring of textiles (natural and manmade); lesser amounts are consumed in foods, drugs, leather, paper, plastics, and other materials. There are mineral (inorganic) dyes as well as organic (natural and synthetic) dyes; today, there are thousands of synthetic dyes, and they have almost entirely replaced the mineral and natural dyes because of lower costs and superior properties.

All organic dyes are benzenoid (i.e., aromatic) and are very complex chemicals; in fact, some dyes (e.g., sulfur dyes) are still of unknown chemical structure. Because of this, systematic chemical names are rarely used in a discussion of dyes. Dyes can be discussed in terms of their common name or trade name; however, the dyes are more frequently classified and

referred to according to their Colour Index 1/ name and number. For example, Vat Black 25 (the Colour Index name and number) has the common name of Olive T, while its systematic chemical name is 3-(1-anthraquinonylamino)-anthra[2,1,9-m]naphtha[2,3-h]acridine-5,10,15-(1-H)-trione.

The following table lists dyes by their class of application and by the major materials to which dyes are applied, by application class.

1/ Colour Index, Third Edition (1971), published at Yorkshire, England and Research Triangle Park, N.C., by "The Society of Dyers and Colourists", with acknowledgements to the American Association of Textile Chemists and Colorists.

Dyes: By class of application, and by principal use, by application class

Class of application <u>1/</u>	Major materials to which dyes are applied-- by application class
Acid-----	Nylon (polyamides), wool, silk, and acrylics.
Azoic compositions-----	Cotton, other cellulose fibers, rayon, silk, wool, and fur.
Basic-----	Acrylics, cotton, polyester, nylon, leather, paper, wool, and other cellulosic fibers.
Direct-----	Cotton, other cellulosic fibers, paper, and nylon.
Disperse-----	Polyester, nylon, acrylics, cellulose acetate and rayon.
Fiber-reactive-----	Cotton and other cellulosic fibers, rayon, silk, and wool.
Fluorescent brightening agents-----	In soaps, washing powders, and detergents--counteracts "yellowness" in textiles.
Food, drug, and cosmetic colors-----	Food, drugs, and cosmetics.
Mordant-----	Cotton, linen, and rayon.
Solvent-----	Soluble in organic solvents--used in inks, stains, varnishes, gasoline, lacquers, coloration of candles, sealing waxes and polishes, and plastics.
Vat-----	Cotton, linen, rayon, and cellulose acetate.
All other <u>2/</u> -----	Cotton for sulfur; cotton and linen for ingrain; and cotton, fur, and hair for oxidation bases.

1/ Excluded from this list are the azoic compounds: Fast color bases, fast color salts, and Naphthol AS and derivatives (TSUS item 406.80) since in themselves they have no tinctorial properties--only when a fast color base or fast color salt is combined with one of the Naphthols is color produced.

2/ Includes principally oxidation bases, ingrain dyes, and sulfur dyes.

Source: Class of application, U.S. Tariff Commission, Synthetic Organic Chemicals, United States Production and Sales, 1971.

Synthetic organic dyes can also be classified by chemical composition (e.g., azo, anthraquinone, phthalocyanine, stilbene, triarylmethane, etc.), but this tends to be confusing as dyes of very similar chemical structure often are used in very diverse application classes.

Certain dyes are sometimes referred to as "fast"; this term refers to neither a chemical class nor an application class. Rather, the term describes characteristics of certain dyes such as "wash fast", those dyes that resist fading during washing; and "light fast", those dyes which resist fading on exposure to light. Some dyes are also "fast" to other chemical, mechanical, or physical color destroying agents.

During the period 1968-72, there have been commercial developments which have affected the demand for dyes. For example, the trend in fabrics in recent years has been away from 100-percent cotton to blends of cotton and manmade fiber (e.g., 70 percent polyester/30 percent cotton). The result of this has been that cotton fiber consumption by U.S. textile mills has declined irregularly from 4,146 million pounds in 1968 to 3,841 million pounds in 1972 1/, or by more than 7 percent. This has adversely affected the production and sales of dyes used primarily on cotton and cellulose fibers (such as direct dyes and vat dyes). Also, the demand for brighter colors has increased the demand for fiber-reactive dyes in cotton dyeing at the expense of the older dyes, vat and direct, which are not capable of producing these bright colors (e.g., bright red). Therefore, the vat dyes and direct dyes are faced with a declining share within a declining market.

1/ Source: Economic and Statistical Analysis Division, Economic Research Service, U.S. Department of Agriculture.

Conversely, total U.S. textile-mill consumption of manmade fibers (see source, previous page) has increased irregularly from 9,781 million pounds in 1968 to 11,648 million pounds in 1972, or by 19 percent. Therefore, dyes used mainly in manmade fibers, such as the acid dyes, basic dyes, and the disperse dyes, have shown rapid growth in recent years.

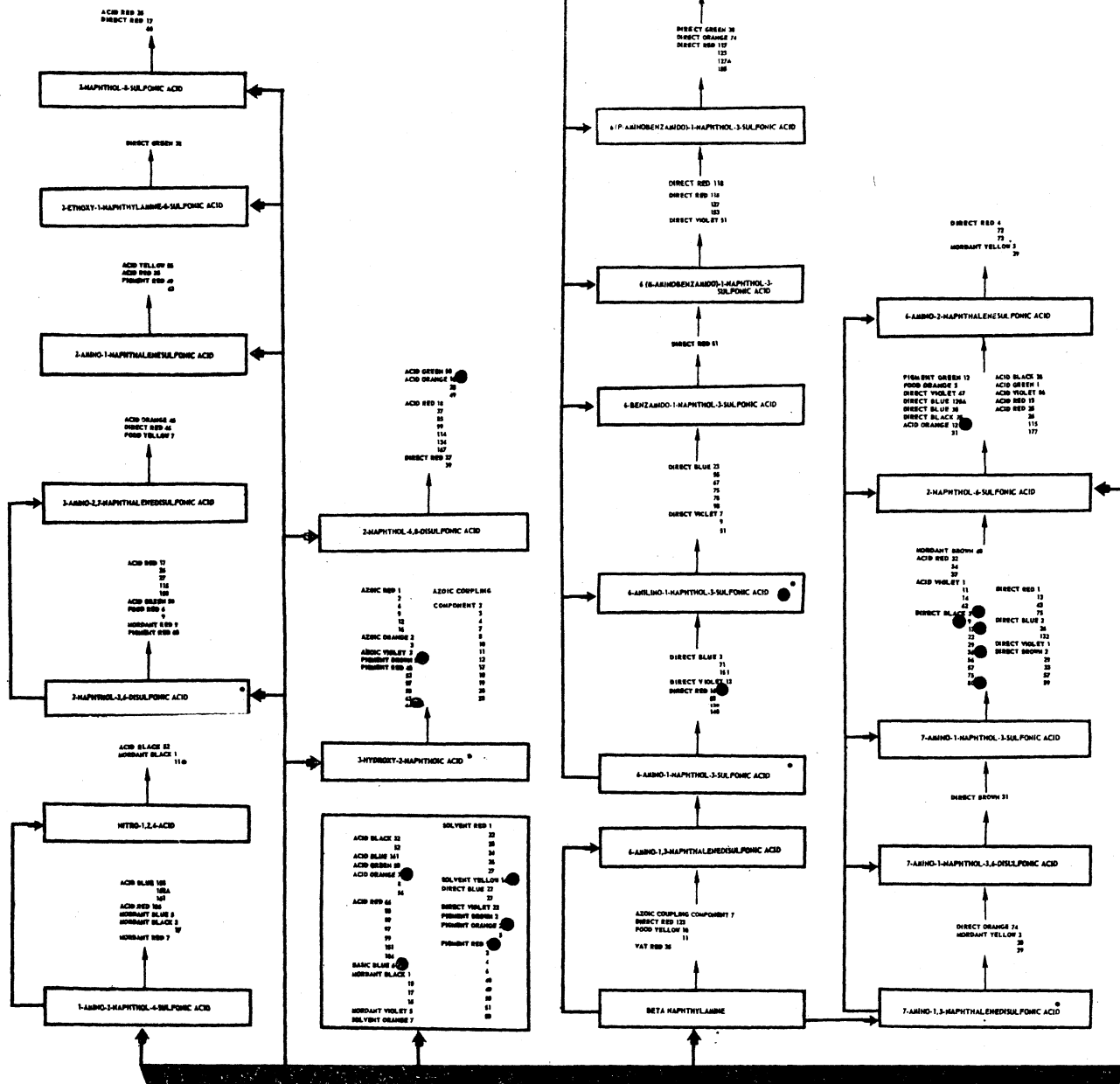
Trade sources report that the decline of the commercial laundry also has decreased the need for vat dyes. Commercial laundries washed all the pieces together in water that was at about 200° F. and which contained chlorine. If the material ~~were~~ not dyed with a vat dye, it came home from the laundry several shades lighter than it went in. The home washer allows individuals to segregate their laundry, add chlorine only to whites, and wash the colored articles at a reduced temperature--thereby allowing other dyes to be used. In addition, the vat dyes have lost most of their share of the textile printing goods market to resin-bound pigments.

