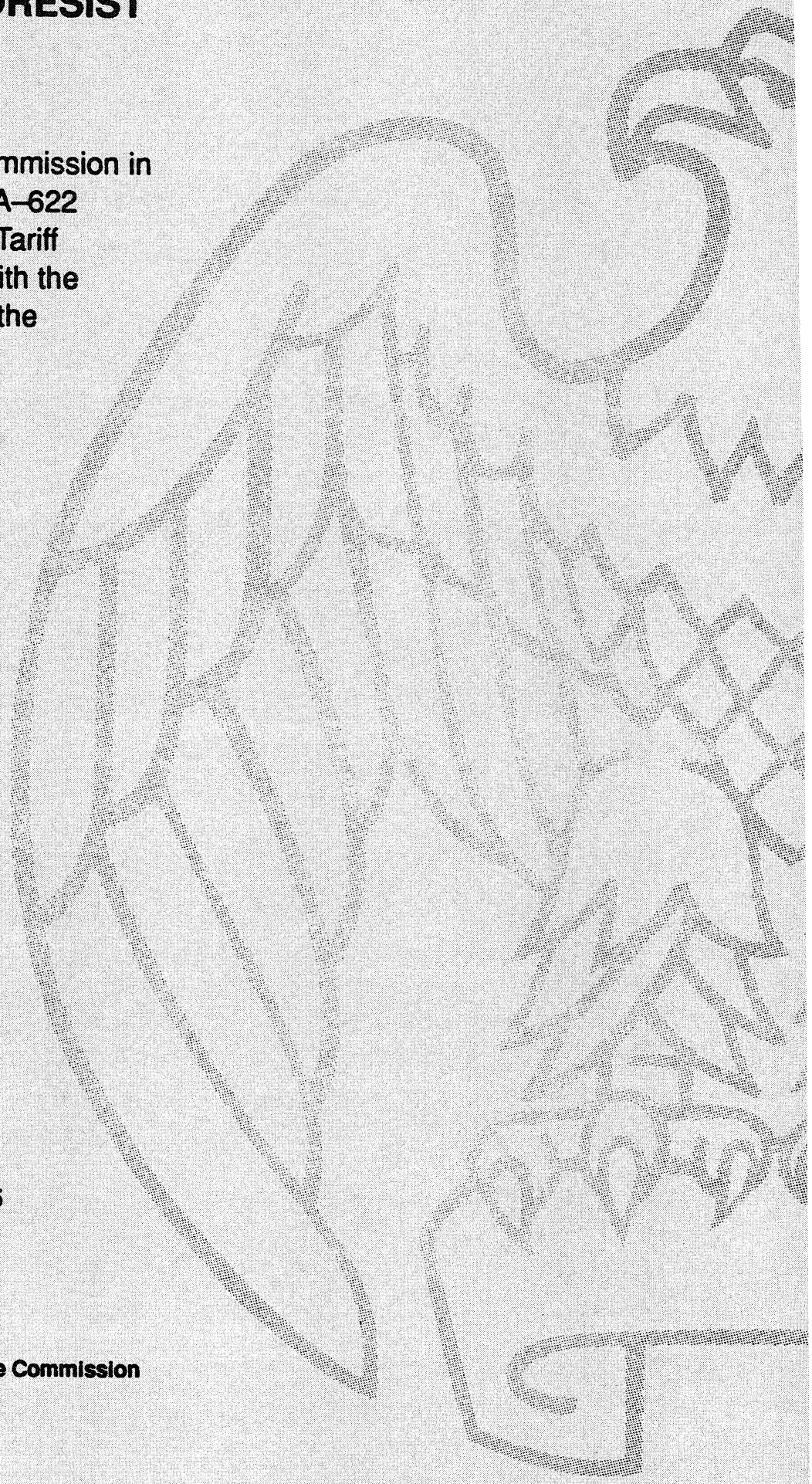
DRY FILM PHOTORESIST FROM JAPAN

Determination of the Commission in Investigation No. 731–TA–622 (Preliminary) Under the Tariff Act of 1930, Together With the Information Obtained in the Investigation



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Washington, DC 20436

UNITED STATES INTERNATIONAL TRADE COMMISSION

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Note.--Information that would reveal confidential operations of individual concerns may not be published and therefore has been deleted from this report. Such deletions are indicated by asterisks.

DETERMINATION AND VIEWS OF THE COMMISSION

UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation No. 731-TA-622 (Preliminary)

DRY FILM PHOTORESIST FROM JAPAN

Determination

On the basis of the record[1] developed in the subject investigation, the Commission determines,[2] pursuant to section 733(a) of the Tariff Act of 1930 (19 U.S.C. § 1673b(a)), that there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury by reason of imports from Japan of dry film photoresist, provided for in subheadings 3702.39.00, 3702.42.00, 3702.43.00, 3702.44.00, 3702.95.00, and 3707.90.30 of the Harmonized Tariff Schedule of the United States, that are alleged to be sold in the United States at less than fair value (LTFV).

Background

On July 16, 1992, a petition was filed with the Commission and the Department of Commerce by E.I. Du Pont de Nemours & Co., Wilmington, DE; Morton International, Inc., Tustin, CA; and Hercules Incorporated, Wilmington, DE, alleging that an industry in the United States is materially injured and threatened with material injury by reason of LTFV imports of the subject products from Japan. Accordingly, effective July 16, 1992, the Commission instituted antidumping investigation No. 731-TA-622 (Preliminary).

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[1] The record is defined in sec. 207.2(f) of the Commission's Rules of Practice and Procedure (19 CFR § 207.2(f)).

[2] Commissioner Brunsdale dissenting; Vice Chairman Watson not participating.

Notice of the institution of the Commission's investigation and of a public conference to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the Federal Register of July 23, 1992 (57 F.R. 32810). The conference was held in Washington, DC, on August 6, 1992, and all persons who requested the opportunity were permitted to appear in person or by counsel.

VIEWS OF CHAIRMAN NEWQUIST, COMMISSIONER ROHR, AND COMMISSIONER NUZUM

Based on the record in this preliminary investigation, we determine that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of dry film photoresist from Japan that is alleged to be sold at less than fair value (LTFV).[1] [2] [3] [4]

I. LEGAL STANDARD IN PRELIMINARY INVESTIGATIONS

The legal standard in preliminary antidumping investigations requires the Commission to determine whether, based on the best information available at the time of the preliminary determination, there is a reasonable indication of material injury or threat thereof to a domestic industry by reason of the subject imports. [5] In this investigation, the Commission considered whether: "(1) the record as a whole contains clear and convincing evidence that there is no material injury or threat of material injury; and (2) no likelihood exists that contrary evidence will arise in a final investigation." [6] The U.S. Court of Appeals for the Federal Circuit has held that this interpretation of the standard "accords with clearly discernible legislative intent and is sufficiently reasonable." [7]

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[1] See Additional Views of Commissioner Crawford for her analysis of why there is a reasonable indication that the domestic industry is threatened with material injury by reason of alleged LTFV imports.
[2] See Dissenting Views of Commissioner Brunsdale.
[3] Vice Chairman Watson did not participate in this investigation.
[4] Material retardation of the establishment of an industry is not an issue in this investigation and will not be discussed further.
[5] 19 U.S.C. § 1671b(a). American Lamb v. United States, 785 F.2d 994, 1001 (Fed. Cir. 1986); Calabrian Corporation v. United States International Trade Commission, 16 CIT _, Slip Op. 92-69 (CIT 1991) (citing American Lamb).
[6] American Lamb Co., 785 F.2d at 1001 (Fed. Cir. 1986).
[7] Id. at 1004.

II. LIKE PRODUCT AND DOMESTIC INDUSTRY

A. Background and Products Subject to Investigation

To determine whether a domestic industry is materially injured or threatened with material injury by reason of the subject imports, the Commission must first define the "like product" and the "industry". Section 771(4)(A) of the Tariff Act of 1930 (the "Act") defines the relevant domestic industry as "the domestic producers as a whole of a like product, or those producers whose collective output of the like product constitutes a major proportion of the total domestic production of that product . . . ."[8] In turn, section 771(10) defines like product as "a product which is like, or in the absence of like, most similar in characteristics and uses with, the article subject to investigation . . . ."[9]

The Department of Commerce has defined the imported product subject to this investigation as:

> all forms of dry film photoresist from Japan. Dry film photoresist includes all forms and dimensions of solid photosensitive resin film in rolls, without sprocket holes, designed to be laminated onto a surface to permit etching or plating of a pattern. [10]

Dry film photoresist is a thin solid photographic film used primarily in the etching and plating of patterns on high-density printed circuit boards (PCBs), which are used in the manufacture of electronic devices. [11] Dry film photoresist consists of five chemical components,[12] which initially are

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[8] 19 U.S.C. § 1677(4)(A).
[9] 19 U.S.C. § 1677(10).
[10] 57 Fed. Reg. 36066, August 12, 1992.
[11] Dry film is also used in chemical machining of precision parts. One petitioner reported that an estimated 5 percent of dry film sales goes to that market. Report at I-23.
[12] The components are: (1) one or more binders to hold the film together in solid form; (2) one or more photoinitiators that react to light exposure; (3)

