UNITED STATES INTERNATIONAL TRADE COMMISSION

CLEAR POLYMETHYL METHACRYLATE OF PELLET, POWDER, FLAKE, GRANULAR, OR SIMILAR FORMS FROM JAPAN

Determination of No Injury or Likelihood Thereof in Investigation No. AA1921-153 Under the Antidumping Act, 1921, as Amended, Together With the Information Obtained in the Investigation

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UNITED STATES INTERNATIONAL TRADE COMMISSION

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Note.--Information which would disclose confidential operations of individual concerns may not be published and therefore has been deleted from this report. Deletions are indicated by asterisks.

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

[AA1921-153]

CLEAR POLYMETHYL METHACRYLATE OF PELLET, POWDER, FLAKE, GRANULAR OR SIMILAR FORMS

Determination of No Injury or Likelihood Thereof

On March 19, 1976, the United States International Trade Commission received advice from the Department of the Treasury that clear polymethyl methacrylate of pellet, powder, flake, granular or similar forms from Japan is being, or is likely to be, sold in the United States at less than fair value within the meaning of the Antidumping Act, 1921, as amended (19 U.S.C. 160(a)). Accordingly, on March 30, 1976, the Commission instituted investigation No. AA1921-153 under section 201(a) of said act to determine whether an industry in the United States is being or is likely to be injured, or is prevented from being established, by reason of the importation of such merchandise into the United States.

Notice of the institution of the investigation and of the public hearing was published in the Federal Register of April 5, 1976 (41 F.R. 14435). The hearing was held on May 11, 1976.

In arriving at its determination, the Commission gave due consideration to written submissions from interested parties, evidence adduced at the hearing, and all factual information obtained by the Commission's staff from questionnaires, personal interviews, and other sources.

On the basis of its investigation, the Commission 1/ has unanimously determined that an industry in the United States is not being and is not likely to be injured, and is not prevented from being established, by reason of the importation of clear polymethyl methacrylate of pellet, powder, flake, granular or similar forms from Japan that is being, or is likely to be, sold at less than fair value within the meaning of the Antidumping Act, 1921, as amended.

1/ Commissioner Moore did not participate in the decision.

Statement of Reasons

On March 30, 1976, the U.S. International Trade Commission instituted investigation No. AA1921-153 under section 201(a) of the Antidumping Act, 1921, as amended. The investigation was made to determine whether an industry in the United States is being or is likely to be injured, or is prevented from being established, by reason of the importation into the United States of clear polymethyl methacrylate (hereinafter referred to as PMMA polymer resins) that the Department of the Treasury (Treasury) has determined is being, or is likely to be, sold at less than fair value (LTFV) within the meaning of such act. In other words, the Commission, in order to find affirmatively, must find two conditions satisfied in this investigation. First, there must be injury, or likelihood of injury, to an industry in the United States, or an industry in the United States must be prevented from being established. 1/ Second, such injury or likelihood of injury must be "by reason of" the importation into the United States of the class or kind of foreign merchandise which the Treasury has determined is being, or is likely to be, sold at LTFV.

On the basis of the information developed in the investigation we have determined that any injury which the domestic industry may be experiencing or may be likely to experience is

1/ Prevention of the establishment of an industry is not an issue in the instant case and will not be discussed further.

not by reason of LTFV imports. Therefore the second condition, that of causation, has not been satisfied, and we have made a negative determination.

The product

PMMA polymer resins are synthetic, thermoplastic resins (plastics) which are produced by polymerizing methyl methacrylate (MMA) monomer. On a resin-content basis they contain less than 10 percent by weight of comonomer (e.g., ethyl acrylate) other than MMA. PMMA polymer resins are cast, molded, or extruded to form glazing materials for buildings and vehicles, taillight lenses for motor vehicles, luminous ceiling panels, and other articles for which optical clarity, transparency, and hardness are desirable properties.

The U.S. industry

In making this determination we have considered the domestic industry to consist of the facilities in the United States used in the production of PMMA polymer resins. These are the facilities most likely to be affected by the LTFV imports, and no evidence was developed during the course of the investigation showing that any other industry in the United States was adversely affected by such imports. 1/ PMMA polymer resins are produced in the United

1/ The Commission's investigation developed information on all PMMA resins, including copolymer resins. However, the Commission did not find any imports of PMMA copolymer resins from Japan. Such resins are not substitutable for or directly competitive with PMMA polymer resins, and the production lines used in the manufacture of PMMA polymer resins are separate and distinct from those used in producing copolymer resins.

States by three horizontally diversified producers of chemicals and plastics, and by a fourth company, a vertically integrated producer of extruded products. The processes and materials used in producing PMMA polymer resins are similar for the various producers.

No injury by reason of LTFV imports

All of the U.S. imports of PMMA polymer resins from Japan that were examined by Treasury during the period of its investigation (January 1-June 30, 1975) were sold at LTFV. Japanese exports of these resins to the United States declined annually from 5.9 million pounds in 1971 to 1.2 million pounds in 1974 and then increased slightly to 1.4 million pounds in 1975. As a share of apparent U.S. consumption, exports from Japan represented more than 6 percent of total U.S. consumption in 1971, about 1 percent in 1974, and about 1.5 percent in 1975. 1/ The sharp decline in Japanese exports of PMMA polymer resins to the United States and the very low level of import penetration in 1975, the year in which Treasury found there were imports at LTFV, make it difficult, absent unusual circumstances, to establish an identifiable causal relationship between the LTFV imports and any injury the domestic industry may be experiencing. Such circumstances are not present here.

1/ The ratios of Japanese exports of PMMA polymer resins to the United States to U.S. consumption are shown in this statement rather than the ratios of U.S. imports to U.S. consumption because such imports are not separately reported in official statistics.

U.S. producers' domestic shipments of PMMA polymer resins declined from 131 million pounds in peak year 1973 to about 100 million pounds in 1975, or by more than 30 million pounds. During the same period, exports of PMMA polymer resins from Japan to the United States decreased from 1.5 million pounds in 1973 to 1.4 million pounds in 1975. The large drop in U.S. producers' domestic shipments, most of which occurred in 1975, was attributable to the economic recession in that year. The two principal markets for PMMA polymer resins, the automotive and construction industries, were particularly depressed in 1975. Thus, it is evident that LTFV imports did not cause the sharp decline in U.S. producers' shipments in 1975.

U.S. producers' prices for PMMA polymer resins declined slightly during the first half of 1975; thereafter, prices trended upward, and no substantial evidence was presented which indicated that the early 1975 decline was by reason of LTFV imports. To the contrary, the small quantity of such imports in the U.S. market supports the conclusion that the price weakness was attributable to intense competition among the U.S. producers during a period of depressed demand.

The three largest U.S. producers of PMMA polymer resins provided the Commission with financial data on their PMMA polymer resin operations. These producers enjoyed favorable profits during the period 1971-74, with their annual aggregate net operating profits ranging from 15 to 26 percent of net sales. The ratio of net

operating profits to net sales declined to 1.8 percent in 1975. The profit pattern for PMMA polymer resins was similar to that reported by the major domestic producers for their overall plastics operations. The decline in the profitability of the producers in 1975 was attributable to a sharp decline in sales as a result of the depressed market conditions and an accompanying large increase in raw material costs, and not to LTFV imports.

The number of workers engaged in the production of PMMA polymer resins increased from 178 in 1971 to 229 in 1974 and then declined substantially in 1975. The trend in employment for the PMMA polymer resin industry during 1971-75 was similar to that experienced by the overall operations of the establishments producing PMMA polymer resins. Thus, the decline in employment which occurred between 1974 and 1975 could not be attributed to imports from Japan.

No likelihood of injury by reason of LTFV imports

The finding above with respect to the role of the subject LTFV imports in any injury being experienced by the domestic industry under consideration leads to the conclusion that such imports are also not an identifiable cause of any likelihood of injury which may exist. Although the Japanese PMMA polymer resin industry had substantial unused capacity in 1975, as did the PMMA polymer resin industry in the United States, there is no evidence to suggest that there will be any increase in import penetration.

The economic recovery which is underway in Japan and the United

States will result in greater utilization of capacity in both countries. There has been no indication of any plans by the Japanese to expand capacity, and substantial lead time from instituting construction plans to actual operation is necessary in this capital-intensive industry. The outlook for increased consumption of PMMA polymer resins in the United States is evidenced by the fact that U.S. producers more than doubled their capacity to produce these resins during 1971-75 and have plans to bring additional capacity on stream in late 1976. Furthermore, U.S. demand for PMMA polymer resins has increased substantially in 1976, and U.S. producers' domestic shipments in the first quarter were at an annual rate that was 28 percent greater than that experienced in 1975.

The ratio of Japanese PMMA polymer resin exports to the United States to total Japanese exports of PMMA polymer resins decreased every year from 1971 to 1975. In 1975 only 15 percent of Japanese exports of PMMA polymer resins went to the United States, compared with more than 70 percent of such exports in 1971. Ten major domestic purchasers of PMMA polymer resins that account for about one-third of total U.S. purchases were contacted by the Commission during the investigation; none of these firms purchased any PMMA polymer resins of Japanese origin during the first quarter of 1976.

The major U.S. producers of PMMA polymer resins are large diversified corporations with long-established business relationships

with the U.S. plastics-fabricating companies that are purchasers of these resins. In addition, three of the four U.S. producers of PMMA polymer resins produce MMA monomer, the principal raw material used in producing PMMA polymer resins, and all four U.S. producers further process MMA monomer or PMMA polymer resins into more advanced products.

Conclusion

We therefore conclude that an industry in the United States is not being and is not likely to be injured by reason of the importation of PMMA polymer resins from Japan that are being, or are likely to be, sold at LTFV within the meaning of the Antidumping Act, 1921, as amended.

INFORMATION OBTAINED IN THE INVESTIGATION

Introduction

On March 19, 1976, the United States International Trade Commission received advice from the Department of the Treasury that clear polymethyl methacrylate of pellet, powder, flake, granular, or similar forms from Japan is being, or is likely to be, sold in the United States at less than fair value (LTFV) within the meaning of the Antidumping Act, 1921, as amended (19 U.S.C. 160(a)). Accordingly, on March 30, 1976, the Commission instituted investigation No. AA1921-153 under section 201(a) of the act, to determine whether an industry in the United States is being or is likely to be injured, or is prevented from being established, by reason of the importation of such polymethyl methacrylate into the United States. By statute the Commission must render its determination within 3 months of its receipt of advice from the Department of the Treasury--in this case by Monday, June 21, 1976.

In connection with the investigation, the Commission conducted a public hearing on May 11, 1976. Notice of the institution of the investigation and of the hearing was duly given by posting copies thereof at the Office of the Secretary, United States International Trade Commission, Washington, D.C., and at the Commission's New York Office and by publishing the notice in the Federal Register on April 5, 1976 (41 F.R. 14435).