The Federal Water Pollution Control Act or F.W.P.C.A. (62 Stat 1155 Chap. 758, Public Law 845, dated June 30, 1948) and the Amendments of 1972 to the F.W.P.C.A. (public Law 92-500, dated October 18, 1972) 1/ have affected all industries to some degree. The older dye plants, such as Linden, have been especially hard hit, no matter where located, because their effluent and waste-treatment systems are generally outmoded; plants located in states, such as New Jersey, which have extremely stringent discharge rules have also been especially affected.

1/ The Federal Water Pollution Control Act allows each state to set its own standards, provided those standards are at least as strict as the guidelines of the act. The act is enforced by the Environmental Protection Agency (EPA).

The starting materials used in producing synthetic organic dyes include benzene, toluene, xylene, naphthalene, anthracene, and other raw primary products. Before these raw materials reach the level of a dye, they pass through many processes such as nitration, reduction, halogenation, amination, sulphonation, oxidation, and others. The resulting products, precursors of dyes, are known as "intermediates." From the basic raw materials literally thousands of intermediates can be synthesized. To further complicate an already complicated subject, products which are dyes in their own right (i.e., can impart color to a substrate) are also used as intermediates in the production of either pigments, or of other dyes which are further up the synthesis scale. (For an illustration of this synthesis procedure, see the diagram on the next page, courtesy of the American Cyanamid Co., Wayne, N.J.).

Because of the great number of dyes and the limited quantity in which they are produced, the finished dyes are made from their intermediates by the batch-process method of production (as opposed to a continuous-flow process method used to obtain products manufactured in large volume). Synthetic organic (benzenoid) dyes and their intermediates are usually made in cast-iron or stainless-steel kettles that are often lined with rubber, glass (i.e., enamel), carbon blocks, or stainless steel and which have capacities of 500 to 10,000 gallons. Where possible, the manufacturing process is initiated on the highest floor in the plant and the product



BETA NAPHTHOL

SULFONIC ACID
CAUSTIC SODA
NAPHTHOL DIS
OSAL

advancement continues down to the ground-floor level, where the final products are obtained. This process permits a gravity flow of the materials which reduces the need for using pumps; pumps are often focal points for corrosion.

Pigments 1/

Pigments are both inorganic and organic. Inorganic pigments include many of natural origin, while virtually all organic pigments are obtained synthetically. Pigments differ fundamentally from dyes in that they are insoluble (or virtually so) coloring materials which are applied to the vehicle (e.g., paint, plastic, etc.) without prior solubilization. In other words, pigments are held to the substrate by a binding agent and are not absorbed by the substrate. **Pigments are** used in such products as aqueous and non-aqueous paints, textile printing, printing inks, paper coating, and rubber and plastic colorations. The organic and inorganic pigments are used interchangeably, to a degree, in the paint and printing-ink market. However, inorganic pigments are of lower tinctorial strengths and intensity (i.e., not as bright) than the organic pigments, which offsets the inorganic pigments' normally lower cost. The most important criteria by which pigments are evaluated are fastness to light, heat, solvents, and other chemicals. Also important are two of the properties mentioned above: strength, or tinting value and intensity, or brightness of hue. Organic pigments, like dyes, are known principally by their Colour Index number. They are available

1/ "In U.S.A...the term, "Toners" covers all full-strength pigments." Colour Index, Third edition (1971), V. 3, p. 3267.

commercially as color lakes and toners. Color lakes is a term used (in textile dyeing and in printing) to describe a water-insoluble derivative of a usually water soluble coloring material, as, for example, the chromium "lake" of a mordant dye. The lakes are prepared by precipitating a soluble dye onto the surface of an inorganic compound, known as a substrate. Toners, or full-strength colors, are insoluble organic pigments and do not require a substrate or base. Toners are marketed either at full strength or diluted (i.e., extended toners); they are far more important commercially than are the color lakes.

Chemically, organic pigments are closely related to organic dyes, and, like dyes, are made by the batch process. In fact, some dyes are also used as intermediates in the manufacture of pigments (the reverse can also be true). The neutral, metal-free compounds [as opposed to negative charge (anionic) and positive charge (cationic) lakes, as well as a small group of metal complexes] are the largest and most widely used group of pigments, and they are made principally from azo compounds--the monazo and diazo dyes. The azo pigment differs from its corresponding dye in that the molecule is devoid of the solubilizing groups found in dyes, such as $-SO_3H$ (sulphonic acid group) and $-COOH$ (carboxylic acid group).

The following table lists the pigments by chemical class and the resulting color range of each class.

Organic pigments: By chemical class and by color range

Chemical class	:	Color range
Azo coupling-----	:	Yellow
Azo condensation-----	:	Yellow, orange, red
Derivatives of 4,5,6,7-tetrachloro-:	:	
isoindolin-1-one-----	:	Greenish-yellow, orange, red, brown
Anthraquinone-----	:	Yellow, orange, violet
Perinone, Perylene-----	:	Orange, red, violet
Quinacridone-----	:	Maroon, scarlet, red, magenta, violet
Dioxazine-----	:	Violet
Phthalocyanines-----	:	Blue, green

The phthalocyanine pigments, when first commercialized in 1935, set new standards in fastness properties, brilliance, and color strength that were not equaled by other pigments in the yellow, red, and violet spectrums for another 25 years.

U.S. Tariff Treatment 1/Dyes

The rates of duty on the synthetic organic dyes covered here vary depending on whether the dye is a specified dye, such as acid black, or is part of the basket category--colors, dyes, and stains (except toners).

The table below shows the current rates, the 1967 rates, and the 1930 rates.