(continued...)

batch-mixed together in liquid form, then coated onto a layer of plastic film, dried, laminated with another thin layer of plastic film for protection, and wound into "widestock" or master rolls of 4-6 feet in width and over 1000 feet in length. [13] Before shipment to the end-user, the rolls are slit into widths that are exact multiples of the user's PCB's. Once slitted, the rolls are considered "finished". [14]

Dry film photoresist is not a homogenous product. Its exact formulation depends on a variety of factors, including the film's manufacturer and, most importantly, on the PCB manufacturing process of the user. To select or recommend a specific film for a user, the producer must first know whether the user's process requires a negative or positive-working film, i.e., whether the unexposed film or the exposed film is to be removed before etching or plating. [15] Secondly, the producer must know the nature of the user's developing and stripping solutions and the makeup of the user's equipment. There are three basic types of developing and stripping solutions: (1) aqueous (water based), (2) solvent based, or (3) semi-aqueous, which is a combination of processes. Each type of solvent and stripping solution requires specially formulated film. [16] The exact formulation of the film also will differ according to whether the user's process is for etching or plating. The etching process involves the further consideration of whether the etching solutions are acid

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[12](...continued)
one or more monomers that transform the film at the time of exposure; (4) plasticizers and adhesion promoters that add strength to the transformed film; and (5) dyes and/or pigments that color the film at the time of exposure (for ease of inspection during the PCB manufacturing process. Report at I-4.

[13] Report at I-4.

[14] Report at I-4.

[15] All film imported from Japan and nearly all dry film produced in the United States is negative working film. Report at I-4-5.

[16] To date, all imports from Japan and about 90 percent of U.S. production have been formulated for an aqueous developing solution. Report at I-5.

or alkaline based. [17] Finally, dry film photoresist is produced in several thicknesses to better accommodate users' needs. [18]

B. Like Product Analysis

The Commission's like product determinations are factual, and the Commission applies case-by-case the statutory standard of "like" or "most similar in characteristics and uses".[19] In this investigation, we have identified three issues regarding the definition of the like product: (1) whether slit and unslit dry film photoresist constitute one like product; (2) whether all types of dry film photoresist should be included in the like product: and (3) whether the like product should include photoresist other than dry film. We address each of these issues in turn.

1. Whether slit and unslit dry film photoresist constitute one like product [20]

All domestic producers of dry film photoresist slit the widestock they produce. In October 1990, however, the major importer, LeaRonal, completed construction of a domestic slitting facility at a cost of $1.5 million at which it slits imported widestock from Japan. Slitting involves the use of special equipment and must be done in a clean room.

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[17] Report at I-5.
[18] Report at I-5.
[19] In analyzing which domestic products are "like" the class or kind of imported articles subject to investigation, the Commission considers factors including: (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) customer and producer perceptions; (5) common manufacturing facilities and production employees; and where appropriate, (6) price. Generally, the Commission requires "clear dividing lines among possible like products" and disregards minor variations among them. See Torrington Co. v. United States, 767 F. Supp. 744, 748-749 (CIT 1990), aff'd. 938 F.2d 1278 (1991).
[20] No party has argued that slit and unslit dry film photoresist constitute separate like products. However, this does not preclude us from considering the issue.

We address the issue of whether slit and unslit dry film photoresist constitute a single like product using a semifinished product analysis. [21] The Commission typically examines five factors to determine whether components or semifinished products should be included in the same like product as finished products. These factors are: (1) the necessity for, and costs of, further processing; (2) the degree of interchangeability of articles at different stages of production; (3) whether the article at an earlier stage of production is dedicated to use in the finished article; (4) whether there are significant independent uses or markets for the finished and unfinished articles; and (5) whether the article at an earlier stage of production embodies or imparts to the finished article an essential characteristic or function. [22]

We note that it is necessary to slit dry film photoresist widestock in order to use it for its intended purpose. The value added during the slitting process is about 20 percent of the value of the finished product. The widestock is not interchangeable in use with the slit dry film, as it would be difficult for purchasers to use widestock which has not been cut. In that connection, it appears that purchasers do not have their own slitting facilities. Further, there is no significant use for widestock other than to

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[21] See, e.g., DRAMs of One Megabit and Above from the Republic of Korea, Inv. No. 731-TA-556 (Preliminary), USITC Pub. 2519 at 6 (June 1992); 3.5" Microdisks and Media Therefore from Japan, Inv. No. 731-TA-389 (Final) USITC Pub. 2170 at 7, 13-18 (March 1989) (semifinished product analysis used to determine whether complete microdisks and the coated media from which microdisks were made should be included within the same like product).

[22] See, e.g., Ball Bearings, Mounted and Unmounted, and Parts Thereof from Argentina, Austria, Brazil, Canada, Hong Kong, Hungary, Mexico, the People's Republic of China, Poland, the Republic of Korea, Spain, Taiwan, Turkey, and Yugoslavia, Invs. Nos. 701-TA-307 and 731-TA-498-511 (Preliminary) USITC Pub. 2374 at 13 & n.34 (April 1991); Certain Telephone Systems and Subassemblies Thereof from Japan and Taiwan, Invs. Nos. 731-TA-426 and 428 (Final), USITC Pub. 2237 at 5 n.9 (November 1989).

be slit and used as dry film photoresist. The unslit widestock imparts the essential characteristics to the slit product. Although most U.S. widestock production is slit and shipped domestically, large quantities are also exported, unslit, to foreign affiliates who in turn slit them to their customers' specification. A small proportion of exports are of slitted material shipped directly to foreign end users. [23]

We find that the various factors weigh in favor of including both widestock and slit material in the like product. Particularly in view of the fact that there are no independent uses for the widestock other than in the production of finished dry film photoresist, and the fact that the unslit photoresist imparts the essential characteristics to the finished product, we find that the like product consists of both slit and unslit dry film photoresist.

2. Whether all types of dry film photoresist constitute one like product

Petitioners have taken somewhat inconsistent positions on this like product question. For instance, petitioners presented the injury data in the petition in terms of domestic production of all dry film photoresist. However, petitioners noted that the Commission could properly conclude that U.S. production of aqueous processable films constitute the "like" product manufactured in the United States because all dry film imports from Japan are aqueous processable. [24]

Respondents LeaRonal, Inc. and Tokyo Ohka Kogyo Co. ("LeaRonal et al.")

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[23] Report at I-8.

[24] Counsel for petitioner also stated that under the standards that the Commission has used in the past for determining like product, the Commission may consider it more appropriate to look at dry film photoresist as a group, i.e., those formulated for use with aqueous, semi-aqueous, and solvent based development solutions. Preliminary Conference Transcript at 21.

declined to take a position on this issue, stating that it does not matter how the like product is defined. [25] Respondents Hitachi Chemical Co. and Hitachi Chemical Co. America, Ltd. ("Hitachi") also stated that the definition of the like product probably made no difference, but urged for purposes of the preliminary investigation that all categories of dry film photoresist be considered one like product. [26]

Many factors must be taken into account when deciding on a specific photoresist formulation, in addition to whether the developing solution is solvent based, semi-aqueous based, or aqueous based. These factors include whether the user requires a positive or negative film, the make-up of the user's equipment, and whether the user is etching or plating. [27] Thus, the nature of the developing solution is only one factor considered when making a purchasing decision.

All types of dry film photoresist are manufactured by similar production processes in the same manufacturing facilities by the same production employees and are marketed through the same channels of distribution. Producing one film formulation or another is primarily a matter of changing the mixture of the ingredients in the initial batch. [28]

The information on the record regarding interchangeability is somewhat mixed. At the conference, petitioners' industry representative indicated that all forms of dry film photoresist are interchangeable to some degree.[29] In their post-conference brief, petitioners contend that solvent type photoresist

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[25] Preliminary Conference Transcript at 97.
[26] Preliminary Conference Transcript at 136.
[27] Report at I-5.
[28] Report at I-5.
[29] Preliminary Conference Transcript at 53.

is not easily interchangeable with the aqueous or semi-aqueous types.[30] Other evidence indicates that switching from a dry film photoresist formulation, which employs a semi-aqueous or solvent-based developing solution, to one which requires an aqueous developing solution may require some modifications to manufacturing equipment, process and product design. [31]

In light of the overall similarities in characteristics and uses of all types of dry film photoresist, the evident similarity in production processes and production facilities, the overlap in the channels of distribution, and at least some degree of interchangeability for all types of dry film photoresist, we define the like product in this investigation to include all types of dry film photoresist.

3. Whether the like product should include photoresist other than dry film [32]

There are no products that directly substitute for dry film photoresist in the PCB etching and plating processes for which it is designed. There are at least two older technologies for PCB production still in use, however -- one utilizing liquid film photoresist and another using screen printing. Liquid film photoresist is utilized in much the same way as dry film photoresist except that it is applied to the substrate as a liquid and must be dried before being exposed. Screen printing uses stainless steel or plastic screens, precut to the desired patterns, in place of the film. This allows the etching or plating substances to be directly applied to the substrate.