Following the receipt of a complaint from E. I. du Pont de Nemours and Company, Inc., the Department of the Treasury instituted an antidumping investigation by publication of an "Antidumping Proceeding Notice" in the Federal Register on June 16, 1975 (40 F.R. 25497). On June 23, 1975, an "Amendment of Antidumping Proceeding Notice," limiting the class or kind of merchandise under consideration to clear polymethyl methacrylate of pellet, powder, flake, granular, or similar forms, was published in the Federal Register (40 F.R. 26282). On December 18, 1975, a "Withholding of Appraisement Notice" was published in the Federal Register (40 F.R. 58666). The determination of sales at less than fair value was made on March 18, 1976, and was published in the Federal Register on March 24, 1976 (41 F.R. 12233).

The Product

Description

Polymethyl methacrylate is a clear (colorless and transparent), synthetic, thermoplastic resin 1/ known as PMMA resin or simply as PMMA. PMMA is prepared by polymerizing methyl methacrylate (MMA) monomer in the presence of a catalyst and/or heat. The yield of polymer produced, based on monomer used, exceeds 90 percent. MMA, a colorless, volatile, flammable liquid, is prepared by the reaction of acetone, hydrogen cyanide, sulfuric acid, and methanol.

PMMA is not a single, distinct plastic but comprises a group of products which, in turn, are part of a broader classification of plastics known as acrylic resins. Acrylic resins are so named because these resins are polymers or copolymers of acrylic acid, methacrylic acid, or esters of these acids (i.e., acrylates and methacrylates). PMMA is commercially the most important of all the acrylic resins, and it may be divided by the level of comonomer present into two distinct use categories, as described below.

PMMA polymer resins

PMMA polymer resins are PMMA resins that contain less than 10 percent by weight, on a resin content basis, of a comonomer (e.g., ethyl acrylate) other than MMA. Such resins are referred to in this report as either PMMA molding and extrusion resins or as PMMA polymer resins. The comonomer in these resins (usually an acrylate or another

1/ See appendix A for definition of this and other technical terms.

methacrylate) is added principally as a processing aid (e.g., a melt-flow modifier) and is not added to alter significantly the properties that PMMA would exhibit if no comonomer were present. The special properties that give PMMA polymer resins their importance are their optical clarity and transparency, which compare favorably with those of glass. Further, these resins are hard, have a high refractive index (ca. 1.49), and exhibit good resistance to light and aging. Cast, molded, or extruded products made with clear PMMA polymer resins exhibit a light transmission of 92 percent, which means that these resins are as transparent as the best optical glass. PMMA's light transmission and clarity can be modified with the addition of a wide range of transparent, translucent, or opaque colors.

PMMA copolymer resins

PMMA copolymer resins are PMMA resins that contain 10 to 49 percent by weight, on a resin content basis, of a comonomer (e.g., ethyl methacrylate) other than MMA. 1/ These products are referred to individually in this report as PMMA micro (or bead) polymers, PMMA emulsion polymers, and PMMA solution polymers. They are called copolymer resins because the comonomer (usually an acrylate or another methacrylate) is present in such amounts in the final product as to alter in a significant fashion some of the basic properties that PMMA would exhibit if no comonomer were present. These materials are normally available as dry micro (or bead) polymers (i.e., powders

1/ Products containing more than 50 percent of another comonomer would be classified as copolymers of the other comonomer, not as PMMA copolymers.

with the consistency of flour), in solution (solution polymer), or as emulsion polymers (latices). The micro (or bead) polymers frequently are used in emulsions or solutions. The solution polymers are frequently converted to thermosetting resins by the addition of acrylic anhydride, acrylamide, and so forth.

Uses

PMMA polymer resins

Virtually all of PMMA polymer resins are consumed in the manufacture of molded and extruded products. Industry sources report that about 75 percent of the annual output of PMMA molding and extrusion resins consist of clear (colorless and transparent) resins; the balance consists of resins which have had color added. In the industry these resins are referred to solely by their chief use, that is, as molding and extrusion resins.

The principal end-use applications for PMMA polymer resins in 1975 were in the automotive and lighting industries, and in glazing (i.e., transparent material fitting the door and/or window of a building or a vehicle).

Automotive uses for PMMA molding and extrusion resins include taillight lenses (reported to be the largest single use in the auto industry), instrument covers, control dials, and knobs. The major lighting application for PMMA molding and extrusion resins is in the manufacture of luminous ceiling panels (i.e., fluorescent-lamp refractor lenses). These panels are made from extruded sheet, which in turn, is made directly from PMMA polymer resin. The major use for

PMMA molding and extrusion resins in the glazing market has been as safety glazing in hazardous areas, such as storm doors made from extruded PMMA sheet. This is a growing use because of the requirements of recently enacted safety codes. A wide variety of additional products made from PMMA polymer resins include highway reflectors, faucet knobs, and backs of brushes.

PMMA copolymer resins

PMMA emulsion polymers are used mainly in water-based paints (latices); the emulsion polymers also are used in floor polishes, paper sizing and coatings, textile manufacturing applications, and so forth. Organic solutions of PMMA copolymer resins (i.e., solution polymers) are used in a wide variety of appliance and automotive coatings (e.g., lacquers for automotive topcoats).

U.S. Tariff Treatment

Clear polymethyl methacrylate (PMMA) of pellet, powder, flake, granular, or similar forms is dutiable under TSUS item 445.05 (acrylic and methacrylic acid resins). The column 1 rate of duty 1/ is 1.3 cents per pound plus 10 percent ad valorem; the column 2 rate of duty 2/ is 4 cents per pound plus 30 percent ad valorem. The column 1 rate of duty, which has been in effect since January 1, 1972, represents the last of five staged reductions negotiated under the Kennedy Round

1/ The column 1 rate applies to countries other than designated Communist-dominated countries.

2/ The column 2 rate applies to designated Communist-dominated countries.

of the General Agreement on Tariffs and Trade. The average ad valorem equivalent (AVE) for imports in 1975 under TSUS item 445.05 was 12.5 percent.

Treasury Finding of Sales at Less Than Fair Value

Summary

The U.S. Treasury Department, investigating U.S. imports of clear polymethyl methacrylate of pellet, powder, flake, granular, or similar forms from Japan, found that such PMMA 1/ was sold at LTFV during the period of investigation, January 1-June 30, 1975. Comparisons of purchase price with the adjusted home market price were made on approximately 95 percent of the PMMA molding and extrusion resin from Japan sold to the United States during the period of investigation. Margins were found ranging from 18 to 30 percent on 100 percent of the sales compared; the weighted-average margin was found to be 24 percent. 2/ Treasury determined the aggregate value of the margins of LTFV sales to be approximately * * * ; however, none of this amount is collectable

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1/ It is reported in memorandums throughout the * * * file from the Treasury Department (e.g., * * *) that the product under investigation is that described earlier as PMMA polymer resins. For example, from the above memorandum: "These polymers are processed by extrusion or injection molding into lighting diffusers, automobile taillights, instrument dials, and miscellaneous items requiring high optical clarity and weatherability." However, the Treasury Department's notice of determination of sales at LTFV (41 F.R. 12233; Mar. 24, 1976), included both PMMA polymer resins and PMMA copolymer resins.

2/ The Department of the Treasury calculates percentage dumping margins as

$$\frac{\text{Home market price (or fair value) - purchase price (or exporter's price)}}{\text{Purchase price (or exporter's sales price)}},$$

while the U.S. International Trade Commission calculates percentage dumping margins as

$$\frac{\text{Home market price (or fair value) - purchase price (or exporter's sales pri}}{\text{Home market price (or fair value)}}$$

Margins for polymethyl methacrylate from Japan based on the U.S. International Trade Commission formula would range from 15 percent to 23 percent.

because Treasury did not withhold appraisement until December 18, 1975. All, or virtually all, imports of the subject merchandise from Japan were manufactured by either Mitsubishi Rayon Co., Ltd., or Asahi Chemical Industry Co., Ltd., both of Tokyo, Japan.

During the period of the Treasury Department's investigation, only clear grades of PMMA resins were sold in the United States. Accordingly, the LTFV determination was limited to clear polymethyl methacrylate (i.e., PMMA polymer resins).

Home Market Price

The home market price was calculated on the basis of the delivered, net, packed price to the distributor. Adjustments were made for rebates, credit expenses, transportation, certain technical service expenses, and packing costs, as appropriate, for merchandise sold by both manufacturers, in accordance with section 153.8, Customs Regulations (19 CFR 153.8). With respect to sales by Asahi Chemical Industry Co., Ltd., further adjustments for differences in circumstances of sales were made for freely offered discounts and rebates on merchandise, for royalty payments, and for certain sales aids, including technical brochures, provided for the benefit of purchasers in later sales. With respect to sales by Mitsubishi Rayon Co., Ltd., further adjustments for differences in circumstances of sales were made for certain expenses relating to advertising, sales aids, and technical service brochures incurred for the benefit of purchasers in later sales, and for rebates actually paid in connection with the

sales under consideration. A representative home market price calculation is shown below:

* * *

Weighted average price per kilogram		¥ * * *
Less:		
Rebate	¥ * * *	
Freight to warehouse	* * *	
Freight to customer	* * *	
Interest	* * *	
Advertising	* * *	
Technical assistance	* * *	
Samples (technical)	* * *	
Sales aid	* * *	
Packing	* * *	
	* * *	
Foreign market value per kilogram		¥ * * *

Purchase Price

Purchase price was used by the Department of the Treasury in the determination of the percentage dumping margins, since all export sales were made to nonrelated Japanese trading companies. The purchase price was calculated on the basis of the ex-godown, Japanese port, packed price to the United States. Deductions were made for inland freight and packing for both manufacturers. A deduction was made for a royalty payment for merchandise sold by Asahi Chemical Industry Co., Ltd. A representative purchase price calculation is shown below:

* * *

Ex-godown price per kilogram		¥ * * *
Less:		
Inland freight	¥ * * *	
Packing	* * *	
Plus:		
Drawback	* * *	
Purchase price per kilogram		¥ * * *

Domestic Industry

PMMA polymer resins are produced in the United States by three large, horizontally diversified chemical and plastics companies, and by a fourth company (J. W. Carroll & Sons), a vertically integrated producer of extruded products. These companies, their headquarters locations, the locations of their PMMA molding and extrusion resin facilities, and their estimated share of 1975 U.S. capacity are listed in the following tabulation:

Company	Headquarters	PMMA facilities	Estimated share of 1975 U.S. capacity for PMMA polymer resins
			Percent
Rohm and Haas Co.	Philadelphia, Pa.	Bristol, Pa. Louisville, Ky.	* * *
E. I. du Pont de Nemours & Co., Inc.	Wilmington, Del.	Parkersburg, W. Va.	* * *
American Cyanamid Co.	Wayne, N.J.	Wallingford, Conn.	* * *
J. W. Carroll & Sons, Div. of U.S. Industries, Inc.	Carson, Calif.	Carson, Calif.	* * *

The four producers of PMMA polymer resins operate five plants at locations listed above. One plant was constructed in * * *, one in * * *, and the rest since * * *. All plants have been upgraded and/or expanded periodically since their startup dates.