Acid black and other specified dyes; and colors, dyes, and stains (except toners): Current (1973) rates of duty, the 1967 (pre-Kennedy Round) rates, and the 1930 rates

(Cents per pound; percent ad valorem)					
TSUS No.	Brief description	Current rate of duty	1967 rate of duty	1930 rate of duty	
406.10	Acid black and other specified dyes-----	16%	32%	7¢ + 45%	
406.50	Colors, dyes, and stains (except toners)-----	20%	40%	7¢ + 45%	

1/ The ad valorem rate is assessed on the "American selling price" of a similar competitive article of United States manufacture or, if no such similar competitive article is produced domestically, on "United States value." American selling price and United States value are defined in section 402 and 402(a) of the Tariff Act of 1930, as amended. For a further discussion on American selling price, see "Report to the Special Representative for Trade Negotiations on Investigation No. 332-47 Under Section 332 of the Tariff Act of 1930." (TC Publication 181, July 1966); or "Customs Valuation", a Report to the Committee on Finance of the United States Senate--Investigation No. 332-68 (TC Publication 540, January 1973).

Based on imports in 1972, the ad valorem equivalent of the 1930 rate of duty is 46.8 percent for item 406.10 and 47.3 percent for item 406.50.

Table 1 in the appendix shows the reductions in rates of duty resulting from trade-agreement concessions granted under the General Agreement on Tariffs and Trade (GATT 1/) for specified dyes, as well as for colors, dyes, and stains (except toners) of the types now dutiable under items 406.10 and 406.50. Table 2 shows U.S. imports of synthetic benzenoid dyes admitted under the Tariff Schedules of the United States (TSUS) items mentioned above and the applicable rates of duty.

Pigments

The current rate of duty for item 406.70--color lakes and toners (organic pigments)--is 20 percent; the various trade-agreement concessions are reported in table 1.

Based on imports in 1972, the ad valorem equivalent of the 1930 rate of duty was calculated at 47.7 percent for item 406.70. Table 3 shows imports of color lakes and toners derived from benzenoid crudes or intermediates and natural alizarin and natural indigo admitted under the above-mentioned TSUS item and the applicable rates of duty.

1/ The negotiations with Switzerland (1936), which resulted in concessions, were bilateral.

U.S. Producers

Dyes

In 1972, synthetic benzenoid dyes were produced in the United States by 45 companies, seven of which are U.S. subsidiaries of foreign-owned companies.

Fifteen companies produced vat dyes in 1972, four of which are U.S. subsidiaries of foreign dye manufacturers.

Pigments

Organic toners and lakes were produced domestically by 34 companies in 1972, five of which are U.S. subsidiaries of foreign-owned companies.

The pigments, Blue 15 and Green 7, were produced by a total of 22 companies in 1972--all 22 firms produced the Blue 15; 11 firms produced the Green 7, while 11 companies produced both pigments. Among these 22 companies, there were two U.S. subsidiaries of foreign firms that produced pigment Blue 15 in 1972, and one which produced Green 7 that year.

There was a total of 22 companies which produced both dyes and pigments in 1972.

U.S. Consumption and Trade

Dyes

During the period 1968-72, apparent annual U.S. consumption of synthetic organic dyes increased from about 209 million pounds in 1968 to about 250 million pounds in 1972, or by more than 19 percent (table 4). Sales are compared with imports since part of the dyes produced annually are

themselves used as intermediates in the manufacture of either pigments or of other dyes which are higher up the synthesis ladder. During the period 1968-72, production annually exceeded sales quantity from a low of 3 percent in 1972 to a high of 9 percent in 1969.

During the same period, U.S. sales of benzenoid dyes increased from about 211 million pounds in 1968 to about 248 million pounds in 1972, or by more than 17 percent, while during these years imports increased from nearly 15 million pounds in 1968 to about 31 million pounds in 1972, or by about 107 percent. The import share of the domestic market increased steadily from 7.1 percent of the total in 1968 to 12.4 percent in 1972.

Table 5 shows the ratio of imports of dyes by application class to U.S. sales, including for export, of domestically produced dyes by application class. As can be seen, the ratio of imports of fiber-reactive dyes to U.S. sales of fiber-reactive dyes is the highest (about 78 percent in 1972). This is explained by the fact that four foreign producers hold the patents on this class of dyes (their U.S. subsidiaries are: ICI America, Inc., American Hoechst Corp., Ciba-Geigy Corp., and Verona Corp.--Baychem). In 1972, the quantity of imports of disperse dyes was equivalent to 26 percent of the U.S. sales quantity of disperse dyes; imports of vat dyes were equivalent to 18 percent of U.S. sales quantity of vat dyes. In terms of import quantity, vat dyes were the most important in 1972, followed by disperse dyes.

As can be seen from table 5, disperse dyes have exhibited the greatest sales increase from 1967-72, advancing from 17 million pounds in 1967 to 38 million pounds in 1972, or by over 123 percent. Sales of vat dyes,

the principal class of dyes at the Linden plant, increased irregularly from 54 million pounds in 1967 to 56 million pounds in 1972, or by about 4 percent. 1/ * * * However, the increase in sales of vat dyes is accounted for principally by two dyes; vat blue 1 or synthetic indigo (produced domestically only by Allied Chemical Corp. in 1972, and vat blue 43 (produced domestically only by the Martin Marietta Corp. in 1972). In 1972, these two vat dyes accounted for over * * * percent of the U.S. sales quantity (including for export) of all domestically produced vat dyes.

The following tabulation shows the production and sales individually and cumulatively of these two dyes of the period 1967-72.

* * * * *

1/ * * *

The above tabulation shows that the cumulative sales quantity of these two vat dyes increased irregularly from * * * million pounds in 1967 to * * * million pounds in 1972, or by * * * percent. These two dyes are used almost exclusively in cotton blue denims--these dyes fade quickly and wash out rapidly (are known as "fugitive" dyes), resulting in a worn appearance, which is the "in" thing among teenagers and young adults. As can be seen from the above tabulation, these two vat dyes are low-cost dyes; in 1972, all vat dyes had an average unit value of \$1.21 per pound; all blue vats had an average unit value of 61¢ per pound. All synthetic organic dyes had an average unit value of \$1.89 per pound in 1972.

The following tabulation shows U.S. sales of vat dyes, including for export, (excluding vat blue 1 and vat blue 43), and a comparison of general imports (excluding vat blue 1 and vat blue 43) to sales of vat dyes for the period 1967-72:

(Quantity in millions of pounds)			
Year	: U.S. sales : of : vat dyes	: General : imports of : vat dyes	: Ratio of : imports to : U.S. sales : <u>Percent</u>
1967-----	: * * * :	: 1.0 :	: * * *
1968-----	: * * * :	: 1.8 :	: * * *
1969-----	: * * * :	: 2.0 :	: * * *
1970-----	: * * * :	: 1.6 :	: * * *
1971-----	: * * * :	: 1.4 :	: * * *
1972-----	: * * * :	: 1.5 :	: * * *

Source: Sales, U.S. Tariff Commission, Synthetic Organic Chemicals, United States Production and Sales; general imports, U.S. Tariff Commission, Imports of Benzenoid Chemicals and Products.

Note.--General imports of vat blue 1 (item 406.04) ranged during the period from a low of 1.5 million pounds in 1967 (vat blue 1 represented 60 percent of all the general imports of vat dyes that year) to a high of 8.4 million pounds in 1972 (vat blue 1 accounted for over 82 percent of that year's general imports of vat dyes). Imports of vat blue 43 (item 406.50) have been negligible and infrequent.

It can be seen from the above tabulation that U.S. sales of the more typical vat dyes, excluding vat blue 1 and vat blue 43, have declined irregularly from * * * million pounds in 1967 to * * * million pounds in 1972, or by * * * percent, while imports of vat dyes, excluding vat blue 1 and vat blue 43, have increased irregularly from 1.0 million pounds in 1967 to 1.5 million pounds in 1972, or by 50 percent.