In general, dry film photoresist's superior resolution capabilities and

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[30] Petitioners' post-conference brief at 23-24.
[31] Report at I-24.
[32] No party has argued for inclusion of all types of photoresist in the like product. Indeed, petitioners have specifically argued that the like product should not include other types of photoresist.

cost effectiveness in high volume operations have made it the method of choice in most applications. The development of certain liquid photoresists has continued, and some provide resolution capabilities equal to or superior to those of dry film photoresist. They are generally inferior to dry film photoresist, however, in terms of cost effectiveness, and the processes using them have remained relatively few in number. [33] Alternative products, such as screen inks, electro-deposition techniques and liquid photoresist, require investment in significantly different manufacturing equipment and processes.[34]

Based on the limited information available concerning the other types of photoresist products in this preliminary investigation, we do not include other types of photoresist in the like product. Other types of photoresist do not appear to be interchangeable with dry film photoresist to any substantial degree. Further, they differ from dry film photoresist in terms of their chemical characteristics, methods of use, and production processes and manufacturing techniques.

4. Conclusion

In this preliminary investigation, we determine that the like product is all dry film photoresist, slit or unslit, irrespective of the type of solvent used as a developing solution.

C. Domestic Industry

As noted previously, the domestic industry consists of the "domestic producers" of a "like product". In this investigation, the domestic industry consists of the domestic producers of slit or unslit dry film photoresist. The petitioners (Dupont, Morton, and Hercules) and Positec Photo Systems are

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[33] Report at I-5.
[34] Report at I-24.

the only firms known to produce widestock dry film photoresist, and finished material therefrom, in the United States in recent periods. [35]

Prior to October 1990, respondent LeaRonal, the primary importer of the subject product, imported only finished (slit) dry film photoresist from respondent Tokyo Ohka Kogyo Co. In late 1990, however, the company opened up its own slitting facility and now slits imported widestock to its customers' specifications. No party has argued that the presence of this facility and the activities carried out therein are sufficient to consider LeaRonal to be a domestic producer.

In deciding whether a firm qualifies as a domestic producer, the Commission has analyzed the overall nature of a firm's production-related activities in the United States. Specifically, the Commission has examined such factors as: (1) the extent and source of a firm's capital investment; (2) the technical expertise involved in U.S. production activity; (3) the value added to the product in the United States; (4) employment levels; (5) the quantities and types of parts sourced in the United States, and (6) any other costs and activities in the United Stated directly leading to production of the like product, including where production decisions are made. [36] The Commission has emphasized that no single factor -- including value added--is determinative and that value added information becomes more meaningful when other production activity indicia are taken into account. [37]

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[35] Morton's operations involve the initial mixing and final slitting of dry film photoresist. Another firm provides it with coating, drying, and laminating services under a toll arrangement. Report at I-6.

[36] E.g., DRAMs of One Megabit and Above from the Republic of Korea, Inv. No. 731-TA-556 (Preliminary), USITC Pub. 2519 (June 1992) at 11-12.

[37] See, e.g., Color Television Receivers from the Republic of Korea and Taiwan, Invs. Nos. 731-TA-134 and 135 (Final), USITC Pub. 1514 (May 1984) at 7, 8.

The Commission also has stated that it will consider any other factors it deems relevant in light of the specific facts of any investigation. [38]

LeaRonal's slitting facility cost $1.5 million to construct, and employs a relatively small number of workers. The slitting of widestock requires special equipment and must be done in a clean-room environment. This accounts for the high cost of construction of the slitting facility.

As previously noted, slitting accounts for about 20 percent of the value of the finished product. The slitting process generates a significant amount of waste. [39] Because substances in the film are subject to environmental regulation, slitting waste and other unusable material must be disposed of in a special fashion. The cost of this disposal adds to the cost of production.

In sum, we find that the mere slitting operation is fundamentally a relatively minor finishing operation; i.e., the widestock is cut to appropriate size to meet the customer's needs. We conclude, therefore, for purposes of this preliminary determination that mere slitting of imported widestock dry film photoresist is not sufficient production-related activity to include LeaRonal in the domestic industry.[40]

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[38] Erasable Programmable Read Only Memories from Japan, Inv. No. 731-TA-288 (Final), USITC Pub. 1927 (Dec. 1986).

[39] Report at I-8.

[40] We note that even if we had found LeaRonal's domestic slitting activities sufficient to consider it a domestic producer of the like product, we would have found that it is a related party under the related parties provision of the statute, 19 U.S.C. § 1677(4)(B), and that appropriate circumstances exist to exclude it from the domestic industry. LeaRonal imports all of its unslit dry film photoresist from respondent Tokyo Ohka for finishing in its U.S. facility, and is therefore an importer of the articles subject to investigation. The company appears to be shielded from any adverse effects caused by the imports, and in fact, appears to benefit from the purchase of alleged LTFV imports. Therefore, appropriate circumstances exist to exclude it from the domestic industry.

III. CONDITION OF THE INDUSTRY

In assessing whether there is a reasonable indication of material injury to a domestic industry by reason of allegedly dumped imports, the Commission is instructed to consider "all relevant economic factors which have a bearing on the state of the industry in the United States . . . ."[41] These include output, sales, inventories, capacity utilization, market share, employment, wages, productivity, profits, cash flow, return on investments, ability to raise capital, and research and development.[42] No single factor is determinative, and the Commission considers all relevant factors "within the business cycle and conditions of competition distinctive to the affected industry."[43]

One condition of competition relevant to our consideration of the condition of the industry is the fact that the domestic industry producing dry film photoresist is very capital intensive. Significant research and development expenditures are necessary to maintain a presence in the market. We note further that consumption of dry film photoresist is primarily driven by the demand for printed circuit boards. The shrinking size of PCBs due to increased density, the shrinking number of PCB producers, and the effects of the recessionary conditions in the United States on the demand for products containing PCBs have all contributed to the decline in U.S. consumption of dry film photoresist.[44]

Apparent U.S. consumption of dry film photoresist declined steadily during most of the period of investigation. [45] Specifically, from 1989 to

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[41] 19 U.S.C. § 1677(7)(C)(iii).
[42] Id.
[43] Id.
[44] Report at I-22.
[45] Report at I-22.

1991, apparent U.S. consumption of dry film photoresist declined by 8.8 percent in terms of quantity, and 13.2 percent by value. Between the interim periods (January-June 1991 and January-June 1992), however, apparent domestic consumption increased by 7.5 percent in quantity and 4.1 percent in value. [46] U.S. producers' market share declined throughout the period of investigation. Domestic production decreased throughout most of the period of investigation, falling from 907 million square feet in 1989 to 772 million square feet in 1991. Production increased slightly from January-June 1991 to January-June 1992, from 390 to 394 million square feet. [47] Capacity for widestock production varied somewhat throughout the period of investigation--largely due to the allocation of certain equipment to other products and not to the permanent expansion or retirement of resources. Capacity increased from 1989 to 1990, then decreased from 1990 to 1991 to levels below reported 1989 levels. Capacity utilization decreased from 1989 to 1991, before increasing in the interim period. [48] Domestic shipments measured by quantity followed the same trends as production, decreasing throughout most of the period of investigation and increasing slightly between the interim periods.[49] Inventories, both in terms of absolute value and as a percentage of shipments, fluctuated throughout the period of investigation. [50]

With respect to employment, the number of production and related workers declined throughout the period of investigation. Total compensation paid to production and related workers and hours worked decreased throughout the

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[46] Report at I-22.
[47] Report at I-9.
[48] Report at I-9.
[49] Report at I-9.
[50] Report at I-12.

period of investigation, while hourly compensation fluctuated somewhat.[51] Productivity declined somewhat from 1989 to 1991, and then increased during the interim period. Capital expenditures fluctuated throughout the period of investigation, although research and development expenditures remained relatively constant.[52]

Most of the financial information concerning the domestic industry is confidential, and therefore, our discussion concerning that information must be general in nature. Our review of that information suggests that the financial condition of the industry has deteriorated throughout the period of investigation. Aggregate net sales, whether measured by quantity, value, or on a per-unit basis, declined from 1989 to 1991. At the same time, cost of goods sold remained virtually constant on a per-unit basis. Consequently, gross profits and gross profit margins declined. As selling, general, and administrative ("SG & A") expenses increased, particularly relative to declining sales, operating profits and net profits in 1991 were reduced to about one-third of 1989 levels. [53]

The financial trends from interim 1991 to interim 1992 were somewhat similar. A decrease in net sales value was almost offset by a decrease in cost of goods sold; however, SG & A expenses again increased, resulting in further reductions in profit levels, notwithstanding an increase in the volume of shipments and sales. [54]

Based on the foregoing evidence regarding the condition of the U.S. industry producing dry film photoresist, we find that there is a reasonable

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[51] Report at I-10.
[52] Report at I-15.
[53] Report at I-11.
[54] Report at I-11.

indication that the industry is experiencing material injury.[55]

IV. REASONABLE INDICATION OF MATERIAL INJURY BY REASON OF ALLEGED LTFV IMPORTS

In determining whether there is a reasonable indication that the domestic industry is materially injured by reason of the imports under investigation, the statute directs the Commission to consider:

> (I) the volume of imports of the merchandise which is the subject of the investigation,[56]
>
> (II) the effect of imports of that merchandise on prices in the United States for like products,[57] and
>
> (III) the impact of imports of such merchandise on domestic producers of like products, but only in the context of production operations in the United States. [58]

In making this determination, the Commission may consider "such other economic factors as are relevant to the determination . . . ." [59] Although we may consider information that indicates that injury to the industry is caused by factors other than LTFV imports, we do not weigh causes. We note that the

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[55] Although Commissioner Nuzum does not disagree with the statement that the domestic industry is materially injured, she does not find it necessary to make a finding of material injury separate from the consideration of causation.