Table 1 on the following page shows for PMMA polymer resins the approximate U.S. capacity, U.S. production, and the utilization of

Table 1.--PMMA polymer resins: U.S. capacity, production, and industry utilization of capacity, 1971-75, January-June 1974, January-June 1975, and January-March 1976

Period	Capacity	Production	Utilization
	Million pounds	Million pounds	Percent
1971	110,000	92,005	83.6
1972	140,000	122,961	87.8
1973	156,000	133,210	85.4
1974	226,000	* * *	* * *
1975	239,000	* * *	* * *
January-June--			
1974	113,000	66,844	59.2
1975	119,500	* * *	* * *
January-June--			
1976	1/ 59,750	* * *	* * *

1/ Estimated.

Source: Capacity and production compiled from data submitted in response to U.S. International Trade Commission questionnaires.

Note.--Capacity for each year includes an estimated * * * million pounds per year for J. W. Carroll & Sons. * * *

capacity by the industry during 1971-75, and for the periods January-June 1974, January-June 1975, and January-March 1976.

PMMA resins comprise only a relatively small portion of the total plastics operations for Rohm and Haas, Du Pont, and American Cyanamid. These companies all produce a wide variety of organic and inorganic chemicals and related products in addition to plastics and other resins. For J. W. Carroll, PMMA polymer resins are produced only as one phase of a * * * process for manufacturing extruded products (such as refractory lighting lenses). Sales of the resin by

this firm occur only when it has an excess after supplying its own captive requirements; * * * .

Of the four PMMA polymer resin producers, Rohm and Haas, Du Pont, and American Cyanamid produce their own MMA monomer from acetone, methanol, sulfuric acid, and hydrogen cyanide. J. W. Carroll either imports MMA monomer or purchases it from one of the three domestic MMA producers. All three MMA producers have captive supplies of hydrogen cyanide and sulfuric acid. Both Du Pont and Rohm and Haas also produce methanol, but none of the companies produce acetone. Annual U.S. production capacity for MMA in 1975 totaled 870 million pounds, as shown in table 2, on the following page.

The MMA producers annually consumed about * * * percent of their own production of MMA monomer during 1971-75. Overall, about * * * percent of intracompany consumption of MMA monomer was used to produce cell cast and continous cast acrylic sheet. In producing the cast sheet, the monomer is polymerized in situ and never takes the shape of resin of pellet, powder, flake, granular, or similar forms; therefore, cast PMMA sheet is not within the scope of this investigation. About * * * percent of the monomer was consumed in surface coatings; and about * * * percent went into polishes, textiles, and paper. The other * * * percent was used to produce PMMA polymer resins or PMMA copolymer resins, or to modify other plastic resins.

Statistics on U.S. production and exports of MMA are shown in table 3 (p. A-15) and table 4 (p. A-16), respectively.

Table 2.--Methyl methacrylate (MMA) monomer: Domestic producers, plant locations, and capacities, 1975

Company	Plant location	Annual capacity
		Million pounds
American Cyanamid Company:		
Ind. Chems. and Plastics Div	Fortier, La.	80
E. I. du Pont de Nemours & Co., Inc.:		
Biochems. Dept	Belle, W. Va.	120
Ind. Chems. Dept	Memphis, Tenn.	120
Rohm & Haas Co	Bristol, Pa.	1/
Rohm & Haas Kentucky Inc. (subsid.)	Louisville, Ky.	1/
Rohm & Haas Tennessee Inc. (subsid.)	Knoxville, Tenn.	1/
Rohm & Haas Texas Inc. (subsid.)	Deer Park, Tex.	550
Total		870

1/ Purifies methyl methacrylate monomer from crude monomer produced at Deer Park, Texas.

Source: 1976 Directory of Chemical Producers, Stanford Research Institute, Menlo Park, California, 1976, p. 685.

Table 3.--Methyl methacrylate monomer: U.S. production and U.S. producers' sales, 1/ by companies, 1971-75

Company and year	Production	Sales		
		Quantity	Value	Unit value
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
American Cyanamid Co.:				
1971	***	***	***	***
1972	***	***	***	***
1973	***	***	***	***
1974	***	***	***	***
1975	***	***	***	***
E.I. du Pont de Nemours & Co., Inc.:				
1971	***	***	***	***
1972	***	***	***	***
1973	***	***	***	***
1974	***	***	***	***
1975	***	***	***	***
Rohm & Haas Co.:				
1971	***	***	***	***
1972	***	***	***	***
1973	***	***	***	***
1974	***	***	***	***
1975	***	***	***	
Total:				
1971	459,409	***	***	***
1972	598,692	***	***	***
1973	706,295	***	***	***
1974	717,798	***	***	***
1975	512,421	***	***	***

1/ Includes export sales.

Source: Compiled from responses to U.S. International Trade Commission questionnaires.

Table 4.--Methyl methacrylate monomer: U.S. exports, 1973-75

Year	Quantity	Value	Unit value
	1,000 pounds	1,000 dollars	Per pound
1973	34,798	5,493	$0.16
1974	53,951	13,617	.25
1975	49,833	15,417	.31

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

Note.--Separate data did not become available until 1973. The principal export markets for MMA monomer (in declining order of value in 1975) were as follows: Canada, Mexico, Argentina, United Kingdom, Venezuela, and Australia. Official statistics on imports of MMA are not separately available.

Consideration of Injury or Likelihood Thereof by Reason of LTFV Sales

U.S. Consumption, Production, Domestic Sales, and Foreign Trade

U.S. consumption of PMMA polymer resins increased from * * * million pounds in 1971 to * * * million pounds in 1973, then declined in 1974 and 1975, reaching * * * million pounds in the latter year (table 5, p. A-18). Clear PMMA molding and extrusion resins, which sell for 3 to 5 cents per pound less than the color grades, account for about 75 percent of annual domestic sales of such resins. Captive consumption of PMMA polymer resins by U.S. producers is small and is believed not to exceed * * * percent of production during any of the periods covered here.

U.S. production of PMMA polymer resins was * * * than consumption in each year during 1972-75. * * * Production increased from 92 million pounds in 1971 to 133 million pounds in 1973, then declined in 1974 and 1975, reaching * * * million pounds in the latter year (table 5, p. A-18, and chart A, appendix B).

During the period 1973-75, U.S. producers' yearend inventories of PMMA polymer resins ranged from * * * million pounds in 1974 to * * * million pounds in 1975. During the period of LTFV sales, inventories amounted to * * * million pounds; for a similar period in 1974 and for the first quarter of 1976, end-of-period inventories amounted to * * * million pounds and * * * million pounds, respectively. Similar data for 1971 and 1972 are not available.

Table 5.--PMMA polymer resins: U.S. production, exports, imports, apparent consumption, and end-of-period inventories, 1971-75, January-June 1974, January-June 1975, and January-March 1976

Period	Production	Exports	Imports 1/	Apparent consumption	Inventory	Ratio of imports to consumption 2/
	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	Percent
1971	92,005	***	5,704	***	-	***
1972	122,961	***	4,321	***	-	***
1973	133,210	***	5,570	***	***	***
1974	***	***	3,594	***	***	***
1975	***	***	5,097	***	***	***
Jan.-June--						
1974	66,844	***	1,271	***	***	***
1975	***	***	2,991	***	***	***
Jan.-Mar.--						
1976	***	***	886	***	***	***

1/ Import data are for all acrylic resins, including the PMMA polymer and copolymer resins.

2/ Since import data are overstated (see footnote 1), the ratio of imports to consumption is somewhat overstated.

Source: Production and exports compiled from responses to U.S. International Trade Commission questionnaires; imports compiled from official statistics of the U.S. Department of Commerce.

Domestic sales of PMMA polymer resins in recent years have accounted for more than * * * percent of total sales of such resins by U.S. producers. The quantity of domestic sales of PMMA polymer resins increased from 84 million pounds in 1971 to 128 million pounds in 1973 and then declined to * * * million pounds in 1975 (table 6, p. A-20).

U.S. exports of PMMA polymer resins, as reported by the producers, increased from more than * * * million pounds annually in both 1971 and 1972 to * * * million pounds annually during 1973-75 (table 5, p. A-18). For exports of all acrylic resins by principal markets, see table 7, p. A-21.

Table 6.--PMMA polymer resins: U.S. production and domestic and export sales, by producers, 1971-75, January-June 1974, January-June 1975, and January-March 1976

Period/producer	Production quantity	Domestic sales			Export sales		
		Quantity	Value	Unit value	Quantity	Value	Unit value
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound	1,000 pounds	1,000 dollars	Per pound
1971:							
Total	92,005	84,342	32,666	$0.39	***	***	***
American Cyanamid	***	***	***	***	***	***	***
E. I. du Pont	***	***	***	***	***	***	***
J. W. Carroll	***	***	***	***	***	***	***
Rohm & Haas	***	***	***	***	***	***	***
1972:							
Total	122,961	99,810	37,960	.38	***	***	***
American Cyanamid	***	***	***	***	***	***	***
E. I. du Pont	***	***	***	***	***	***	***
J. W. Carroll	***	***	***	***	***	***	***
Rohm & Haas	***	***	***	***	***	***	***
1973:							
Total	133,210	128,734	47,529	.37	***	***	***
American Cyanamid	***	***	***	***	***	***	***
E. I. du Pont	***	***	***	***	***	***	***
J. W. Carroll	***	***	***	***	***	***	***
Rohm & Haas	***	***	***	***	***	***	***
1974:							
Total	***	***	***	***	***	***	***
American Cyanamid	***	***	***	***	***	***	***
E. I. du Pont	***	***	***	***	***	***	***
J. W. Carroll	***	***	***	***	***	***	***
Rohm & Haas	***	***	***	***	***	***	***
1975:							
Total	***	***	***	***	***	***	***
American Cyanamid	***	***	***	***	***	***	***
E. I. du Pont	***	***	***	***	***	***	***
J. W. Carroll	***	***	***	***	***	***	***
Rohm & Haas	***	***	***	***	***	***	***
January-June 1974:							
Total	66,844	***	***	***	***	***	***
American Cyanamid	***	***	***	***	***	***	***
E. I. du Pont	***	***	***	***	***	***	***
J. W. Carroll	***	***	***	***	***	***	***
Rohm & Haas	***	***	***	***	***	***	***
January-June 1975:							
Total	***	***	***	***	***	***	***
American Cyanamid	***	***	***	***	***	***	***
E. I. du Pont	***	***	***	***	***	***	***
J. W. Carroll	***	***	***	***	***	***	***
Rohm & Haas	***	***	***	***	***	***	***
January-March 1976:							
Total	***	***	***	***	***	***	***
American Cyanamid	***	***	***	***	***	***	***
E. I. du Pont	***	***	***	***	***	***	***
J. W. Carroll	***	***	***	***	***	***	***
Rohm & Haas	***	***	***	***	***	***	***

[illegible] to response to questionnaires of the U.S. International Trade Commission.