In recent years, imports of dyes have come mainly from West Germany, Switzerland, and the United Kingdom, with lesser amounts coming from France and Japan. In 1972, West Germany supplied 50 percent of the quantity of imports under item 406.50, which, in turn, accounted for 86 percent of the quantity of all dye imports covered here (i.e., items 406.02, .04, .10, .50, and .60).

A feature of the import trade in dyes is that imports consist predominantly of intracompany transfers between foreign dye manufacturers and their U.S. subsidiaries. In 1972, over 95 percent (by value) of all dye imports consisted of such intracompany transfers. It is estimated that these foreign subsidiaries, combining their imports of dyes and their sales of U.S.-produced dyes, supply about one-half of the value of the domestic dye market.

Table 6 shows imports of benzenoid dyes by selected TSUS item. As shown in table 6, imports of acid black and other specified dyes in 1972 amounted to 1,783 thousand pounds, valued at \$6,714,000, with an average dutiable value of \$3.77 per pound. Imports in 1972 of colors, dyes, and stains (except toners) amounted to 26,394 thousand pounds, valued at \$79,751,000, with an average dutiable value of \$3.03 per pound.

Exports of dyes increased irregularly from 16 million pounds in 1968 to 29 million pounds in 1972, or by 8 percent. Canada has been the principal export market during this period. Official export data are not available by application class; however, industry estimated exports of dyes on a quantity basis by application class in 1972 as follows: Acid, 15 percent; basic, 8 percent; direct, 10 percent; disperse, 30 percent; fiber-reactive, 2 percent; sulfur, 10 percent; vat, 15 percent; and all other (including mordant, solvent, and so forth), 10 percent.

Industry sources further report that exports financed by the Agency for International Development (A.I.D.) have accounted for between 15 percent and 20 percent of the total, annual exports of synthetic organic dyes. Exports of dyes and pigments combined (not available separately) that have been financed by A.I.D. have ranged irregularly during 1968-72 from a low of \$2,447 thousand in fiscal 1969 to a high of \$11,372 thousand in fiscal 1971, and declined to \$5,646 thousand in 1972.

Pigments

Consumption of organic pigments (color lakes and toners--principally toners) increased irregularly from 40 million pounds in 1968 to 47 million pounds in 1972 (table 7), or by 18 percent. U.S. sales, including for

export, of domestically produced pigments increased irregularly from 46 million pounds in 1968 to about 53 million pounds in 1972, or by 15 percent. During the period 1968-72, organic pigment production exceeded sales quantity annually from a low of 17 percent in 1968 to a high of 24 percent in 1971 and 1972. Part of the annual output is used captively by the producers in the production of paints and printing inks. Toners annually accounted for about 93 percent of the total pigment sales quantity--color lakes, the remainder. (Note: In 1972, the combined total sales quantity of dyes and pigments amounted to 301.5 million pounds; of this total, pigments accounted for only 17.6 percent).

Imports of organic pigments increased irregularly from 1,653 thousand pounds in 1968 to 4,612 thousand pounds in 1972, or by 179 percent; and imports also increased regularly as a percentage of consumption from 4.1 percent in 1968 to 13.2 percent in 1971 before declining to 9.8 percent in 1972. Switzerland, West Germany, and the United Kingdom have been the principal sources. In 1972, Switzerland accounted for nearly 47 percent of the total imports under item 406.70.

It should be noted that imports of the pigment intermediate, copper phthalocyanine base (TSUS item 403.60), have increased steadily during the period 1968-72, as shown in the following tabulation. Japan has been the principal source of this material.

Phthalocyanine crude copper salt 1/: General imports, 1968-72

<u>Year</u>	<u>1,000 pounds</u>
1968 -----	1,076
1969-----	2,400
1970-----	3,176
1971-----	4,698
1972-----	5,748

1/ In 1967, imports of phthalocyanine crude copper salt amounted to only 213,000 pounds.

Source: U.S. Tariff Commission, Imports of Benzenoid Chemicals and Products.

This intermediate is readily convertible by a simple reaction to the pigment blue 15, C.I. 74 160--either the alpha form or beta form.

The 1972 imports of phthalocyanine crude copper salt represent about 67 percent of that year's apparent domestic consumption (8,600 thousand pounds for pigment blue 15, C.I. 74 160). During the period 1968-72, general imports of the pigment blue 15 1/ itself increased irregularly from only 182,000 pounds in 1968 to about 436,000 pounds in 1972, or by 240 percent.

As with dyes, exports of pigments are combined into one total. However, industry sources have furnished the Commission with their estimates of exports of toners vs exports of color lakes. It is the consensus of these sources that toners increased from about 75 percent of the export quantity in 1968 to 85 percent in 1970, and accounted for nearly 90 percent of the total pigment exports in 1972.

1/ Pigment Blue 15 is the principal pigment produced at the GAF Corp.'s Linden plant.

During the period 1968-72, industry sources estimate that between 10 and 15 percent of the total, annual exports of organic pigments were financed by A.I.D. Exports of pigments increased steadily from 7,345 thousand pounds in 1968 to 10,588 thousand pounds in 1972, or by 44 percent.

Canada has been the principal export market during the period, 1968-72.

The corporation

GAF Corporation was incorporated in Delaware on April 26, 1929, as the American I.G. Chemical Corp., and adopted its present title on April 23, 1968. GAF Corporation, which has its corporate headquarters in New York, N.Y., is organized into the following five sales and production divisions: Chemical Products, Photographic Products, Business Systems Products, Building Products, and Industrial Products. Among GAF's principal domestic subsidiaries are GAF Export Corp., of New York, N.Y., and GAF International Corp., New York, N.Y. At the end of 1972, GAF corporation had domestic manufacturing plants and research laboratories in thirty-one states. These operations included fifty-four plants, twenty-four research laboratories, two hundred and fifty-seven sales offices, eighty-eight distribution centers, seventeen photofinishing plants, and five photo equipment repair centers.

I.G. Farbenindustrie A.G. of Germany retained control of General Aniline and Film Corp. (now GAF Corporation) until 1942, when the U.S. Government seized control of the company under the World War II Alien Property laws. The U.S. Government controlled the company until GAF's shares were sold to the public in March, 1965.