[56] In evaluating the volume of imports of merchandise, the statute directs that the Commission "shall consider whether the volume of imports of the merchandise, or any increase in that volume, either in absolute terms or relative to production or consumption in the United States, is significant." 19 U.S.C. § 1677(7)(B)(i).

[57] In evaluating the price effect of subject imports, the statute states that the Commission:

> shall consider whether -
>
> (I) there has been significant price underselling by the imported merchandise as compared with the price of like products of the United States, and
>
> (II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.

[58] 19 U.S.C. § 1667(7)(B)(i).

[59] 19 U.S.C. § 1677(7)(B)(ii).

Commission need not determine that imports are "the principal, a substantial or a significant cause of material injury." [60] Rather, a finding that imports are a cause of material injury is sufficient. [61]

The volume of imports subject to investigation accounted for a small but increasing share of domestic consumption throughout the period of investigation. [62] It is significant that the subject imports' share of apparent U.S. consumption increased throughout the period of investigation, while the market share of U.S. producers declined commensurately. [63] We find that there is a reasonable indication that the increasing share of consumption accounted for by subject imports is a factor in the resulting downturn in the condition of the domestic industry. In this regard, respondents argue that the recessionary economy and the downturn in dry film demand are responsible for the declining trends in the domestic market, as evidenced by the declines in U.S. consumption during most of the period of investigation. It is noteworthy, however, that the imports from Japan continued to increase in the face of a decline in apparent U.S. consumption.[64]

The Commission requested price and quantity data from U.S. producers and importers for their overall sales of dry film and sales to their largest customers by quarter during the period of investigation. U.S. producers and importers were requested to submit separating pricing data for their annual sales to (a) firms purchasing under 3 million square feet per year and (b) firms purchasing 3 million square feet or over. To date, importers have

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[60] S. Rep. No. 249, 96th Cong., 1st Sess. 57 and 74 (1979).
[61] See, e.g., Metallverken Nederland B.V. v. United States, 728 F. Supp. 730, 741 (Ct. Int'l Trade 1989); Citrosuco Paulista S.A. v. United States, 704 F. Supp. 1075, 1101 (Ct. Int'l Trade 1988).
[62] Report at I-22.
[63] Report at I-22.
[64] Report at I-22.

only sold dry film to firms purchasing quantities amounting to less than 3 million square feet per year. All three U.S. producers reported sales to customers purchasing less than 3 million square feet, as well as those purchasing more. Hence, thus far, the subject imports have competed successfully only on sales to smaller accounts. [65]

Overall, prices for all products for which pricing data were obtained appear to have declined slightly throughout the period of investigation. We note, however, that overall prices for two of the products have declined to a greater extent in those sales to firms purchasing 3 million square feet or more per year.[66] Insofar as the subject imports have yet to capture sales in this segment of the market, we intend to examine this phenomenon in greater detail in any final investigation.

Price comparisons were mixed, with both under- and over-selling by imports reported. Out of thirty-two comparisons between average unit values of domestic and import sales to customers purchasing less than 3 million square feet annually, underselling was observed in 19 occurrences, with margins ranging from 0.3 to 7.8 percent.[67] We note that instances of underselling were significantly more pronounced during the latter part of the period of investigation, coincident with the start-up of LeaRonal's domestic slitting facility.

Petitioners have made a number of specific lost sales and revenue allegations. Although several of these allegations have been confirmed, we note that there is evidence that some of these purchasers later returned to petitioners.

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[65] Report at I-26.
[66] Report at I-30.
[67] Report at I-30.

We have considered respondents' arguments that non-price factors, including petitioner's deemphasis on product performance and technical service, are at least partly responsible for any injury that the domestic industry may be suffering. The information on the record concerning these allegations is mixed. We intend, therefore, to examine these allegations further in any final investigation.

Overall, the information in this preliminary investigation indicates that allegedly dumped imports from Japan, sold at declining prices and accounting for an increasing share of apparent U.S. consumption, have had an adverse effect on domestic prices and on the sales and revenues of the domestic industry. Given the simultaneous increase in import penetration and decrease in domestic sales and profits, we cannot say there is clear and convincing evidence of no material injury by reason of imports.

For all the reasons set forth above, and in light of the applicable statutory standard for a preliminary investigation, we determine that there is a reasonable indication that the domestic industry producing dry film photoresist is materially injured by reason of the subject imports from Japan.

ADDITIONAL VIEWS OF COMMISSIONER CAROL T. CRAWFORD

Dry Film Photoresist from Japan
Inv. No. 731-TA-622 (Preliminary)

Based on the record in this investigation, I determine that there is no reasonable indication that the dry film photoresist industry in the United States is materially injured by reason of alleged less than fair value imports of dry film photoresist from Japan. However, I determine that there is a reasonable indication that the domestic dry film photoresist industry is threatened with material injury by reason of subject imports of dry film photoresist from Japan.

I. THE LEGAL STANDARD FOR PRELIMINARY DETERMINATION

My approach to preliminary determinations is derived from the decision in American Lamb v. United States.[1] The court's language in that decision specifies that a negative determination is appropriate only when "(1) the record as a whole contains clear and convincing evidence that there is no material injury or threat of material injury; and (2) no likelihood exists that contrary evidence will arise in a final investigation."[2]

This standard does not imply that the absence of some information normally considered in a final investigation requires an affirmative determination in a preliminary investigation. Clearly, given the short time period allowed in a preliminary investigation, requiring that all information be collected would

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[1] 785 F. 2d 994 (Fed. Cir. 1986).

[2] Id., at 1001-04. "Clear and convincing" evidence supporting a negative determination must be "substantial," and more than a preponderance of the evidence. Since the Commission is permitted to weigh the evidence in the record, however, a negative preliminary determination may be issued if some evidence supports an affirmative determination, and even if some reasonable doubt exists as to whether a negative determination is warranted. See, e.g., Buildex Inc. v. Kason Industries, Inc., 849 F. 2d 1461, 1463 (Fed. Cir. 1988).

nearly preclude a negative finding, even in appropriate cases. Rather, I consider the relation of any missing information to the likely disposition of a final investigation. Where there is a question as to what the evidence would show in a final investigation, I give all benefit of doubt to the Petitioner, as instructed by the statute.

II. LIKE PRODUCT AND DOMESTIC INDUSTRY

I concur with the majority in its discussion and determination that all dry film photoresist is the like product in this investigation. However, I differ in defining the domestic industry. I find LeaRonal, the principal importer of dry film photoresist from Japan, to be part of the domestic industry in this investigation.

Section 771(4)(A) of the Tariff Act of 1930 defines the domestic industry as:

> the domestic producers as a whole of a like product, or those producers whose collective output of the like product constitutes a major proportion of the total domestic production of that product.[3]

In determining whether a firm is a member of the domestic industry, the Commission has analyzed the overall nature of a firm's production-related activities in the United States.[4] In my view, value added encompasses all of these factors and should carry considerable weight in determining whether a producer qualifies as part of the domestic industry. Since October 1990, LeaRonal has imported only unfinished master rolls of dry film photoresist. It has provided the slitting process in its facilities in California. The value added in LeaRonal's slitting operations in California is significant relative to the overall value of the product.

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[3] 19 U.S.C. § 1677(4)(A)

[4] See, Sulfur Dyes from China, India, and the United Kingdom, Inv. Nos. 731-TA-548, 550, and 551 (Preliminary), USITC Pub. 2514, May 1992.

Furthermore, there is no separate market for the unfinished master rolls of dry film photoresist. For these reasons, I determine that LeaRonal is part of the domestic industry for purposes of this investigation.

III. RELATED PARTIES

Once the determination is made that LeaRonal is part of the domestic industry, we must analyze whether LeaRonal should be excluded as a related party.[5] When a producer is related to exporters or importers of the product under investigation, or is itself an importer of that product, the Commission may exclude such producers from the domestic industry in "appropriate circumstances." The purpose of this provision is to avoid distortions in aggregate industry data that would result from the inclusion of data from a producer that was shielded or benefitted from the unfairly traded imports subject to investigation.