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Table 7.--Acrylic resins: 1/ U.S. exports, by principal markets, 1971-75

Market	1971	1972	1973	1974	1975
	Quantity (1,000 pounds)				
Canada	8,985	10,811	13,865	14,963	9,807
United Kingdom	934	1,567	2,608	2,759	4,451
Netherlands	910	628	6,559	2,722	1,267
Japan	732	666	2,314	3,594	1,396
All other	7,336	9,027	14,747	21,602	11,742
Total	18,897	22,699	40,093	45,640	28,663
	Value (1,000 dollars)				
Canada	4,191	4,967	5,780	6,858	5,010
United Kingdom	1,125	1,270	1,683	1,963	2,196
Netherlands	902	873	2,634	3,868	2,225
Japan	558	516	1,345	2,848	1,467
All other	4,952	5,886	7,439	12,968	8,499
Total	11,728	13,512	18,881	28,505	19,397

1/ Data are for all acrylic resins, including PMMA polymer or copolymer resins, as well as others, such as polyacrylamide, for which exports are estimated to be about 2 million pounds per year.

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

Table 8.--Acrylic resins: 1/ U.S. imports, by principal sources, 1971-75

Source	1971	1972	1973	1974	1975
	Quantity (1,000 pounds)				
Canada	83	244	826	517	2,429
Japan 2/	4,822	3,206	2,703	1,665	2,329
West Germany	208	283	528	438	154
United Kingdom	477	429	292	314	50
All other	114	159	1,221	660	135
Total	5,704	4,321	5,570	3,594	5,097
	Value (1,000 dollars)				
Canada	26	52	280	263	1,185
Japan 2/	1,119	788	747	763	1,005
West Germany	96	272	324	479	228
United Kingdom	211	350	490	511	116
All other	75	74	776	414	134
Total	1,527	1,536	2,617	2,430	2,668

1/ Data are for all acrylic resins, including the PMMA polymer and copolymer resins.

2/ Industry sources estimate that virtually all of the imports of PMMA resins from Japan consist of the polymer type.

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

During the period 1971-75, total U.S. imports of all acrylic resins from all countries were at the period high of 5.7 million pounds in 1971 and then fluctuated to 5.1 million pounds in 1975. These imports amounted to 1.3 million pounds and 3.0 million pounds during January-June 1974 and January-June 1975, respectively; and amounted to about 900,000 pounds during January-March 1976 (see table 5, p. A-18). Imports of all acrylic resins by principal sources are given in table 8, p. A-22.

Market Penetration of LTFV Sales

Imports of acrylic resins from Japan as compiled from three sources are shown in table 9, p. A-25, both in absolute terms and as a ratio to consumption. These sources are the official U.S. import statistics for acrylic resins, imports of PMMA polymer resins reported to the U.S. International Trade Commission by importers (see chart A, appendix B), and official Japanese statistics on exports of PMMA polymer resins to the United States.

Imported PMMA polymer resins from Japan, based on official Japanese export statistics, supplied a percentage of U.S. consumption which steadily declined from * * * percent in 1971 to * * * percent in 1974 and then increased to * * * percent in 1975. These imports supplied * * * percent of consumption during the period of LTFV sales (January-June 1975), compared with * * * percent during the corresponding period of 1974 (table 9, p. A-25).

The ratio of imports of PMMA polymer resins from Japan to U.S. consumption for the period of the Treasury Department's investigation in 1975 was * * * percent when calculated with official U.S. import statistics and * * * percent when determined from import data furnished by the importers. For January-June 1974, the ratios were calculated to be * * * percent using official U.S. import data and * * * percent based on data received from importers.

The official Japanese export statistics are believed to give a more accurate picture of Japanese import penetration than either the official U.S. import statistics, which include all acrylic resins and thereby overstate the imports, or the imports from Japan as reported to the Commission by the importers, which may understate the actual imports during certain periods because of incomplete coverage.

Japanese exports may also differ in part from official U.S. imports and from the data furnished by the importers, because there is a lag between the time when a shipment is exported from Japan and the time when it is imported into the United States.

Table 9.--Acrylic resins from Japan: Official U.S. imports, U.S. imports of PMMA polymer resins as reported by the importers, official Japanese exports of PMMA polymer resins to the United States, and U.S. apparent consumption of PMMA polymer resins, 1/ 1971-75, January-June 1974, January-June 1975, and January-March 1976

Period	Official U.S. imports of all acrylic resins from Japan (A)	PMMA polymer resins			Ratio of		
		Imports from Japan as reported by importers (B)	Official Japanese exports to the United States (C)	U.S. apparent consumption (D)	A/D	B/D	C/D
	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	Percent	Percent	Percent
1971	4,822	6,980	5,907	***	***	***	***
1972	3,206	3,434	2,862	***	***	***	***
1973	2,703	***	1,517	***	***	***	***
1974	1,665	***	1,206	***	***	***	***
1975	2,329	1,917	1,380	***	***	***	***
Jan.-June:							
1974	255	***	212	***	***	***	***
1975	1,668	1,230	992	***	***	***	***
Jan.-Mar.:							
1976	245	***	2/	***	***	***	***

1/ Represents apparent consumption data shown in table 5, p. A-18, using aggregate imports of all acrylic resins compiled from official statistics of the U.S. Department of Commerce.

2/ Not available.

Source: Official U.S. imports compiled from official statistics of the U.S. Department of Commerce; imports of PMMA polymer resins compiled from importers' responses to questionnaires of the U.S. International Trade Commission; Japanese exports of PMMA polymer resins to the United States, furnished by Counsel for the Japanese importers, were from the following source: Japanese Customs and Tariff Bureau, Ministry of Finance.

The Japanese Industry

PMMA polymer resins

Table 10 shows data concerning the Japanese industry producing these resins. These data were submitted by counsel for the two Japanese producers involved in this investigation, Asahi Chemical Industry Co., Ltd., and Mitsubishi Rayon Co., Ltd.

Table 10.--PMMA polymer resins: Estimated Japanese production capacity, production, shipments, total exports, and exports to the United States, 1971-75

Year	Estimated production capacity	Production		Total shipments	Total exports		Exports to the United States	
		Quantity	Ratio to estimated production capacity		Quantity	Ratio to shipments	Quantity	Ratio to total exports
	1,000 pounds	1,000 pounds	Percent	1,000 pounds	1,000 pounds	Percent	1,000 pounds	Percent
1971	***	46,702	***	45,533	8,392	18.4	5,907	70.4
1972	***	55,387	***	55,634	8,006	14.4	2,862	35.7
1973	***	76,860	***	76,198	9,473	12.4	1,517	16.0
1974	***	59,467	***	58,715	7,678	13.1	1,206	15.7
1975	***	44,548	***	45,866	9,217	20.1	1,380	15.0

Source: Estimated production capacity obtained from Japanese industry sources; production and shipments, Chemical Industry Statistics, compiled by the Research and Statistics Dept., Minister's Secretariat, Japanese Ministry of International Trade and Industry (MITI); exports, Chemical Industrial Export Statistics, compiled by Japanese Customs and Tariff Bureau, Ministry of Finance.

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As shown in table 10, during the period 1971-75 unused production capacity in Japan was at its highest in 1975 (* * * percent idle capacity). During the period 1971-75, Japanese exports of PMMA molding and extrusion resins to the United States, expressed as a percentage of total Japanese exports of PMMA polymer resins, declined annually from 70.4 percent in 1971 to 15.0 percent in 1975.

MMA monomer

Trade sources 1/ report Japanese production of MMA monomer as shown below:

Year	MMA 1,000 pounds
1971	223,366
1972	262,174
1973	325,678
1974	280,696
1975	207,711

The Japanese producers of MMA monomer, the annual MMA capacity of each, and the share of total capacity held by each, as reported by Plastics Industry News, 2/ are shown below:

Firm	MMA capacity as of January 1975 (1,000 pounds per year)	Share held by each (Percent)
Mitsubishi Rayon Co.	244,755	58
Kyowa Gas Co.	79,380	19
Asahi Chemical Co.	36,162	9
Sumitomo Chemical Co.	31,752	7
Mitsui Toatsu Chemical Co.	18,522	4
Mitsubishi Gas Chemical Co.	13,230	3
Total	423,801	100

1/ Data for 1971-74 are from Plastics Industry News (Japan), January 1976, p. 5. The data for 1975 represent demand (including export demand), as production figures are not available, and were obtained from Plastics Industry News, September 1975, p. 137.

2/ August 1975, p. 119.

Japan is reportedly the second largest producer (after the United States) of MMA monomer, accounting for almost 20 percent of total world capacity, compared with the U.S. share of 41 percent. Although Mitsubishi Rayon Co. and Asahi Chemical Co. were the only Japanese firms found by the Department of the Treasury to be exporting PMMA molding and extrusion grade resins to the United States, the other Japanese producers of MMA monomer also have export capabilities. Some of the other Japanese producers export MMA monomer and/or PMMA sheet 1/ to the United States. For example, it is reported in a Japanese trade journal 2/ that Kyowa Gas Co. alone annually exports about 3 million to 4 million pounds of MMA monomer to the United States.

Employment

The number of U.S. production and related workers engaged in the production of PMMA polymer resins increased from 178 in 1971, to 229 in 1974, then decreased to * * * in 1975. Employment in the first half of 1975 was * * *, compared with 242 in the first half of 1974 and 207 in the first quarter of 1976. 3/

The number of production and related workers engaged in the production of all products at U.S. establishments where PMMA polymer resins were produced was relatively steady at an average of about * * * during 1971-74. This figure declined to * * * in 1975, and 1975, and increased in the first quarter of 1976 to * * *.

1/ Dumping of acrylic sheet is currently being investigated by the U.S. International Trade Commission (AA1921-154).

2/ Plastics Industry News, August 1975, p. 119.

3/ These data are for Rohm and Haas, Du Pont, and American Cyanamid.

The following tabulation summarizes the number of production and related workers engaged in the production of PMMA polymer resins during 1971-75 and January-March 1976.