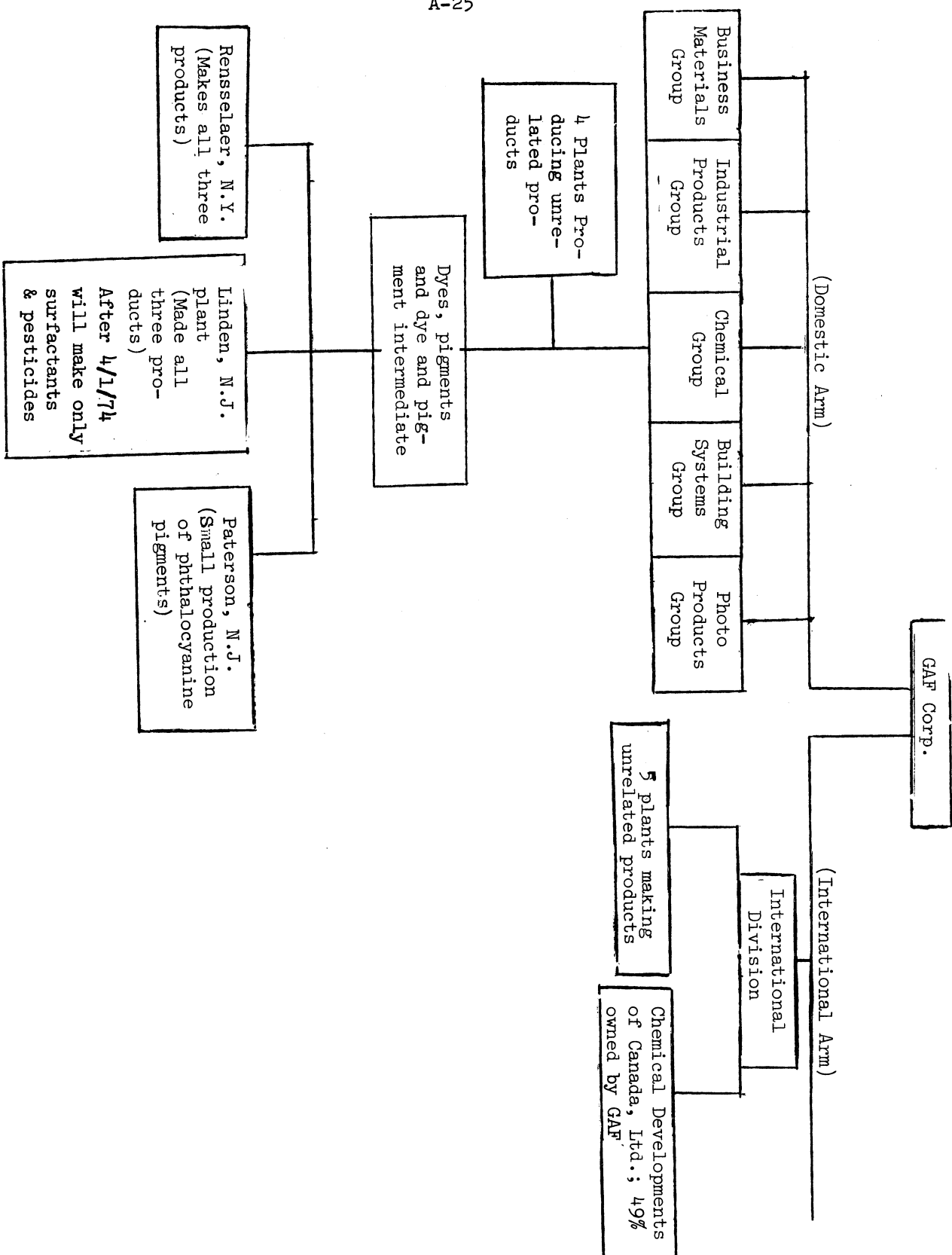
GAF Corporation maintains principal manufacturing and marketing subsidiaries in 18 foreign countries while GAF products are now marketed in over 85 foreign countries. The major foreign subsidiaries are GAF (Belgium) N.V., GAF (Great Britain) Ltd., GAF (Netherlands) N.V., GAF (Canada) Ltd., and GAF (Australasia) Pty. Ltd. Slide projectors, diazo reproduction machines, and photographic film, paper, and servicing are the major products of those subsidiaries. GAF's major foreign affiliates are Chemical Developments of Canada, Ltd. (49 percent owned by GAF and 51 percent by Domtar, Ltd.) and Sawyer's Asia Pty. Ltd., of India (49 percent owned by GAF.)

GAF Corporation's product line is diversified and includes these major items: textile, industrial, and specialty chemicals, surfactants, pigments, dyestuffs, photo products, business machines, diazo reproduction, audiovisual, and micrographic products, building materials, and industrial products including felt filters, asbestos materials, and insulation. GAF also processes film. GAF net sales in 1972 were 768.5 million dollars, up 12 percent from the 1971 figure of 683.8 million dollars. GAF's net income for 1972 was \$27.7 million. This compares with \$21.9 million for the previous year before deducting an \$8.4 million extraordinary charge, or a net income of \$13.5 million for 1971. In both 1971 and 1972, the business systems group accounted for 12 percent net sales, building materials for 34 percent of net sales, and industrial products for 7 percent of net sales. For the chemical group, net sales decreased from 21 percent of total in 1971 to 20 percent in 1972 while the photo products group increased net sales from 26 percent of total in 1971 to 27 percent of total in 1972. Net sales from foreign operations accounted for 13.2 percent of net sales in 1971 and for 13.0 percent in 1972.

A figure showing the relevant organizational components of GAF Corp. appears on the following page.

In 1968 through 1972, dye and pigment production was carried on at the GAF plants in Linden, N.J., Paterson, N.J., and Rensselaer, N.Y. The vat dyes produced at Linden are dependent upon the production of cellulose-fiber (cotton textiles) while the Rensselaer dye production is focused on the synthetic textile market. Besides the Linden, Paterson, and Rensselaer plants, GAF

Figure 1.--Organizational Components



has chemical production facilities at Calvert City, Kentucky; Chattanooga, Tennessee; Huntsville, Alabama; and Texas City, Texas, but none of these other plants produce dyes, pigments, or dye and pigment intermediates.

Part of A-26 and all of A-27 are data relating to the Linden plant of the GAF Corp.

* * * * *

The plant

Chemicals have been produced at the Linden, N.J., plant since the late 1800's. Referring to the map of the plant (p. A-30), dye and pigments are produced in buildings 50, 52, and 53. Basic production of dyes and pigments is carried on in buildings 50 and 52, while non-chemical processes such as grinding and mixing of the dyes and pigments are carried on in building 53. Building 51 is a dye and pigment laboratory while final color examination of dyes and pigments is made in building 100.

Building 50, constructed in 1927, is three stories high with 28,600 square feet devoted to production. Building 52, also three stories high, was constructed in 1927 and expanded in 1948 and again in 1956. Building 52 had 28,600 square feet devoted to production, 7,800 to offices, and 8,650 to laboratories. Building 53, constructed in 1938, is five stories high and has 24,500 square feet devoted to production.

In general, the dye and pigment equipment which is now in use was installed at the time the buildings were constructed. There has been some replacement of worn out equipment.

* * * * *

According to GAF officials at Linden, the machinery presently used to make vat dyes can be used interchangeably to make other types of dyes such as acid, basic, direct, azoic, and azoic components.

At the present time, dyes, pigments, dye and pigment intermediates, pesticides, surface-active agents, and intermediates for pesticides and surfacants are being made at Linden. An index to the enclosed map (p. A-31) describes the division of plant property as to production of surfactants, pesticides, warehouse facilities, and sites of previous GAF production.

GAF plans to discontinue production at Linden as of the first quarter of 1974 for all products except surface-active agents, pesticides, and intermediates for surface-active agents and pesticides.