After examining the record in this investigation, in light of factors generally considered by the Commission in applying the related parties provision, I determine that LeaRonal should be excluded from the domestic industry. Of particular note in my determination is the fact that LeaRonal's primary interests lie in the importation of the merchandise at issue, not in the domestic production of the like product. It produces no unfinished master rolls of dry film photoresist in the United States and indicated that it is unable or unwilling to do so. LeaRonal imports all of its widestock from respondent Tokyo Ohka, which in turn, LeaRonal slits in its own domestic slitting facility. The fact that LeaRonal imports all of its unfinished dry film photoresist, and in fact, prior to October 1990 imported all of its finished dry film photoresist, indicates that it would be shielded from any adverse effects caused by the imports, and would in fact benefit from the purchase of any alleged LTFV imports.

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[5] 19 U.S.C. § 1677(4)(B).

IV. NO REASONABLE INDICATION OF MATERIAL INJURY BY REASON OF ALLEGED LTFV IMPORTS

In making its determination, the statute directs the Commission to consider the volume of subject imports, the effect of subject imports on domestic prices, and the impact of subject imports on the domestic industry. In addition, it "may consider such other economic factors as are relevant to the determination regarding whether there is material injury by reason of imports."[6]

A. ECONOMIC FACTORS

The statute also directs the Commission to evaluate relevant economic factors in the "context of the business cycle and conditions of competition that are distinctive to the affected industry."[7]

The demand for dry film photoresist is a derived demand, dependent on the demand for printed circuit boards (PCBs) used in computers, telecommunications, and other types of applications.[8] The demand for these downstream products depends largely on the level of overall economic activity. During the period of investigation, the recession reduced the demand for consumer products and reduced business expenditures on computer equipment and telecommunications. PCBs experienced a decline in demand of about 17 percent between 1988 and 1991,[9] which was reflected in U.S. apparent consumption of dry film photoresist, which declined 8.8 percent between 1989 and 1991.[10]

Furthermore, the demand for dry film photoresist has declined as a direct result of technological evolutions. Specifically, the shift to higher density PCBs reduces the number

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6 19 U.S.C. § 1677(7)(B).

7 19 U.S.C. § 1677(7)(C).

8 Staff report at I-7.

9 Staff report at I-23.

10 Staff report at I-23.

of PCBs needed for the same level of "power", and the shift to smaller PCBs, as the computer industry moves to miniaturization of its products, reduces the amount of dry film photoresist required for each PCB. These technological developments, along with the recession, have resulted in a significant decline in the number of PCB manufacturers in the United States during the period of investigation.

The elasticity of substitution is a critical factor in determining the volume, price effects, and impact of the subject imports on the domestic like product. Dry film photoresist is not a homogenous product. The exact chemistry depends on the film's manufacturer and on the PCB manufacturing process.[11] Customers contacted by the Commission cited no particular differences in quality between U.S. and Japanese products.[12] Dry film photoresist is not made to customer specifications. Almost all customers require a qualification process that can require two weeks to three months to complete.[13] Based on the information in this record, it appears that Japanese imports of the subject merchandise and the domestic like product are close substitutes for one another. The elasticity of substitution between these products is moderate to high.

B. VOLUME EFFECTS

In determining whether there is a reasonable indication of material injury by reason of alleged LTFV imports, the statute directs the Commission to consider "whether the volume of imports of the merchandise, or any increase in that volume, either in absolute terms or relative to production or consumption in the United States, is significant."[14]

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11 Staff report at I-4.

12 Staff report at I-24.

13 Staff report at I-24 and I-25.

14 19 U.S.C. § 1677(7)(C)(i).

The quantity and value of shipments of dry film photoresist imports from Japan increased substantially from 1989 to 1991.[15] By both quantity and value, Japanese imports held a small share of the U.S. market in 1989 but increased this share significantly by 1991.[16] Although significant, this increase did not raise the subject import share to a significant level. Thus, the domestic industry's share of the U.S. dry film photoresist market declined by quantity and value, but this decline was insignificant and the domestic industry maintained an overwhelming share of the market.[17]

C. PRICE EFFECTS

In evaluating the effect of subject imports on the price of the domestic like product, the statute directs the Commission to consider whether there is significant price underselling by subject imports and whether subject imports depress prices to a significant degree or prevent price increases that otherwise would have occurred, to a significant degree.[18]

1. Elasticity of Demand

As discussed above, the demand for dry film photoresist is a derived demand dependent on the demand for PCBs. Dry film photoresist accounts for approximately 4 to 7 percent of the total cost of manufacturing PCBs.[19]

There are no direct substitutes for dry film photoresist. Two older technologies for PCB production are still in use--one utilizing liquid film photoresist and another using screen

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15 Staff report at I-21.

16 Staff report at I-29.

17 Staff report at I-21. The record shows no non-subject imports of dry film photoresist throughout the period of investigation.

18 19 U.S.C. § 1677(7)(C)(ii).

19 Staff report at I-25.

printing. Both processes are less cost effective.[20] In addition, screen printing does not provide the same level of quality as dry film photoresist. Therefore, the elasticity of demand for dry film photoresist is most likely inelastic.

2. Price Depression and Suppression

The record contains reported pricing data covering approximately 57 and 99 percent of total shipments of U.S.-produced and Japanese dry film photoresist, respectively.[21] These pricing data indicate that the domestic industry was experiencing price depression during the period of investigation. However, I must conclude that the price depression experienced by the domestic producers was unrelated to alleged LTFV imports from Japan.

LeaRonal shipped only to small purchasers, that is, customers purchasing less than 3 million ft^2 of dry film photoresist per year; domestic producers shipped to both large and small customers. For this reason, the Commission aggregated total sales across all customers regardless of the amount purchased in any given year. It separately aggregated total sales for small purchasers, again defined for this investigation as customers that purchased less than 3 million ft^2 of dry film photoresist per year. My analysis focuses on these latter data.

The record contains pricing data for four types of dry film photoresist products. For Product 1 the record indicates that the Japanese, specifically Hitachi, had no U.S. sales until the third quarter of 1991, and even then, only to small purchasers. Furthermore, subject import total sales of Product 1 were too small relative to sales of domestic producers to have any significant price effect. LeaRonal had no sales of Product 1 until the first quarter of 1992.

Data collected for sales to small purchasers of Products

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20 Staff report at I-5.

21 Staff report at I-26.

2 and 3 and Product 4 indicate that the subject imports competed with the domestic product during the entire period of investigation. Again, total import sales relative to domestic producers' sales volumes were too small to have any significant price effect.

Product 1, for which there was no effective competition between the subject imports and the domestic product until late in the period of investigation, experienced a more rapid price decline than the price decline that occurred for Products 2 and 3 and Product 4. Furthermore, the pricing data for sales to all customers show the same or a more rapid decline in prices over the period of investigation.

The fact that subject imports competed with domestic products only in sales to small customers and that these import sales were not sufficiently large relative to the domestic product to be significant support the position that any price depression experienced by domestic producers was unrelated to alleged LTFV imports.

Cost of goods sold remained virtually constant on a per unit basis.[22] Thus, there can be no finding of price suppression by reason of alleged LTFV imports.

3. Underselling

Price is almost always important in any purchasing decision.[23] However, relative price, not absolute price, is the determinative factor. It is in this context that I evaluate the price effects of the subject imports on the degree of underselling, price depression and price suppression in the domestic industry.

The record contains evidence of both underselling and

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[22] Staff report at I-11.

[23] See, Sulfanilic Acid from the People's Republic of China, Inv. No. 731-TA-538 (Final), USTIC Pub.2542 (1992) at 35.

overselling by the subject imports.[24]

Nonprice factors were cited by all parties as important in a purchaser's sourcing decisions. These factors include technical support, which appears to be of greater importance to smaller purchasers; the ability to hold large inventories of product for customers to meet fluctuating demand; product performance; producers' research and development into more advanced photoresist products; maintaining a broad range of product offerings; and offering related equipment for sale. Some dry film purchasers, as well as petitioners and respondents, reported no particular differences in quality between the subject imports and the domestic product. However, customers contacted by the Commission indicated that they found quality differences between the subject imports and the domestic like product.

The importance of nonprice factors in the purchasing decision, particularly in view of the small volume of sales of the subject imports, and the lack of price depression or suppression caused by the subject imports, leads me to conclude that any underselling by the subject imports was not significant.

V. IMPACT OF THE ALLEGED LTFV ON THE DOMESTIC INDUSTRY

The statute directs the Commission to examine the impact of subject imports on the domestic industry. The statute lists specific factors for Commission consideration and provides that the "Commission shall evaluate all relevant economic factors...within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[25]

The distinctive conditions of competition in this industry include the recession and technological advances in the downstream product PCBs. These conditions of competition are also

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[24] Subject imports of Product 1 oversold the domestic product. Subject imports of Products 2 and 3 and Product 4 undersold the domestic product, but by margins less than the alleged dumping margins.

[25] 19 U.S.C. § 1677(7)(C)(iii).

relevant economic factors, and were discussed above.