Period	Number of production and related workers engaged in the production of:	
	All products	PMMA polymer resins
1971	* * *	178
1972	* * *	203
1973	* * *	222
1974	* * *	229
1975	* * *	***
January-June:		
1974	* * *	242
1975	* * *	***
January-March:		
1976	* * *	207

Production and related workers engaged in the domestic production of PMMA polymer resins averaged about 457,000 man-hours in 1973 and 1974. The total declined to * * * man-hours in 1975. The following tabulation shows man-hours reported for production of PMMA polymer resins and for all products, the ratio (percent) of PMMA polymer resin production man-hours to total production man-hours for the plants in which PMMA polymer resin production took place, and the average productivity (production/man-hours) for the industry during 1973-March 1976:

Period	Man-hours: all products 1,000 man-hours (A)	Man-hours: PMMA polymer resins 1,000 man-hours (B)	Ratio (percent) of (B) to (A)	Average productivity: pounds of PMMA polymer resins per man-hour
1973----------	* * *	449	* * *	296.7
1974----------	* * *	465	* * *	* * *
1975----------	* * *	* * *	* * *	* * *
Jan.-June:				
1974---------	* * *	234	* * *	285.7
1975---------	* * *	* * *	* * *	* * *
Jan.-Mar.:				
1976---------	* * *	104	* * *	* * *

It is apparent from the tabulations above that employment and man-hours involved in the production of PMMA polymer resins declined more in the first half of 1975 than employment and man-hours for all products in the same plants. Average productivity declined substantially during the period of the Treasury Department's investigation but, with general economic recovery in 1976, rebounded to a new high, as shown above.

Evidence of Lost Sales by Domestic Producers to Imports

* * *

* * * have claimed losses of PMMA molding and extrusion resin sales to certain of their customers through displacement by sales of Asahi Chemical Industry Co., Ltd., and Mitsubishi Rayon Co., Ltd. * * * of such customers specifically named by * * * were surveyed by the Commission. The tabulated results of the information obtained from these purchasers are shown in table 11, p. A-33.

Data supplied by * * * * * * show that the only purchases from non-domestic sources made in 1974 and 1975 were from * * * * * * and amounted to * * * percent and * * * percent, respectively, of total purchases (* * * percent during the period of LTFV sales). * * * reported that * * * furnished * * * percent of its purchases in 1975 (* * * percent during the period of LTFV sales); * * * supplied * * * percent and * * * percent of purchases in 1974 and 1975, respectively (* * * percent during the period of LTFV sales). * * * * * * reported that * * * supplied * * * percent and * * * percent of their purchases in 1973 and 1974, respectively, but none during the period of LTFV sales. * * * supplied * * * percent and * * * percent of * * * requirements in 1974 and 1975, respectively, including * * * percent during the period of LTFV sales. * * * purchased * * * percent and * * * percent of its requirements from * * * in 1974 and 1975, respectively. * * * supplied * * * percent of * * * needs during January-June 1974 and January-June 1975 (table 11, p. A-33).

Table 11.--PMMA polymer resins: Purchases of PMMA polymer resins from Mitsubishi Rayon, Asahi Chemical, U.S. producers, and Chemacryl, (a Canadian producer), by selected customers, 1973-75, January-June 1974, January-June 1975, and January-March 1976

* * * * * * *

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

Prices

General economic conditions in the U.S. plastics industry

During 1971-75, the plastics industry was affected by general economic trends as well as by events related more specifically to the plastics industry. Both 1971 and 1972 were record-breaking years for plastics sales, and by January 1973 the trade journal Modern Plastics was speaking of "The general feeling of euphoria evident all around the plastics industry . . . ." Plastics sales increased again in 1973, although by the end of the year, shortages of raw materials began to develop.

In 1974, with the slump in the construction and automotive industries, plastics sales amounted to 28.5 billion pounds, or 1.7 percent less than the 29.0 billion pounds sold in 1973. Prices for rubber and plastics products increased about 27 percent during 1974. In 1975, plastics sales decreased sharply to 22.8 billion pounds, or by 20.0 percent from the previous year, while prices for rubber and plastics products rose only about 2 percent. Modern Plastics reports that an upturn in resin sales occurred in mid-1975, and that the outlook for 1976 is for a 15-to-20-percent growth in sales quantity over the depressed figure for 1975.

Channels of distribution and pricing practices

Imports from Japan.--Mitsubishi Rayon Co., Ltd., and Asahi Chemical Industry Co., Ltd., sell PMMA polymer resins to Japanese trading companies, which in turn resell the resins to U.S. importers which are subsidiaries of the Japanese trading companies. The two

principal U.S. importers of Japanese PMMA polymer resins in 1974 and 1975 were Nissho-Iwai American Corp. and the Marubeni Corp. Nissho-Iwai handles resins produced by Mitsubishi Rayon, while Marubeni handles resins produced by Asahi Chemical Industry Co. Neither Nissho-Iwai nor Marubeni publishes price lists; prices are established through bargaining and negotiation.

U.S. producers.--All three major U.S. producers of PMMA polymer resins publish price lists; however, in recent years these products have nearly always been sold below list price. Prices are delivered prices for shipment in cartons of 1,200 pounds (American Cyanamid) or 1,500 pounds (Rohm and Haas and Du Pont). An extra 1 cent per pound is charged for shipment in drums of 300 pounds. The lowest prices for clear PMMA polymer resins are for truckload shipments (40,000 pounds or more), with increases of up to 7 cents per pound for smaller quantities and up to 17 cents per pound for shipments of less than standard pound units (1,200 or 1,500 pounds).

The three major U.S. producers' list truckload prices of clear PMMA polymer resins are shown below (in cents per pound):

Rohm and Haas		Du Pont		American Cyanamid	
Price	Effective date	Price	Effective date	Price	Effective date
45.5	5/17/71	45.5	5/ 3/71	45.0	7/15/70
46.0	4/ 1/74	45.0	8/ 1/74	47.0	3/ 1/74
50.0	9/ 3/74	49.0	4/30/75	49.0	7/15/74
54.0	9/ 2/75	53.0	9/ 2/75	53.0	9/ 2/75
57.0	3/ 1/76	57.0	3/ 1/76	57.0	3/ 1/76

Price comparison of domestic and imported (Japanese) PMMA polymer resins, January 1973-March 1976

January-July 1973.--Net delivered selling prices received by U.S. producers and importers of Japanese clear PMMA polymer resins during January 1973-March 1976 are shown in tables 12 and 13 and in charts B and C, appendix B. During January-July 1973, the average imported price was * * * the average domestic price, except in March 1973 when the imported price was * * * the domestic price.

August 1973-May 1974.--From August 1973 to May 1974, a period of strong worldwide demand for acrylics, there were no reported sales of Japanese PMMA polymer resins in the United States. Beginning in late 1973, U.S. production and sales of acrylic resins were limited by a shortage of acetone, a principal raw material in the production of methyl methacrylate monomer. During this period, * * *

* * *

June-October 1974.--Between June and October 1974, Japanese PMMA polymer resins reappeared on the U.S. market, but sales of Japanese resins were made at average prices * * *

* * * domestic prices. During this period of strong demand, domestic prices * * *

In November 1974, * * *

Table 12.--Clear PMMA polymer resins: Net delivered selling prices 1/ received by U.S. producers and importers of Japanese resins, by months, January 1973-March 1976

Period	U.S. producers' prices		Importers' prices		U.S. producers' price minus importers' price	Ratio of importers' price to U.S. producers' price
	Range	Arithmetic average 2/	Range	Weighted average 3/		
	Cents per pound	Cents per pound	Cents per pound	Cents per pound	Cents per pound	Percent
1973:						
January	***	***	***	***	***	***
February	***	***	***	***	***	***
March	***	***	***	***	***	***
April	***	***	***	***	***	***
May	***	***	***	***	***	***
June	***	***	***	***	***	***
July	***	***	***	***	***	***
August	***	***	***	***	***	***
September	***	***	***	***	***	***
October	***	***	***	***	***	***
November	***	***	***	***	***	***
December	***	***	***	***	***	***
1974:						
January	***	***	***	***	***	***
February	***	***	***	***	***	***
March	***	***	***	***	***	***
April	***	***	***	***	***	***
May	***	***	***	***	***	***
June	***	***	***	***	***	***
July	***	***	***	***	***	***
August	***	***	***	***	***	***
September	***	***	***	***	***	***
October	***	***	***	***	***	***
November	***	***	***	***	***	***
December	***	***	***	***	***	***
1975:						
January	***	***	***	***	***	***
February	***	***	***	***	***	***
March	***	***	***	***	***	***
April	***	***	***	***	***	***
May	***	***	***	***	***	***
June	***	***	***	***	***	***
July	***	***	***	***	***	***
August	***	***	***	***	***	***
September	***	***	***	***	***	***
October	***	***	***	***	***	***
November	***	***	***	***	***	***
December	***	***	***	***	***	***
1976:						
January	***	***	***	***	***	***
February	***	***	***	***	***	***
March	***	***	***	***	***	***

1/ All prices are reported prices received for the largest shipment each month to each company's four largest customers.

2/ Arithmetic average of prices of the 3 major U.S. producers. Data were insufficient to provide a weighted average.

3/ ***

Source: Compiled from U.S. producers' and importers' responses to questionnaires of the U.S. International Trade Commission.

Table 13.--Clear PMMA polymer resins: Net delivered selling prices 1/ of U.S. producers and importers, as reported by purchasers, by months, January 1973-March 1976

(In cents per pound)

Supplier	January	February	March	April	May	June	July	August	September	October	November	December
	1973											
Rohm and Haas	***	***	***	***	***	***	***	***	***	***	***	***
DuPont	***	***	***	***	***	***	***	***	***	***	***	***
American Cyanamid	***	***	***	***	***	***	***	***	***	***	***	***
J. W. Carroll	-	-	-	-	-	-	-	-	-	-	-	-
Mitsubishi Rayon	***	***	***	***	***	***	***	***	***	-	-	-
Asahi Chemical	-	-	-	-	-	-	-	-	-	-	-	-
Chemacryl	-	-	-	-	-	-	-	-	-	-	-	-
	1974											
Rohm and Haas	***	***	***	***	***	***	***	***	***	***	***	***
DuPont	***	***	***	***	***	***	***	***	***	***	***	***
American Cyanamid	***	***	***	***	***	***	***	***	***	***	***	***
J. W. Carroll	***	***	***	***	***	***	***	***	***	***	***	***
Mitsubishi Rayon	***	***	***	***	***	***	***	***	***	***	***	***
Asahi Chemical	***	***	***	***	***	***	***	***	***	***	***	***
Chemacryl	***	***	***	***	***	***	***	***	***	***	***	***
	1975											
Rohm and Haas	***	***	***	***	***	***	***	***	***	***	***	***
DuPont	***	***	***	***	***	***	***	***	***	***	***	***
American Cyanamid	***	***	***	***	***	***	***	***	***	***	***	***
J. W. Carroll	***	***	***	***	***	***	***	***	***	***	***	***
Mitsubishi Rayon	***	***	***	***	***	***	***	***	***	***	***	***
Asahi Chemical	***	***	***	***	***	***	***	***	***	***	***	***
Chemacryl	***	***	***	***	***	***	***	***	***	***	***	***
	1976											
Rohm and Haas	***	***	***									
DuPont	***	***	***									
American Cyanamid	***	***	***									
J. W. Carroll	***	***	***									
Mitsubishi Rayon	***	***	***									
Asahi Chemical	***	***	***									
Chemacryl	***	***	***									

1/ Price paid by each company's largest purchaser during a given month.