* * * * *

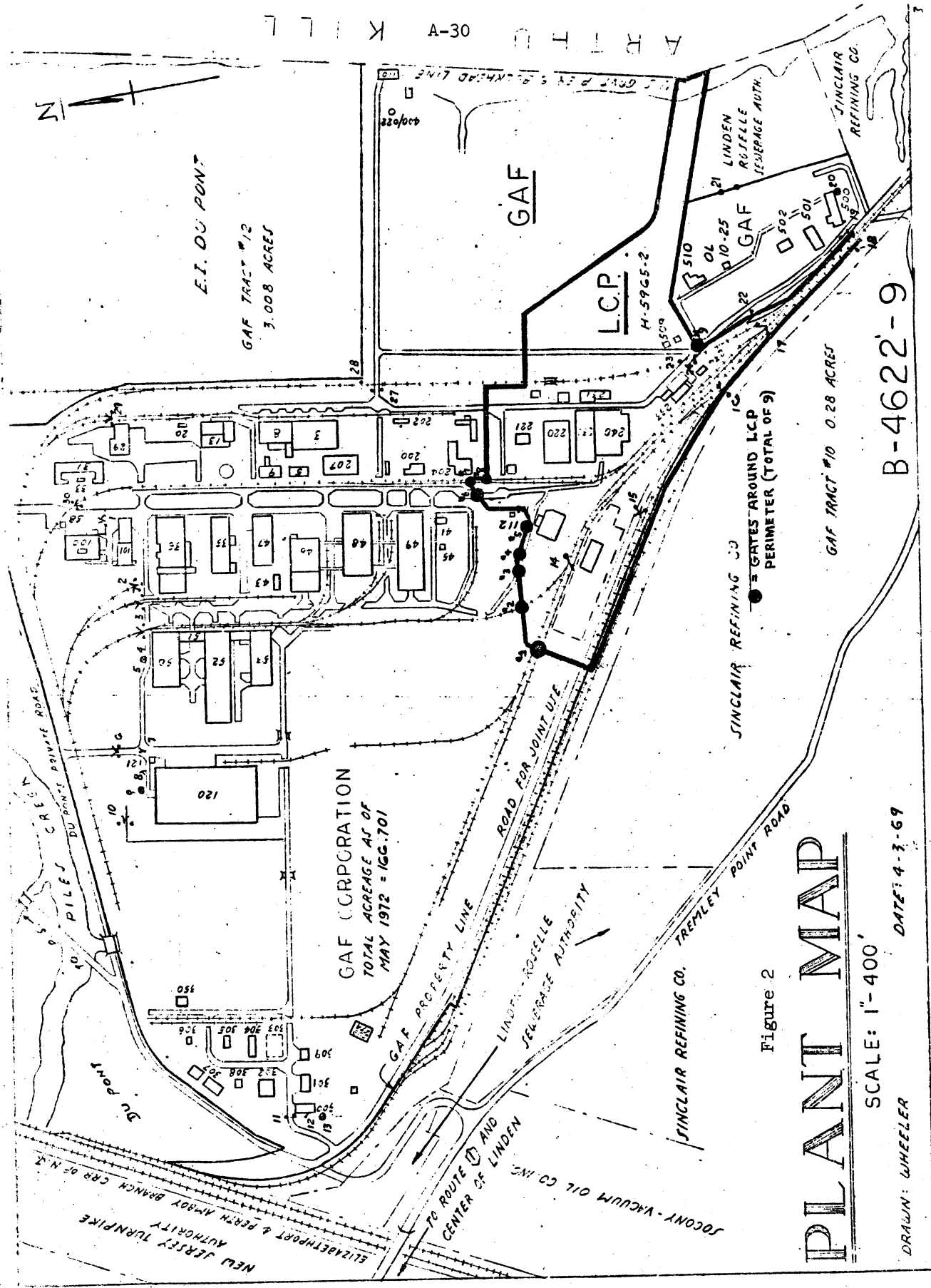


Figure 2

PLANT MAP

SCALE: 1"=400'

DATE: 4-3-69

DRAWN: WHEELER

B-4622-9

Index to GAF Linden Plant Map

Dye production buildings

Building 50: constructed in 1927; 3 stories high; 28,600 square feet devoted to production; basic production of dyes and pigments.

Building 52: 3 stories high; 28,600 square feet devoted to production; 7,800 to offices; 8,650 to labs; basic production of dyes and pigments; constructed in 1927, expanded in 1948 and again in 1956.

Building 53: Five stories high; 24,500 square feet devoted to grinding and mixing of dyes and pigments; constructed in 1938.

Note.--Buildings 50, 52, and 53 are interconnected by second and third story bridges.

Building 51: Laboratory.

Building 100: Final color examination of dyes and pigments.

Other buildings

- A. Building 49: Former production of dye and pigment intermediates; ceased in 1969.
- B. Building 36: Production and storage of surfactants.
- C. Building 46: Pesticide production.
- D. Buildings 300, 301, 309: Production of ethylene oxide; ceased in 1972; equipment is being scrapped or sold to machinery dealers.
- E. Buildings 23, 24, 234, 233, 240, 230, 220, 221, 231: Chlorine-caustic production; sold to Linden Chlorine Products in August 1972.
- F. Building 120: Central warehouse.

Products of the Linden plant

From 1968 through 1971, the principal chemicals produced at the Linden plant were dyes, pigments, dye and pigment intermediates, surface-active agents, pesticides, intermediates for surface-active agents and pesticides, ethylene oxide, chlorine and chlorine by-products. During 1972, production at Linden was substantially decreased so that only dyes, pigments, surface-active agents, pesticides, and related intermediates are the remaining products. With the closing of the dye and pigment works during the fall of 1973 and spring of 1974, only surface-active agents and pesticides will be produced.

A-32 through A-62 data relating to the Linden plant of the GAF Corp.

* * * * *

STATISTICAL APPENDIX

Table 1.--Synthetic organic dyes and pigments: U.S. rates of duty applicable to specified TSUS items, June 18, 1930, and GATT concessions to date 1/

TSUS item No.	Abbreviated description	Rate of duty	
		June 18, 1930	GATT concession 2/ Rate : Effective date
		<u>Cents per pound</u>	<u>Cents per pound</u> :
		<u>plus</u>	<u>plus percent ad</u> :
		<u>percent ad</u>	<u>valorem or per-</u> :
		<u>valorem</u>	<u>cent ad valorem</u> :
406.10	Acid black and other: specified: dyes-----	7 + 45	<u>3/4/40</u> :Feb. 15, 1936-June 30, 1962 <u>5/36</u> :July 1, 1962-June 30, 1963 <u>6/32</u> :July 1, 1963-Dec. 31, 1967 28.5 :Jan. 1-Dec. 31, 1968 25.5 :Jan. 1-Dec. 31, 1969 22 :Jan. 1-Dec. 31, 1970 19 :Jan. 1-Dec. 31, 1971 16 :Jan. 1, 1972
406.50	Colors, dyes, and: stains (except toners)--	7 + 45	<u>3/4/40</u> :Feb. 15, 1936-Dec. 31, 1967 36 :Jan. 1-Dec. 31, 1968 32 :Jan. 1-Dec. 31, 1969 28 :Jan. 1-Dec. 31, 1970 24 :Jan. 1-Dec. 31, 1971 20 :Jan. 1, 1972
406.70	Color lakes: and toners <u>7/</u>	7 + 45	6.3 + 40.5 :July 1, 1962-June 30, 1963 5.6 + 36 :July 1, 1963-Aug. 30, 1963 <u>8/40</u> :Aug. 31, 1963-Dec. 31, 1967 36 :Jan. 1-Dec. 31, 1968 32 :Jan. 1-Dec. 31, 1969 28 :Jan. 1-Dec. 31, 1970 24 :Jan. 1-Dec. 31, 1971 20 :Jan. 1, 1972

See footnotes on following page.

A-65
Footnotes to table 1

1/ "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 of 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"--Subpart C, headnote 6(a), Tariff Schedules of the United States.

For additional detail concerning "colors, dyes, stains, and related products", refer to the Tariff Schedules of the United States, Schedule 4, Part 1, subpart C headnotes 6b, 6c, and 6d; plus Subpart C statistical headnote.

2/ For concessions granted in the Kennedy Round, effective Jan. 1, 1968, the table shows staged rates that became effective up to and including Jan. 1, 1972.

3/ Effective Feb. 15, 1936, as a result of a bilateral agreement with Switzerland, the rate was converted from a compound rate to an ad valorem rate, subject to a compound minimum of 3.5¢ per pound plus 22.5 percent ad valorem.