In the context of these conditions of competition, I have considered all of the statutory impact factors discussed in the majority's opinion under the heading "Condition of the Industry." While I do not reach a separate legal conclusion on material injury based on the condition of the industry, my evaluation of the statutory impact factors leads me to find that there is no reasonable indication that the domestic industry has suffered material injury by reason of the alleged LTFV imports. Given the low market share held by the subject imports, despite the significant increase in the absolute volume of imports, the lack of any evidence of price effects arising from alleged LTFV imports, and the conditions of competition that exist in this industry, I determine that there is no reasonable indication that the domestic industry would have been materially better off if the alleged LTFV imports had been fairly traded. Furthermore, I find that the record in this investigation on present injury is complete and there is no additional information that could arise in a final investigation that would lead to a determination that the domestic dry film photoresist industry is suffering material injury by reason of imports of dry film photoresist from Japan.

VI. REASONABLE INDICATION OF THREAT OF MATERIAL INJURY BY REASON OF ALLEGED LTFV IMPORTS

In making a determination of whether an industry is threatened with material injury, the Commission considers, among other relevant economic factors, statutory threat criteria.[26] A determination that an industry "is threatened with material injury shall be made on the basis of evidence that the threat is real and that actual injury is imminent. Such a determination may not be made on the basis of mere conjecture or supposition."[27] The evidence on the record must show more than a "mere possibility"

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[26] 19 U.S.C. § 1677(7)(F)(i).

[27] 19 U.S.C. § 1677(7)(F)(ii).

that injury might occur.[28] A finding that the industry "almost" experienced injury or is "vulnerable" to future injury is neither a necessary nor sufficient condition for finding any threatened injury will be material. Moreover, the statute does not direct the Commission to reach a separate legal conclusion on material injury based on the condition of the industry before preceding to a threat determination. After reviewing the record in this investigation with respect to the threat criteria enumerated in the statute, I find a reasonable indication that the domestic industry is threatened with material injury by reason of the subject imports.

Certain enumerated statutory criteria were most probative in my threat determination in this investigation. One is the likelihood that market penetration by the subject imports will increase to injurious levels. Production capacity at both Tokyo Ohka and Hitachi increased significantly during the period of investigation. Although production capacity increased, capacity utilization fell due to a decline in the demand for dry film photoresist. The Court of International Trade has held that "the mere fact of increased capacity does not ipso facto imply increased exports" and that imports will increase must be based on "positive evidence tending to show an intention to increase the levels of importation."[29] This burden is met in the record.

Specifically, exports to the United States as a percent of total shipments at Tokyo Ohka and Hitachi increased during the period of investigation, despite the significant decline in U.S. apparent consumption of dry film photoresist. The investment in and operation of LeaRonal's slitting facility in California is evidence of LeaRonal's intent to expand its share in this market.

Likewise, the price comparison data indicates that Hitachi began selling product in the United States during the third quarter of 1991. Hitachi has acknowledged that it is developing

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28 Alberta Gas Chemicals, Inc. v. United States, 515 F. Supp. 780 (1981).

29 590 F. Supp. at 1280.

dry film products specifically for the U.S. market and that it has successfully test-marketed some of these products in the United States.[30] Hitachi has stated that "the way boards [PCBs] are built in the U.S. is very different than the way they are built in Asia. And so, resists that are formulated in Asia, for those processes, do not work very well for pattern plating operations used in the United States." [31]

I find no convincing support for Petitioner's statement that Hitachi is considering investing in a slitting facility in the United States and that this possible future investment constitutes a real threat that actual injury is imminent. Hitachi stated at the Conference, "if we get big enough, and that entails that we need other manufacturing, we would consider that, but we have no plans at the current time."[32]

Furthermore, I note the rapid buildup in U.S. inventories of the subject imports as a percent of import shipments over the period of investigation.[33] Given these particular set of facts, it appears that Hitachi and LeaRonal, and its Japanese supplier Tokyo Ohka, are committed to attaining a larger share of the U.S. dry film photoresist market and have taken steps to do so.

However, an increase in the share of imports does not in and of itself constitute unfair trade. Clearly, the statute directs the Commission to find evidence that supports the probability that imports of the merchandise will enter the United States at prices that will have a depressing effect on the domestic prices of the like product.

I find that the facts in this case provide a reasonable indication that imports of the subject merchandise will enter the United States at prices that will have a depressing or suppressing

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30 Tr. at 132.

31 Tr. at 132.

32 Tr. at 132.

33 Staff report at I-19.

effect on domestic prices. I base my conclusion on the fact the subject imports and domestic like product are close substitutes, and that the price of the subject imports has declined significantly during the period of investigation. In addition, some underselling by the subject imports occurred in each period and at increasingly greater margins.

The domestic industry is not presently experiencing any price effects from the subject imports because of the low volume of such imports. However, the record supports a conclusion that the continuation of the decline in subject import prices, combined with evidence that the market share of the subject imports will rise to injurious levels, constitutes a real threat of material injury. The recent entry by Hitachi and statements by respondents regarding their intent to expand their presence in the U.S. market support a conclusion that actual injury is imminent.

VII. CONCLUSION

Based on my overall evaluation of the record, the volume of subject imports, the effect of subject imports on domestic prices, the impact of subject imports on the domestic industry, and the statutory threat criteria, I conclude that there is a reasonable indication that the domestic dry film photoresist industry is threatened with material injury by reason of the subject imports.

Dissenting Views of Commissioner Anne E. Brunsdale

Dry Film Photoresist from Japan
Inv. No. 731-TA-622 (Preliminary)

In this investigation, I find there is no reasonable indication that an industry in the United States is materially injured or is threatened with material injury by reason of allegedly dumped imports of dry film photoresist from Japan.[1] I concur with the majority's finding of a single like product consisting of all dry film photoresist, and I join its discussion of the condition of the domestic industry. As is well known, however, I do not believe that an independent legal determination of material injury based on the condition of the industry is either required by the statute or useful in determining whether a domestic industry is materially injured by reason of the allegedly dumped imports.[2]

Here I consider the issues of the definition of the domestic industry and related parties. I then discuss my reasons for finding no reasonable indication of material injury or the threat of material injury.

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[1] Material retardation is not an issue in this investigation and will not be discussed further.

[2] See Certain Light-Walled Rectangular Pipes and Tubes from Taiwan, Inv. No. 731-TA-410 (Final), USITC Pub. 2169 (March 1989) at 10-15 (Views of Chairman Brunsdale and Vice Chairman Cass). I do, however, find the discussion of the condition of the domestic industry helpful in determining whether any injury resulting from dumped imports is material.

opening of its own slitting facility in October 1990, LeaRonal imported only slit dry film photoresist.[8]

In deciding whether to exclude related parties, the Commission is seeking to determine whether the related party is in a position that shields it from any injury that might be caused by the imports.[9] Where, as here, the domestic firm imports an intermediate product which it then finishes, it is clear that any injury resulting from the allegedly unfair imports will not be felt by the domestic producer. Rather, if the imported product is offered at an unfairly low price, this should benefit the domestic producer.

Therefore, I find that in this case it is appropriate to exclude LeaRonal as a related party. As a result, I do not need to further examine the question of whether the amount of production performed by LeaRonal would be sufficient to include it in the domestic industry in the absence of this relationship.[10]

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[8] Preliminary Transcript at 111.

[9] The legislative history concerning the related parties provision states that

> where a U.S. producer is related to a foreign producer and the foreign exporter directs his exports to the United States so as not to compete with his related U.S. producer, this should be a case where the ITC would not consider the related U.S. producer to be a part of the domestic industry. (S. Rep. No. 249, 96th Cong., 1st Sess. at 83 (1979).)

[10] I also note that my negative determination in this case does not turn on my decision to exclude LeaRonal from the domestic industry. I would have reached the same decision if I had included LeaRonal. LeaRonal accounted for a very small

(continued...)

No Reasonable Indication of Material Injury

My determination that there is no reasonable indication of material injury resulting from allegedly dumped imports of dry film photoresist is based primarily on two considerations -- the low market share of the subject imports and the significant excess capacity held by U.S. producers.

The sales lost by the domestic industry cannot be greater than the sales of the allegedly dumped imports. Even if all of the dumped imports would disappear absent the dumping and if the domestic producers would capture all of those sales, domestic producers' sales would only increase by the amount of the dumped imports.[11] Imported dry film photoresist from Japan accounted for less than 5 percent of U.S. consumption throughout the period

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[10](...continued)
percentage of sales in the U.S. market throughout the period of investigation and therefore its presence or absence had no significant effect on import market share.

[11] It is unclear whether this would happen in the current case. The alleged dumping margin is between 36 and 60 percent. (Report at I-3). Whether a price increase in this range would be sufficient to eliminate the Japanese product from the market depends on the degree to which the Japanese and domestic products are substitutable. The record in this investigation suggests that while there is substitutability between different dry film photoresists, the various products are not completely substitutable. (Id. at I-5 and I-24) Further, several purchasers of the Japanese product indicated that it did not work as well as the domestic in their processes. (Id. at I-35 - I-36)

I note that while additional information about substitutability would no doubt be gathered in any final investigation, this does not compel me to vote in the affirmative in this case, since even if there were perfect substitutability, I would have found no material injury.

of investigation.[12] Given this small market share, the maximum volume effect would not, by itself, rise to the level of material.