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The distress sale of December 1974.--In December 1974, 220,000 pounds of Japanese PMMA polymer resins were sold to * * * , at * * * cents per pound, which was * * * cents per pound below the Japanese selling price of only 2 months before, and * * * cents per pound below the average domestic selling price for December 1974. This particular sale was allegedly due to a specialized set of circumstances, under which Nissho-Iwai, faced with a suddenly cancelled order, had to dispose of the 220,000 pounds of merchandise in order to avoid the accumulating storage and insurance expenses of holding the resins in a bonded warehouse in Japan. It was decided to drop the price to * * * cents per pound in order to complete the sale. This particular sale was the first of many sales of Japanese PMMA polymer resins * * * in the ensuing months.

At the Commission hearing, importers alleged that their price decrease of December 1974 was made in response to a decrease which occurred in domestic prices. Evidence furnished to the Commission shows that

* * * * * * *

LTFV sales, January-June 1975.--Between January and June 1975 (the period of LTFV sales), the average price of Japanese PMMA polymer resins ranged * * * the average domestic price. * * *

* * * . Average Japanese prices during this period ranged

* * *

* * * compared with the dumping margins of 18 to 30 percent which were found by the U.S. Department of the Treasury.

The average domestic price of PMMA polymer resins * * * * * * cents per pound in January 1975 to * * * cents per pound in May 1975. Purchasers' prices paid to * * * fell from * * * cents per pound in January 1975 to * * * cents per pound in May-July 1975

* * *

* * *

* * *

* * *

July-December 1975.--During the second half of 1975, Japanese PMMA polymer resins * * *

* * *

* * *

* * * All three major U.S. producers raised their list prices by 4.0 cents per pound in September 1975.

1976.--There have been no known major sales of Japanese PMMA polymer resins in the United States in 1976, * * *

* * *

* * *

* * * One major U.S. purchaser reported to the Commission that:

* * *

U.S. producers' average prices of PMMA polymer resins * * * * * * cents per pound in December 1975 to * * * cents per pound in March 1976. All three major domestic producers raised their list prices 3 to 4 cents per pound in March 1976.

Price suppression and/or depression

It was alleged in the hearing that in the 1969-72 period, domestic producers were forced to lower their prices by as much as 30 percent in order to meet import competition from Japan. 1/ It was further alleged that during a period of escalating costs at the end of 1974, Du Pont was forced to maintain prices at unsatisfactory levels 2/ in order to meet import competition from Japan. 3/ While price data available to the Commission do not include the 1969-72 period, price trends during the 1973-75 period were analyzed to determine whether price suppression/depression actually occurred in 1974 and 1975.

* * *

* * *

1/ Transcript of the hearing, p. 7.
2/ * * *
3/ Transcript of the hearing, p. 8.

* * * This increase was greater than the price increases for rubber and plastics products, chemicals and allied products, and industrial commodities during the same period but less than the price increase for industrial chemicals. Price indexes for PMMA polymer resins and various industry groupings are shown in chart D (appendix B) and in table 14, below:

Table 14.--Price indexes for PMMA polymer resins, rubber and plastics products, industrial chemicals, chemicals and allied products, and industrial commodities, January and July of 1973-75 and January 1976

(January 1973=100)

Year and month	PMMA polymer resins	Rubber and plastics products	Industrial chemicals	Chemicals and allied products	Industrial commodities
1973:					
January	100.0	100.0	100.0	100.0	100.0
July	98.1	102.6	102.0	105.4	105.8
1974:					
January	108.8	107.0	106.6	112.5	112.8
July	133.3	126.8	153.3	141.2	131.5
1975:					
January	142.5	136.0	194.1	167.5	139.6
July	139.3	136.5	203.5	172.6	142.7
1976:					
January	148.4	138.5	NA	175.3	147.8

Source: U.S. Department of Commerce, Survey of Current Business, except for data on PMMA polymer resins, which were compiled from U.S. producers' responses to questionnaires of the U.S. International Trade Commission.

Domestic producers of PMMA polymer resins contend that price depression in the domestic industry in 1975 was caused not only by low-priced Japanese sales in the U.S. market, but also by low-priced

Japanese offers of major quantities of material in late 1974 to early 1975. Domestic producers allegedly were obliged to lower their prices in order to avoid losing sales to foreign suppliers. * * *

* * *

* * *

* * *

Between July 1974 and July 1975, prices for PMMA polymer resins increased 4.5 percent, or at a slower rate than in any of the industry groupings listed above. Between January and July 1975, prices for PMMA polymer resins actually declined; * * *

* * *

* * *

* * *

* * * although this period also was one of seriously depressed demand. Between July 1975 and January 1976, the price increase for PMMA polymer resins was greater than that for any of the other industry groupings listed above.

* * * * * * *

* * * * * * *

Prices of J. W. Carroll & Sons and of Chemacryl are alleged by the attorney for Mitsubishi Rayon and Asahi Chemical to have been below those of the major domestic producers:

> . . . the entry of a new domestic acrylic resin producer, J. W. Carroll & Sons, into the market in 1975 could also have caused the alleged injury to the complainant and other members of the domestic industry. It is reported that this new domestic manufacturer is already producing at a rate far in excess of the available annual importations of our clients and is offering its product for sale at prices below those of other domestic producers.
>
> In addition, we call the Commission's attention to the increased imports from Chemacryl, a Canadian producer owned in part by Rohm and Haas Darmstadt that began producing acrylic resin in late 1973. We have been advised that Chemacryl's prices for acrylic resin, both list and actual, are substantially below those of the U.S. producers. 1/

* * * * * * *

1/ Transcript of the hearing, p. 95.

Factors other than price

Allocation in the domestic industry.-- * * *

During parts of 1973 and 1974, shortages of MMA monomer raw material occurred, and it was necessary for the major producers to place their PMMA polymer resin customers on allocation. 1/

* * * * * * *

Preferability of domestically-produced PMMA polymer resins.--If prices of domestically produced and Japanese PMMA polymer resins are equal, all or nearly all domestic purchasers prefer to purchase from

1/ Transcript of the hearing, p. 29.

domestic producers. For this reason, importers must undersell domestic producers by a few cents per pound in order to compete effectively during normal economic periods.

One drawback to the purchase of imported PMMA polymer resins from Japan is delivery time; the mean delivery time is about 2 months, while domestic producers can deliver orders much more quickly.

A second drawback to the purchase of Japanese PMMA polymer resins arises because domestic producers are able to deliver in bulk by means of a truckload (40,000 pounds) or a railroad carload (180,000 pounds), while importers of Japanese PMMA polymer resins must ship in Gaylord boxes (1,200-1,400 pounds) or in 55-pound bags, since bulk shipment across the Pacific Ocean is not economical. Some large domestic purchasers, such as * * * and * * * employ storage silos which can be loaded directly from bulk shipments; when such purchasers buy Japanese PMMA polymer resins, they must incur the additional costs of opening and handling 150 individual boxes in order to obtain the amount held by a bulk railroad carload. One domestic purchaser has estimated that the in-plant cost of boxed material is about 2 cents per pound above that of bulk material.

Most domestic purchasers would prefer to purchase from a domestic producer, rather than be dependent upon a foreign source of supply. This is especially so in the PMMA polymer resin industry in which there have been periods of shortage and allocation. It is reported that domestic producers also offer arrangements whereby a purchaser may utilize the producer's well-known trade name in promoting an end product.

Quality considerations.--Purchasers surveyed by the Commission in regard to this investigation were asked to comment on quality and suitability differences of PMMA molding and extrusion resin purchases made by them from domestic sources and from Asahi Chemical and Mitsubishi Rayon. Out of eight pertinent responses.--

1. Three purchasers did not use Japanese PMMA polymer resins.

2. Five purchasers found no difference between sources (however, none had personal experience with PMMA polymer resins made by Asahi Chemical; they handled only the product of Mitsubishi Rayon).

3. One purchaser stated that the domestic suppliers have more technical expertise relating to molding characteristics.

4. One user stated that the domestic producer has technical personnel "more proximinent [sic] to the manufacturing location as expected."

5. None of the purchasers favored the use of PMMA polymer resins from Asahi Chemical or Mitsubishi Rayon over those from domestic suppliers.

The recession.--In testimony before the Commission, 1/ the attorney for Mitsubishi Rayon and Asahi Chemical stated:

> It cannot be denied that the domestic PMMA pellet market was depressed during 1975; however, it is clear that this depression can in no way be attributed to imports of (P) MMA pellet from Japan. . .
>
> Rather, the depression can be directly linked to the decline in the U.S. economy in general, and to the disastrous decline in the auto industry and construction industry in particular. [2/] For instance, the auto industry recorded a gain in production between 1972 and 1973 of 11.3 percent; however, production fell off between 1973 and 1974 by 24.3 percent, and between 1974 and 1975

1/ Transcript of the hearing, p. 93.

2/ During 1973-75 GNP declined 3.8 percent. By contrast, auto and construction industries declined 30.7 percent and 26.1 percent, respectively, during the same period.

> by an additional 8 percent, so that the average monthly figure for 1975 was 30.7 percent below the same figure for 1973. The same was also true in the construction industry. Between 1972 and 1973, the average monthly rate of private nonresidential construction units put in place rose by 5.7 percent; however, between 1973 and 1974 the average declined by 10.2 percent and the 1974-75 figures registered a whopping 17.7 percent decline. Thus, the 1975 monthly average was 26.1 percent below that for 1973.
>
> It is common knowledge that the vast preponderance of acrylic resin utilized by automobile, construction, or related industries. Therefore, when construction slows to a virtual halt, and automobile production drops off by 30.7 percent in a two-year period, sales of methyl methacrylate pellet are bound to drop off substantially, and it is these economic occurrences which we submit are the proximate [sic] cause of any alleged injury suffered by domestic industry during the relevant period.