4/ As part of a supplementary trade agreement with Cuba, effective Dec. 23, 1939, the rate of duty for that country was 32 percent, with a compound minimum of 2.8¢/lb. + 18 percent ad valorem.

5/ Subject to a compound minimum of 3.1¢/lb. + 20 percent ad valorem.

6/ Subject to a compound minimum of 2.8¢/lb. + 18 percent ad valorem.

7/ From Jan. 1, 1960, through Aug. 30, 1963, toners were classified separately and were dutiable during this period at 40 percent ad valorem (subject to a compound minimum of 3.5 cents per pound plus 22.5 percent ad valorem).

8/ On Aug. 31, 1963, the effective date of the TSUS, color lakes (which were dutiable at 5.6 cents per pound plus 36 percent ad valorem) and toners (which were dutiable at 40 percent ad valorem) were combined into one TSUS class. The rate was that previously applicable to toners, which were the more important of the two chemicals with respect to production as well as imports.

Note.--The effect of the import surcharge proclaimed by the President on Aug. 16, 1971 (Pres. Proc. 4074), was to increase the rate of duty on most imported products by the temporary imposition of an additional duty of 10 percent ad valorem or less, as provided for in new subpart C to Part 2 of the appendix to the TSUS. This surcharge was terminated Dec. 19, 1971 by Pres. Proc. 4098.

A-66

Table 2.--Acid black and other specified dyes, and colors, dyes, and stains (items 406.10 and 406.50): U.S. rates of duty and imports for consumption, 1930, 1935-37, 1940, 1951, 1954, 1957, and 1959-72 1/

Year	Rate of duty		Import	
	Cents per pound plus		Quantity.	
	percent ad valorem			
	or percent ad valorem			
	406.10	406.50	406.10	406.50
			<u>1,000</u>	<u>1,000</u>
			<u>pounds</u>	<u>pounds</u>
1930-----	7 + 45	7 + 45	4,940	
1935-----	7 + 45	7 + 45	4,606	
1936-----	40	40	3,414	
1937-----			3,354	
1940-----			1,787	
1951-----			3,357	
1954-----			2,677	
1957-----			2,719	
1959-----			3,790	
1960-----			3,593	
1961-----			4,624	
1962-----	36		2/446	3/4,499
1963-----	32		1,009	4,438
1964-----			984	5,419
1965-----			1,066	6,837
1966-----			1,255	9,633
1967-----			1,239	8,542
1968-----	28.5	36	1,735	12,381
1969-----	25.5	32	1,732	15,838
1970-----	22	28	1,777	17,705
1971-----	19	24	1,686	24,528
1972-----	16	20	1,783	26,394

1/ Statutory rate under paragraph 28(a) for 1930 through Aug. 30, 1963, and under TSUS items 406.10 and 406.50 for Aug. 31, 1963 through the present.

2/ Data for item 406.10 are available for July-Dec. only; prior to July, data were still combined.

3/ Includes data for both items 406.10 and 406.50 from Jan. through June.

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

Table 3.--Synthetic organic pigments (color lakes and toners) (item 406.70):
U.S. rates of duty and imports for consumption, 1930, 1935-37, 1940,
1951, 1954, 1957, and 1959-72 1/

Year	Rate of duty	Ad valorem	Imports		
		equivalent of:			
	Cents per pound plus:	the rate of	Quantity:	Value	Unit value
	percent ad valorem	duty based on:			
	or	imports in			
	percent ad valorem:	1972			
		Percent	<u>1,000</u> <u>pounds</u>	<u>1,000</u> <u>dollars</u>	<u>Per</u> <u>pound</u>
1930-----	7 + 45	47.7	12	13	\$1.08
1935-----			<u>2/</u>	<u>2/</u>	
1936-----			<u>3/</u> 355	<u>3/</u> 469	1.32
1937-----			28	32	1.14
1940-----			14	19	1.36
1951-----			8	6	0.75
1954-----			1	3	3.00
1957-----			14	11	0.79
1959-----			126	98	0.78
1960-----			<u>4/</u> 89	<u>4/</u> 70	0.79
1961-----			71	64	0.90
1962-----	6.3 + 40.5	42.9	20	21	1.05
1963-----	5.6 + 36; <u>5/</u> 40	38.1	<u>6/</u> 47	<u>6/</u> 131	2.79
1964-----	40		269	702	2.61
1965-----			346	845	2.44
1966-----			589	1,355	2.30
1967-----			1,022	2,738	2.68
1968-----	36		1,653	4,940	2.99
1969-----	32		3,447	3,783	2.55
1970-----	28		3,617	10,628	2.94
1971-----	24		5,764	12,965	2.25
1972-----	20		4,612	12,017	2.61

1/ Statutory rate under paragraph 28(a) for 1930 through Aug. 30, 1963, and under TSUS item 406.70 for Aug. 31, 1963 through the present.

2/ Not available.

3/ Not comparable with other years.

4/ Toners separately available; imports amounted to 8,000 pounds at \$11,000 (\$1.38 per pound) in 1960; 16,000 pounds at \$32,000 (\$2.00 per pound) in 1961; and 70,000 pounds at \$204,000 (\$2.91 per pound) in 1962.

5/ Ad valorem rate became effective with TSUS on Aug. 31, 1963.

6/ For Jan. 1-Aug. 31: Imports of color lakes, 9,000 pounds at \$7,000 (\$0.78 per pound); toners, 80,000 pounds at \$253,000 (\$3.16 per pound); data in table cover the period from Sept. 1 through Dec. 31, 1963.

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

Note.--From Jan. 1, 1960, through Aug. 30, 1963, two rates prevailed. The compound rate (shown in table) for color lakes, etc., and the ad valorem rate of 40 percent for toners.

Table 4.--Synthetic organic dyes: U.S. sales, 1/ imports for consumption, exports of domestic merchandise, and apparent consumption, 1968-72

Year	Sales <u>2/</u>	Imports <u>3/</u>	Exports <u>4/</u>	Apparent consumption	Ratio of imports to consumption
	<u>1,000 pounds</u>	<u>1,000 pounds</u>	<u>1,000 pounds</u>	<u>1,000 pounds</u>	<u>Percent</u>
1968-----	210,621	14,865	15,939	209,547	7.1
1969-----	216,065	18,555	15,061	219,559	8.4
1970-----	218,208	20,888	21,526	217,570	9.6
1971-----	224,227	27,125	21,667	229,685	11.8
1972-----	248,255	30,644	28,976	249,923	12.3

1/ Sales do not include intracompany transfers, unless they represent "arms-length" transactions.

2/ Does not include data for fast color bases, fast color salts, and Naphthol AS and its derivatives (TSUS item 406.80), as in themselves they have no tinctorial properties.

3/ Data include imports under TSUS items 406.02, 406.04, 406.10, 406.50, and 406.60. Items 406.10 and 406.50 accounted for 92 percent to 97 percent of the import quantity during the period 1968-72.

4/ Includes unknown quantities of fast color bases, fast color salts, and Naphthol AS and its derivatives. Trade sources report that a substantial part of the export trade for dyes is carried out through the Agency for International Development (AID) program. The Office of Statistics & Reports, Bureau for Program & Policy Coordination, Agency for International Development (AID) in its annual "Operations Reports" for the fiscal years 1968-72 contains the following total AID commodity expenditures.