Of course, quantity is not the only thing that can be affected by dumped imports. Such imports can also affect the price at which domestic producers can sell their product, and if the dumped imports are causing significant price depression or suppression, this can result in material injury even though the quantity effect is very small.

However, in this case, I do not believe this would occur. Domestic producers have substantial excess capacity. Capacity utilization stood at 66.2 percent in 1991 and at 69.6 percent in the first six months of this year.[13] With so much excess capacity, small increases in demand, such as would occur if the Japanese product were no longer available in the U.S. market, would not have significant effects on the prices charged by domestic producers.

Given that the maximum price and quantity effects do not rise to a material level in this case, I find no reasonable indication that the domestic industry producing dry film photoresist is materially injured by reason of allegedly dumped imports.

No Threat of Future Injury

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[12] Id. at I-23, Table 13.

[13] Id. at I-9, Table 2.

Having found that there is no reasonable indication of material injury, I must turn to the question of the threat of future injury. The statute lists ten factors the Commission is to consider in determining whether an industry is threatened with material injury.[14] I have, of course, considered each of these factors. However, rather than repeat the information concerning each of these factors that appears in the staff report,[15] I focus here upon one key piece of information.

The record contains evidence that purchasers have had difficulty making the Japanese product work in their production processes. In three of seven confirmed cases of lost sales, Commission staff was informed that the purchaser had problems with the Japanese product and therefore switched back to a domestic producer's product. In an additional case, a purchaser stated that it did not purchase the Japanese product because of quality problems.[16]

The presence of such quality problems and the resulting loss of repeat sales suggests that it will be very difficult for the Japanese producers to increase their sales in the U.S. market in the near future. It is, of course, possible that the technical

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[14] 19 U.S.C. 1677(7)(F)(i).

[15] Among the factors the Commission is directed to consider are increases in productive capacity and the existence of excess capacity in the foreign country. These data are found in the Report at I-20, Table 10, and I-21, Table 11. Data on inventories held in this country, another statutory factor, are found at I-19, while data on market penetration are found at I-23, Table 13.

[16] Report at I-46 - I-49.

problems can be solved and that the Japanese product would then become a more potent competitive factor. However, the possibility of such an occurrence at some point in the future does not, in my view, satisfy the statutory requirement that a finding of the threat of future injury be based on evidence that such a threat is "real and that the actual injury is imminent."[17]

Conclusion

Because of the small market share of the Japanese dry film photoresist and the presence of substantial unused capacity to produce this product, I find that there is not a reasonable indication that the domestic industry is being materially injured by reason of allegedly dumped imports. I also find no reasonable indication that the industry is threatened with future injury because quality problems appear to significantly reduce the prospects for future growth in sales in this country.

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[17] 19 U.S.C. 1677(7)(F)(ii).

INFORMATION OBTAINED IN THE INVESTIGATION

INTRODUCTION

On July 16, 1992, a petition was filed with the U.S. International Trade Commission and the U.S. Department of Commerce by E.I. Du Pont de Nemours & Co., Wilmington, DE; Morton International, Inc., Tustin, CA; and Hercules Incorporated, Wilmington, DE, alleging that imports of dry film photoresist from Japan are being sold in the United States at less than fair value (LTFV) and that an industry in the United States is materially injured and threatened with material injury by reason of such imports. Accordingly, effective July 16, 1992, the Commission instituted antidumping investigation No. 731-TA-622 (Preliminary) under section 733(a) of the Tariff Act of 1930 (19 U.S.C. 1673b(a)) to determine whether there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of such imports.

Notice of the institution of the Commission's investigation and of a public conference to be held in connection therewith was posted in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and published in the Federal Register on July 23, 1992 (57 F.R. 32810).[1] The public conference was held in Washington, DC, on August 6, 1992,[2] and the vote was held on August 26. Dry film photoresist has not been the subject of any other investigation conducted by the Commission.

NATURE AND EXTENT OF THE ALLEGED SALES AT LTFV

There is no information relating to the nature and extent of the alleged LTFV sales other than the allegations of the petitioners. The petitioners identified two producers in Japan--Tokyo Ohka Kogyo (Tokyo Ohka) and Hitachi Chemical Co., Ltd. (Hitachi)--that produce and export the subject product to the United States. (The petitioners believe that two other producers in Japan they identified--Asahi Chemical Co. and Mitsubishi Rayon--have not exported to the United States, or, at most, have exported very small quantities). Both Tokyo Ohka and Hitachi are alleged to be selling at LTFV; however, the petitioners only provided LTFV sales information for Tokyo Ohka, which accounts for over 90 percent of the total subject imports. On the basis of two recent home-market sales by Tokyo Ohka and two sales by its sole, unrelated distributor in the United States--LeaRonal, Inc., Freeport, NY--the petitioners calculated dumping margins ranging between 36 and 60 percent.

THE PRODUCT

Description and Uses

The product subject to the petitioners' complaint, dry film photoresist, is a type of photographic film (photosensitive resin), produced in large, continuous rolls, that is specially designed to be laminated onto certain

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[1] Copies of the Commission's and Commerce's notices of institution are shown in app. A.

[2] A list of participants at the conference is presented in app. B.

surfaces to permit the etching or plating of a pattern--primarily the minute and intricate patterns on high-density printed circuit boards (PCBs). Its critical use in this process is described below.

Most high-density PCBs are produced with the subject product. The PCB producer first laminates the film (by means of heat and pressure) onto the substrate of the PCB--usually a flat sheet of copper. A specially patterned template, known as a phototool, is then placed over the film, and the uncovered film is exposed to ultraviolet (UV) light. After removing the phototool, the film is subjected to a developing solution that dissolves the unexposed film, leaving the exposed film on the substrate in the pattern of the phototool. (In some cases, depending on the type of film, the developing solution dissolves the exposed film, leaving the unexposed film on the substrate). Next, the substrate and remaining film are subjected to an etching solution or plating material that etches or plates the areas not covered by the film. Finally, a stripping solution is applied to remove the remaining film from the substrate. Dry film photoresist is similarly used in etching and plating other articles, but PCB manufacture accounts for over 95 percent of the subject product's use.

Dry film photoresist consists of five chemical components,[3] which are initially batch-mixed together in liquid form, then coated onto a thin layer of plastic film, dried, laminated with another thin layer of plastic film for protection (on the exposed side), and finally wound into "widestock" or master rolls 4-6 ft. in width and over 1,000 ft. in length. Before shipment to the user, the rolls (or portions thereof) are slit into widths that are exact multiples of the user's PCBs. Once slit, the rolls are considered "finished." Before 1991, nearly all imports were in finished form. Since the end of 1990, after the major importer completed construction of a slitting facility, most imports have been of widestock material. The equipment used to mix, coat, dry, laminate, and slit dry film photoresist has only limited applicability to other products. In the United States the mixing facilities are sometimes used to produce other resins, and certain coaters are sometimes used to produce solder mask, a similarly-made but chemically different resin that is applied to and becomes a permanent part of the PCB after the etching and plating take place.

Dry film photoresist is not a homogenous product. Its exact chemistry (i.e., the type and relative amounts of the basic chemical components) depends on the film's manufacturer and, most importantly, on the PCB manufacturing process of the user. Producers manufacture variations of dry film photoresist to better suit users' various needs, and it is differentiated accordingly. To select or recommend a specific film for a user, the producer must first know whether the user's process requires a negative- or positive-working film, i.e., whether the unexposed or the exposed film is to be removed before etching or plating. All film imported from Japan and nearly all that produced

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[3] The components are: (1) one or more binders to hold the film together in solid form; (2) one or more photoinitiators that react to light exposure; (3) one or more monomers that transform the film at the time of exposure; (4) plasticizers and adhesion promoters that add strength to the transformed film; and (5) dyes and/or pigments that color the film at the time of exposure (for ease of inspection during the PCB manufacturing process).

in the United States has been negative working. Secondly, the producer must know the nature of the user's developing and stripping solutions, in addition to the makeup of the user's equipment. Processes which use solvents, aqueous (water-based) solutions, or both in combination (semi-aqueous) for developing and stripping each require specially formulated films. To date, all imports from Japan and about 90 percent of U.S. production has been formulated for aqueous processes, which reflects the predominance of these processes in the United States. The exact formulation of the film will also differ according to whether the user's process is for etching or plating and, if for etching, whether the etching solutions are acid or alkaline based. Producing one film formulation or another is primarily a matter of changing the mixture of the components in the initial batch. (Recently Du Pont has introduced, and ***, a film that is designed for all aqueous purposes regardless of etching, plating, and the solutions therefor). Finally, dry film photoresist is produced in several thicknesses to better accommodate users' needs.