Competition from other domestic and foreign producers.--In testimony before the Commission, 1/ Mr. William B. Jones, Jr., Vice President, K-S-H, Inc. (St. Louis, Mo.) stated that--

> . . . one of our competitors in the extrusion industry, J. W. Carroll & Sons, makes its own PMMA from monomer, originally for its own use. In the last couple of years, it has begun offering PMMA pellets for sale in the domestic market. [2/] This fact has a repressing effect on domestic pricing. Obviously, any material sold by that company into the U.S. market is volume not realized by the other three U.S. manufacturers. In addition, other foreign sources of supply are and should be available to the United States consumers of PMMA such as K-S-H, Inc. To the extent that these sources make sales in this country, domestic manufacturers would be subjected to competitive effects.

1/Transcript of the hearing, p. 38.
2/ * * * * * * *

U.S. imports of acrylic resins from Canada increased from 517,000 pounds in 1974 to 2.4 million pounds in 1975; in 1975, Canada surpassed Japan as the principal U.S. source of imported acrylic resins. During the first quarter of 1976, U.S. imports from Canada amounted to 575,000 pounds while U.S. imports from Japan amounted to 245,000 pounds.

Profit-and-Loss Experience of Domestic Producers

Financial information was received from the 3 major producers of PMMA polymer resins. These companies account for about * * * percent * * * of domestic production of such resins. * * *

* * *

* * *

* * *

Profit-and-loss data were requested on the establishments in which PMMA polymer resins were manufactured. The companies were not able to supply the information on this basis since their records are kept on a division or department basis which has little relationship to such resin operations. The companies, however, maintained their records on a product line basis, however, and therefore were able to segregate profit-and-loss data on PMMA polymer resins.

Sales of PMMA polymer resins rose without interruption from 1971 to 1974 before declining by * * * million in 1975. Net profits generally followed the same trend except in 1974 when they declined slightly from the level of 1973. The ratio of net operating profit to net sales ranged between 25.7 percent and 1.8 percent, 1973 being the highest and 1975 the lowest.

* * * * * * *

* * * * * * *

Members of the staff contacted each of the three companies for which data are reported herein and verified these data. * * *

* * *

In both instances the main reasons given were the large increase in raw material cost and the depressed market; these factors brought about an increase in the cost of goods sold and a decrease in sales. These points were also brought out at the public hearing by the complainant.

Table 15.--Profit-and-loss experience of 3 producers of polymethyl methacrylate on their PMMA polymer resin operations only, 1971-75

Year and company	Net sales	Cost of goods sold	Gross profit	Administrative, selling and general expense	Net operating profit or (loss)	Ratio of net operating profit or (loss) to net sales
	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	Percent
1971:						
***	***	***	***	***	***	***
***	***	***	***	***	***	***
***	***	***	***	***	***	***
Total	***	***	***	***	***	***
1972:						
***	***	***	***	***	***	***
***	***	***	***	***	***	***
***	***	***	***	***	***	***
Total	***	***	***	***	***	***
1973:						
***	***	***	***	***	***	***
***	***	***	***	***	***	***
***	***	***	***	***	***	***
Total	***	***	***	***	***	***
1974:						
***	***	***	***	***	***	***
***	***	***	***	***	***	***
***	***	***	***	***	***	***
Total	***	***	***	***	***	***
1975:						
***	***	***	***	***	***	***
***	***	***	***	***	***	***
***	***	***	***	***	***	***
Total	***	***	***	***	***	***

Source: Compiled from data submitted to the U.S. International Trade Commission by the domestic producers.

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APPENDIX A

GLOSSARY OF TERMS

Acrylic resin: A thermoplastic polymer or copolymer of acrylic acid, methacrylic acid, or esters of these acids.

Comonomer: A monomer which is mixed with a different kind of monomer in order to produce a copolymer.

Copolymer: A polymer made from two or more different kinds of monomers.

Molding and extrusion resins: Resins for use in molding or extrusion processes. Molding means imparting shape to a dry thermoplastic resin by applying heat and/or pressure in a confining cavity or matrix. Extrusion means forcing a thermoplastic resin through a die under heat and/or pressure to produce continuous lengths of plastic sections such as rods, sheets, tubes, profiles, and cable coatings.

Monomer: A compound of simple structure and low molecular weight which is capable of reacting with itself or other simple compounds to form a polymer.

Plastic: A high polymer which, at some stage in its manufacture, is capable of flowing under heat and pressure, if necessary, into any desired final shape. The high polymer is combined with other ingredients, such as fillers, colors, or plasticizers.

Polymer: A compound formed by the reaction of simple molecules having functional groups which permit their combination to proceed to high molecular weights under suitable conditions. The term often is used synonymously with the term "plastic" or the term "resin."

Resin: A high-molecular-weight material with no definite melting point. For general purposes, the terms "resin," "polymer," and "plastic" can be (and are) used interchangeably by the trade.

Resin content basis: The weight of the resin exclusive of the weight of plasticizers, colorants, liquid diluents, and other additives.

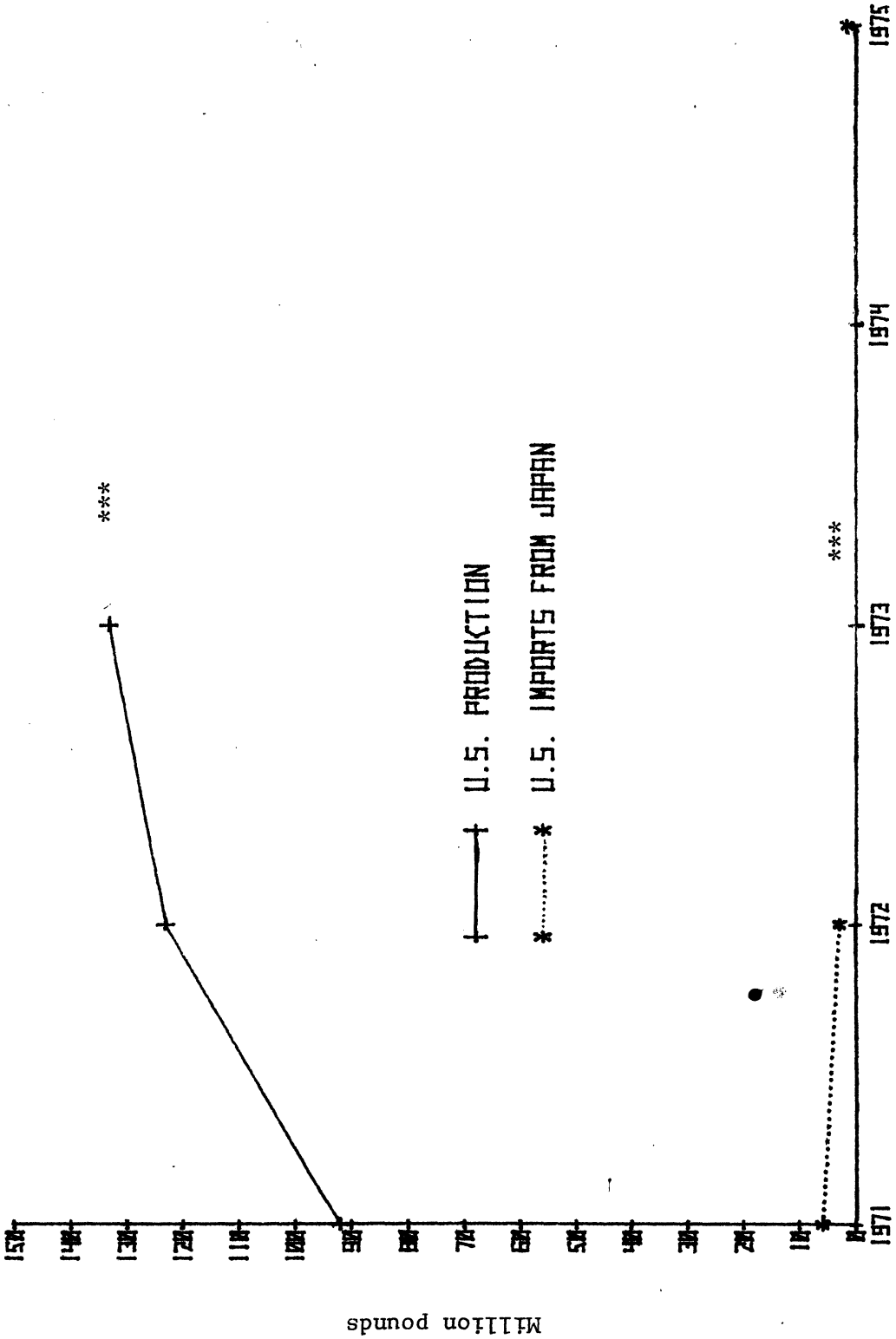
Thermoplastic resin: A material that will repeatedly soften when heated and harden when cooled.

Thermosetting resin: A material that cures by chemical reaction when heated and, when cured, cannot be resoftened by heating.