<u>Fiscal year</u> <u>Period ending June 30</u>	<u>Expenditures</u> <u>(\$1,000)</u>	<u>Commodity description</u>
1968	3,167	Pigments, paints, and varnishes
1969	2,447	Dyeing, tanning, and coloring materials
1970	8,408	do.
1971	11,372	do.
1972	5,646	do.

Continued on following page.

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

Note.--Statistics represent the aggregate gross weight of dyes in whatever form sold; since dyes are marketed in various concentrations, data on imports are not strictly comparable with data on production and exports.

Footnote 13 to section 14.5(m) of the Customs Regulation contains a list of Treasury Decisions (TD's) which list standards of strengths for imports of dyes and colors to which U.S. standard numbers have been assigned and which have been adopted by the Secretary of the Treasury.

Table 5.--Dyes by application class: U.S. sales (including for export), general imports, and ratio (percent) of imports to U.S. sales 1967-72

(Quantity in millions of pounds)							
Dyes by application class	1967	1968	1969	1970	1971	1972	
Quantity of sales <u>1/</u>							
Acid-----	17.5	20.8	21.7	21.6	24.1	28.0	
Basic-----	11.6	12.7	13.8	13.9	15.5	17.8	
Direct-----	32.5	35.9	34.4	32.6	34.1	34.5	
Disperse-----	16.6	20.1	23.1	25.5	31.1	38.3	
Fiber-reactive----	2.1	2.4	2.2	2.7	3.5	3.6	
Fluorescent brighteners-----	21.9	28.9	33.4	31.3	27.2	27.4	
Vat-----	53.8	52.2	49.6	53.4	51.6	56.3	
All other <u>2/</u> -----	35.3	37.6	37.9	37.2	37.1	42.5	
Total-----	191.3	210.6	216.1	218.2	224.2	248.3	
Quantity of imports <u>3/</u>							
Acid-----	2.2	3.1	2.8	2.8	3.4	3.8	
Basic-----	1.2	1.4	1.7	1.7	2.3	2.5	
Direct-----	.8	1.2	1.2	1.0	1.5	1.5	
Disperse-----	2.4	3.7	5.5	5.9	9.3	10.0	
Fiber-reactive----	1.2	1.9	2.0	1.7	3.3	2.8	
Fluorescent brighteners-----	.2	.4	1.1	.5	.9	1.8	
Vat-----	2.5	4.6	5.9	7.8	4.6	10.2	
All other <u>2/</u> -----	.7	1.0	1.0	1.0	.8	1.5	
Total-----	11.2	17.3	21.2	22.4	26.1	34.1	
Ratio (percent) of imports to U.S. sales							
Acid-----	12.6	14.9	12.9	13.0	14.1	13.6	
Basic-----	10.3	11.0	12.3	12.2	14.8	14.0	
Direct-----	2.5	3.3	3.5	3.1	4.4	4.3	
Disperse-----	14.4	18.4	23.8	23.1	29.9	26.1	
Fiber-reactive----	57.1	79.2	90.9	63.0	94.3	77.8	
Fluorescent brighteners-----	.9	1.4	3.3	1.6	3.3	6.6	
Vat-----	4.6	8.8	11.9	14.6	8.9	18.1	
All other <u>2/</u> -----	2.0	2.6	2.6	2.7	2.2	3.3	
Total-----	5.8	8.2	9.8	10.3	11.6	13.7	

1/ Sales data include exports which are unknown by application class.

2/ Includes azoic composition dyes; food, drug and cosmetic colors; mordant dyes; solvent dyes; oxidation bases; ingrain dyes; sulfur dyes; and miscellaneous dyes.

3/ General imports are a combination of entries for immediate consumption and entries into Customs-bonded warehouses. Imports for consumption, as reported by the U.S. Department of Commerce, are a combination of entries for immediate consumption and withdrawals from warehouses for consumption. However, imports to warehouse are normally small.

Source: Sales, U.S. Tariff Commission, Synthetic Organic Chemicals, U.S. Production and Sales; Imports, U.S. Tariff Commission, Imports of Benzenoid Chemicals and Products.

Note.--Because of rounding, figures may not add to total.

A-71

Table 6.--Synthetic organic dyes: U.S. imports for consumption, by selected TSUS items, 1968-72

TSUS : item No:	General description	1968	1969	1970	1971	1972
		Quantity (1,000 pounds)				
406.10 :	Acid black and other	:	:	:	:	:
:	specified dyes-----	1,735	1,732	1,777	1,686	1,783
406.50 :	Colors, dyes, and stains	:	:	:	:	:
:	(except toners)-----	12,381	15,838	17,705	24,528	26,394
		Value (1,000 dollars)				
406.10 :	Acid black and other	:	:	:	:	:
:	specified dyes-----	6,653	7,048	6,566	6,766	6,714
406.50 :	Colors, dyes, and stains	:	:	:	:	:
:	(except toners)-----	37,317	46,223	50,608	76,171	79,751
		Unit value (per pound)				
406.10 :	Acid black and other	\$3.83	\$4.07	\$3.69	\$4.01	\$3.77
:	specified dyes-----	:	:	:	:	:
406.50 :	Colors, dyes, and stains	:	:	:	:	:
:	(except toners)-----	3.01	2.92	2.86	3.10	3.02

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

Note.--In 1972, general imports of "competitive" dyes (duty based on "American selling price") accounted for over half of the total quantity and a third of the total invoice value of all imported dyes. Imports of those dyes which were "noncompetitive" accounted for nearly all of the rest, and their duty was based on U.S. value. The foregoing is based on an analysis of invoice documents and is reported by the U.S. Tariff Commission in Imports of Benzenoid Chemicals and Products, 1972.

Table 7.--Synthetic organic pigments 1/ (color lakes and toners):
 U.S. sales, imports for consumption, exports of domestic
 merchandise, and apparent consumption, 1968-72

Year	Sales <u>2/</u>	Imports <u>3/</u> <u>4/</u>	Exports <u>5/</u>	Apparent consumption	Ratio of imports to consumption
	<u>1,000</u> <u>pounds</u>	<u>1,000</u> <u>pounds</u>	<u>1,000</u> <u>pounds</u>	<u>1,000</u> <u>pounds</u>	<u>Percent</u>
1968-----	45,810	1,653	7,345	40,118	4.1
1969-----	50,794	3,447	6,579	47,662	7.2
1970-----	47,166	3,617	8,405	42,378	8.5
1971-----	47,052	5,764	9,286	43,530	13.2
1972-----	53,215	4,612	10,588	47,239	9.8

1/ Toners are more important commercially than are the color lakes, ranging as they did from a low of 92 percent of the total sales quantity of all organic pigments in 1968 to a high of 95 percent of the total in 1972.

2/ Sales do not include intracompany transfers, unless they represent "arms-length" transactions.

3/ It is possible (but not probable) because of the description under item 406.70 that imports may contain color lakes and toners obtained directly (not synthesized) from natural alizarin and natural indigo.

4/ Although extended toners are provided for under item 406.70, analysis of import data indicates that imports have also been entered under item 409.00 as mixtures.

5/ As described earlier (table 4, footnote 4), part of these exports are being sponsored under the A.I.D. program.

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

Note --Data are reported on a 100-percent basis.

In 1972, general imports of "competitive" pigments (duty based on "American selling price") accounted for 27.4 percent of the total quantity and 22.1 percent of the total invoice value of all imported pigments. Imports of those pigments which were "noncompetitive" accounted for nearly all of the rest, and their duty was based on U.S. value. The foregoing is based on an analysis of invoice documents and is reported by the U.S. Tariff Commission in Imports of Benzenoid Chemicals and Products, 1972.