APPENDIX B

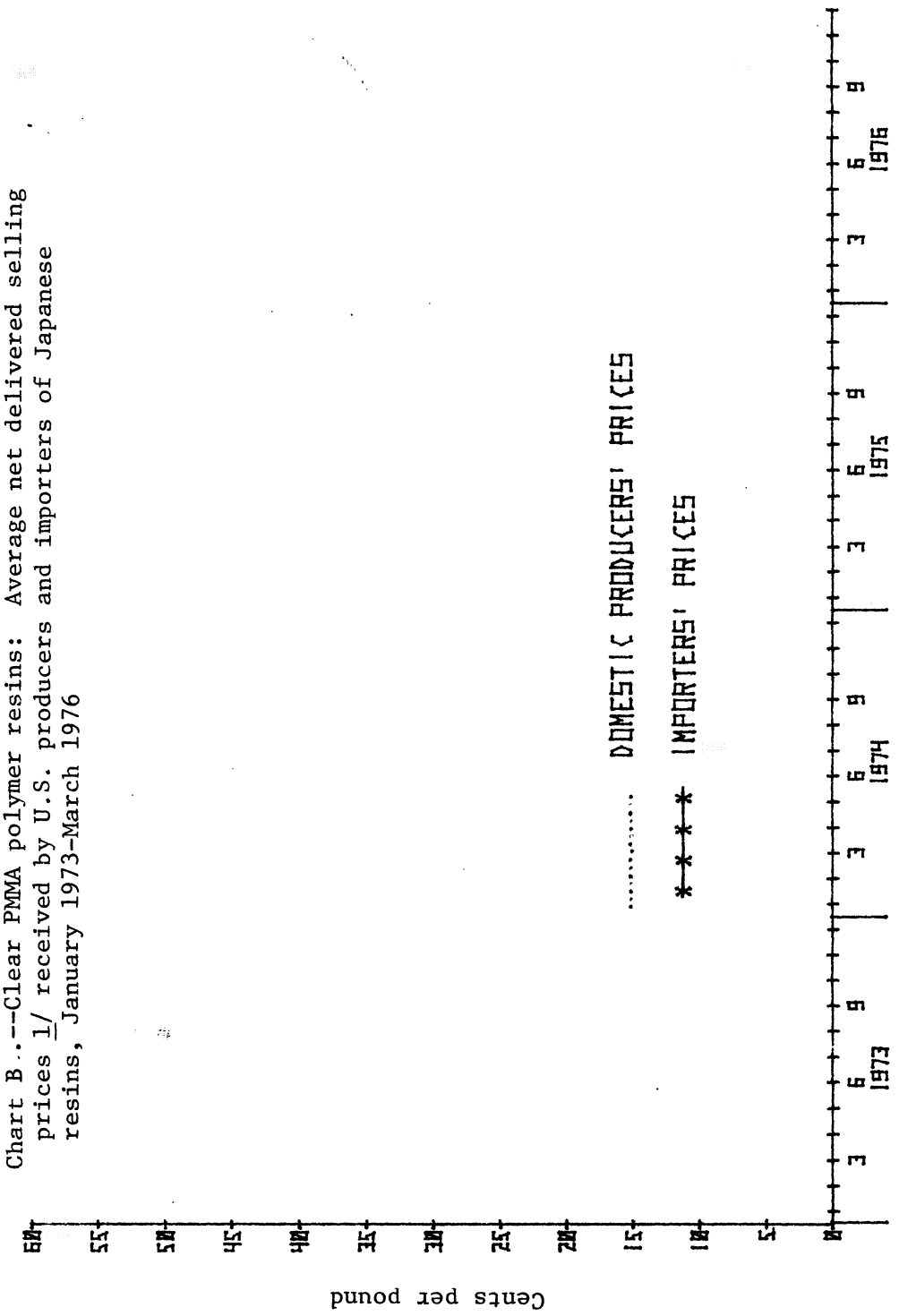
CHARTS

Chart A.--PMMA polymer resins: U.S. production and U.S. imports from Japan, 1971-75



Source: Compiled from U.S. producers' and importers' responses to questionnaires of the U.S. International Trade Commission.

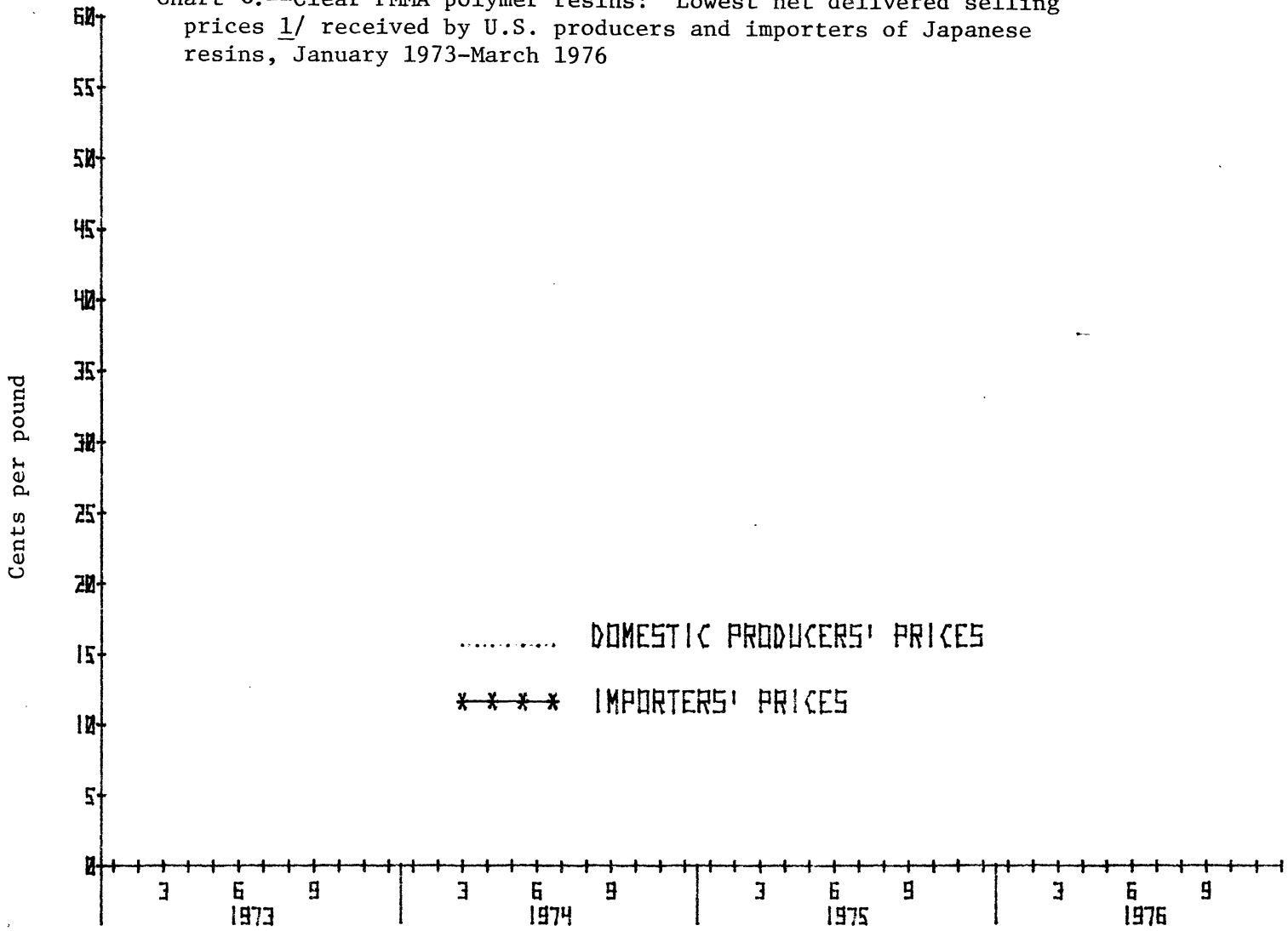
Chart B.--Clear PMMA polymer resins: Average net delivered selling prices 1/ received by U.S. producers and importers of Japanese resins, January 1973-March 1976



1/ Price data are taken from table 12.

Source: Compiled from U.S. producers' and importers' responses to questionnaires of the U.S. International Trade Commission.

Chart C.--Clear PMMA polymer resins: Lowest net delivered selling prices 1/ received by U.S. producers and importers of Japanese resins, January 1973-March 1976



1/ Price data are taken from table 12.

Source: Compiled from U.S. producers' and importers' responses to questionnaires of [illegible] International Trade Commission.

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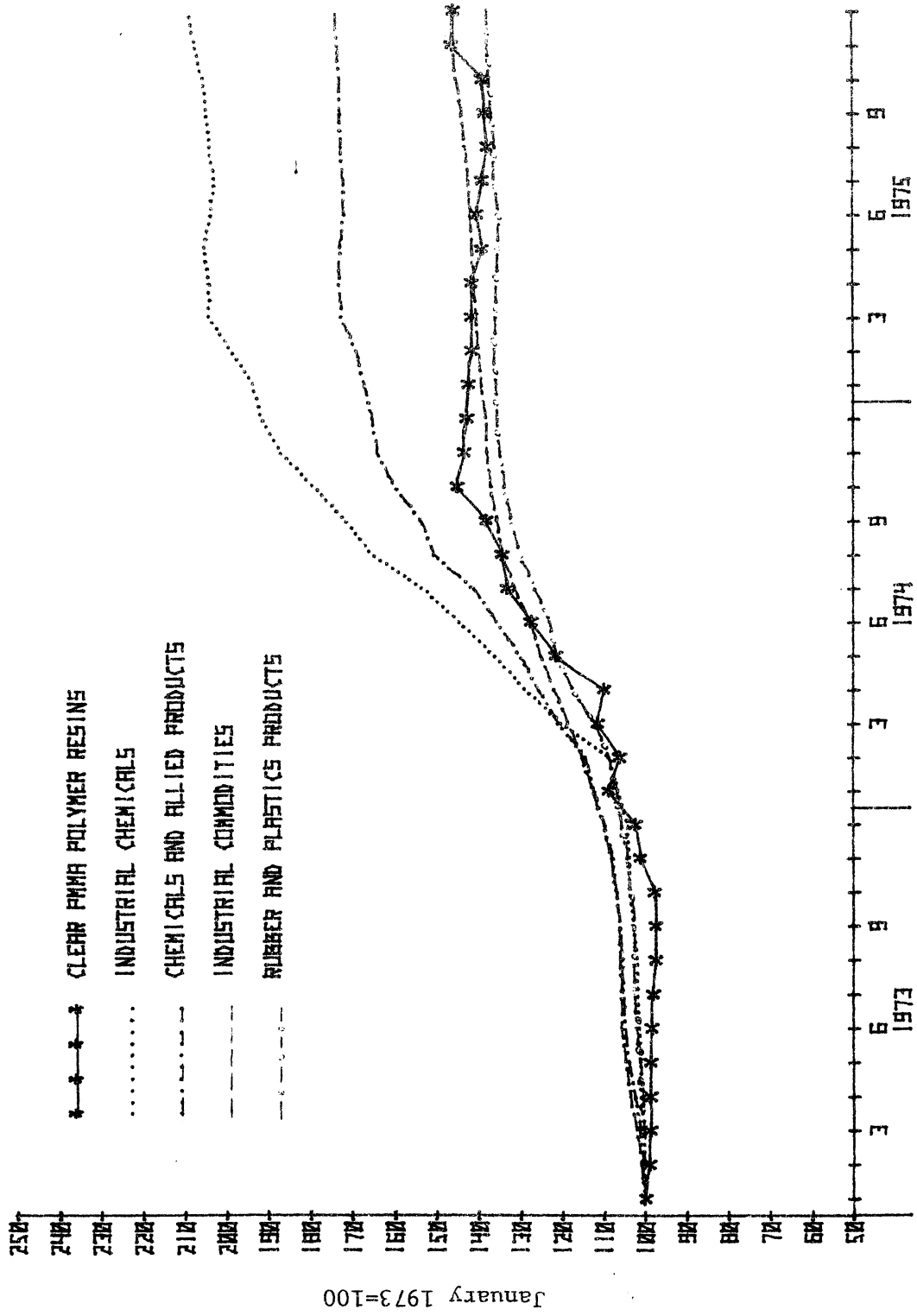
Chart D .--Clear PMMA polymer resins and selected industry groupings: Price indexes, January 1973-March 1976



Source: U.S. Department of Commerce, Survey of Current Business; U.S. producers' responses to questionnaires of the U.S. International Trade Commission.