There are no products that may directly substitute for dry film photoresist in the PCB etching and plating processes for which it is designed; however, there are at least two older technologies for PCB production still in use--one utilizing liquid film photoresists and another using screen printing. Dry film photoresist was first developed by Du Pont in 1968 as an alternative to these processes,[4] and its use has steadily increased with the increased demand for finer and more densely patterned PCBs. In general, dry film photoresist's superior resolution capabilities and cost effectiveness in high volume operations has made it the method of choice for fine and/or densely patterned etching and plating.[5] Today, virtually all high-density PCBs--particularly those used in the computer, military, and telecommunications industries--are manufactured with processes utilizing the subject product.

U.S. Tariff Treatment

Dry film photoresist is provided for in subheadings 3702.39.00, 3702.42.00, 3702.43.00, and 3702.44.00 of the Harmonized Tariff Schedule of the United States (HTS), subheadings that apply to different widths and lengths of all photographic film in rolls, sensitized, unexposed, of any material other than paper, paperboard, or textiles, and without sprocket holes. The subheading most applicable to imports of the subject product to date is 3702.43.00, i.e., film of a width exceeding 610mm (approximately 2 ft.) and a length exceeding 200m (approximately 656 ft.). The column 1-

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[4] Liquid film photoresist is utilized in much the same way as dry film photoresist in the processes designed for it except that it is applied to the substrate as a liquid and must be dried before being exposed. A different process entirely, screen printing uses stainless steel or plastic screens, precut to the desired patterns, in place of the film--which allows the etching or plating substances to be directly applied to the substrate.

[5] The development of certain liquid resists, however, has continued, and some provide resolution capabilities that are equal to or superior to those of dry film photoresist; however, they are still generally inferior to the subject product in terms of cost effectiveness, and the processes utilizing them remain relatively few in number.

general (most-favored-nation) rate of duty for these subheadings, applicable to imports from Japan, is 3.7 percent ad valorem. (In its notice of institution, Commerce identified two other HTS subheadings as potentially applicable to the subject product: 3702.95.00, which provides for similar film with sprocket holes; and 3707.90.30, which provides for general chemical preparations for photographic uses).

U.S. PRODUCERS

The petitioners and one other firm with limited production capabilities in St. Charles, IL--Positec Photo Systems--are the only firms known to have produced widestock dry film photoresist (and finished material therefrom) in the United States in recent periods.[6] Their plant locations and shares of domestic production and shipments of dry film photoresist in January 1989-June 1992 are shown in table 1. With one exception, the above firms are also the sole producers of finished dry film photoresist. In October 1990 the major importer, LeaRonal, completed construction of a slitting facility in Orange, CA, at which it produces finished dry film photoresist from imported widestock. Slitting adds approximately 20 percent to the value of the subject product. Positec, which only this year converted existing capacity to the production of dry film photoresist, is the only U.S. producer of positive-working film. A complete line of negative-working film--aqueous, semi-aqueous, and solvent for both etching and plating--is provided by the petitioners, in addition to several other products and chemicals not subject to investigation. Each claims to serve the entire U.S. market.

U.S. IMPORTERS

LeaRonal accounted for over *** percent of the dry film photoresist imported from Japan in January 1989-June 1992. A manufacturer and distributor of products used in PCB production, it began importing the subject product from Tokyo Ohka in 1988 to complement the other products it provides its customers. Of its 40 customers, 28 now purchase the dry film photoresist it imports and slits. Prior to the construction of its slitting facility in October 1990 (at a reported cost of $1.5 million), it imported finished material only. Slitting, as stated previously, adds about 20 percent to the value of the product.[7]

One other firm imports dry film photoresist from Japan: Hitachi Chemical Co. America, Ltd., a subsidiary of Hitachi--the other Japanese producer and exporter of the subject material. Hitachi America began importing small quantities in late 1991. Currently, it has no slitting facility and imports finished dry film photoresist only.

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[6] Morton's operations are confined to the initial mixing and final slitting of the subject product. Another firm, ***, provides it with coating, drying, and laminating services under the terms of a toll agreement.

[7] Slitting involves special equipment and must be done in a clean-room environment.

Table 1
Dry film photoresist: U.S. producers, plant locations, and respective shares of domestic production and shipments, January 1989-June 1992[1]

Firm	Plant location(s)	Share (percent) of domestic production	Share (percent) of domestic shipments
Du Pont[2]	Towanda, PA	***	***
Hercules	Middletown, DE	***	***
Morton[3]	Pascagoula, MS (mixing only) Woburn, MA (slitting only)	***	***
Positec[4]	St. Charles, IL	***	***

[1] The producers shown account for all U.S. widestock production and finished material thereof. LeaRonal, which has produced finished material from imported widestock since October 1990, is excluded. The quantity of LeaRonal's widestock imports in January 1991-June 1992 was about *** percent that of U.S. production; its production of finished material was *** percent that of the U.S. producers shown.

[2] Du Pont's share of domestic shipments is considerably less than its share of production because of the relatively larger quantities of dry film photoresist it transfers to overseas affiliates.

[3] Another firm--***--coats, dries, and laminates Morton's product under the terms of a toll agreement.

[4] ***.

[5] Less than 0.05 percent.

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

U.S. MARKET AND CHANNELS OF DISTRIBUTION

Other than small quantities used in photoetching glass and machine metals, the market for dry film photoresist consists of 700-900 firms, both large and small, that manufacture PCBs. About three dozen of these are large original equipment manufacturers (OEMs)--such as IBM, Hewlett-Packard, and AT&T--that use the PCBs in the manufacture of telecommunications equipment, computers, military hardware, and consumer electronic devices. The remaining PCB manufacturers supply other firms that produce these products. Producers and importers alike sell directly to the PCB manufacturers, which generally purchase on a loose contractual basis for their annual or biannual needs. To date, the importers have generally sold only to the smaller purchasers, although offers to some of the larger purchasers have been made.

PCB manufacturing methods utilizing dry film photoresist have supplanted other methods as the demand for more intricate PCBs has increased. At the same time, however, the size of PCBs has tended to decrease, reducing the

square footage of dry film photoresist needed per PCB. The number of PCB manufacturers has also tended to decrease. The net effect, combined with other factors, has been an overall decline in consumption for the subject product in recent periods.

CONSIDERATION OF THE ALLEGED MATERIAL INJURY

The data in the following sections represent virtually all production in the United States of widestock dry film photoresist and finished material thereof in January 1989-June 1992,[8] the period for which data were collected. (LeaRonal's production of finished dry film photoresist from imported widestock, which accounted for between *** and *** percent of domestic finished dry film photoresist production in January 1991-June 1992, is excluded from the data). Trends in most of the aggregate data are downward for 1989-91; from January-March 1991 to January-March 1992, there is much evidence of improvement, albeit modest. Selected summary data related to the alleged material injury showing period by period percentage changes are presented in appendix C.

U.S. Production, Capacity, Capacity Utilization, Shipments, Inventories, and Employment

Data on aggregate U.S. producers' dry film photoresist operations, other than employment and financial performance, are shown in table 2. Capacity for widestock production varied somewhat throughout the period; however, this is largely due to the allocation of certain equipment to other products--mainly solder mask--not to the permanent expansion or retirement of capital resources. Most U.S. widestock production is slit and shipped domestically. Large quantities are also exported, unslit, to foreign affiliates. (A small proportion of exports are of slitted material shipped directly to foreign users). The remainder, if not in inventory, is lost as damaged goods, obsolete material, or slitting waste. The latter accounts for about 20 percent of all U.S.-produced widestock that is slit, and, like damaged and obsolete material, can neither be recycled nor reused. Moreover, because of environmentally-controlled substances in the film itself, slitting waste and other unusable material must be disposed of in special fashion--which effectively adds to the cost of production. U.S. producers reported no significant losses in production due to employment related problems, sourcing problems, transitions, power shortages, natural disasters, or any other unusual circumstances.

Employment data for U.S. dry film photoresist production, excluding that for LeaRonal's production of finished material from imported widestock, are shown in table 3. (LeaRonal's slitting facility in Orange, CA, employs about *** production and related workers). Unlike production and shipments, employment appears not to have improved from January-June 1991 to January-June 1992.

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[8] The data do not include Positec, which only this year converted existing capacity to the production of dry film photoresist and to date has produced only small quantities.

Table 2
Dry film photoresist: U.S. production, average practical capacity, capacity utilization, domestic shipments, exports, and end-of-period inventories, 1989-91, January-June 1991, and January-June 1992[1]

Item	1989	1990	1991	January-June-- 1991	1992
Production[2] (million sq.ft.).	907	848	772	390	394
Capacity[3] (million sq.ft.)...	1,193	1,228	1,167	584	566
Ratio of production to capacity (percent).....	76.0	69.1	66.2	66.8	69.6
Domestic shipments:[4]					
Quantity (million sq.ft.)..	533	504	478	234	248
Value[5] (million dollars)...	139	130	119	60	62
Unit value.....	$0.26	$0.26	$0.25	$0.26	$0.25
Exports:[6]					
Quantity (million sq.ft.)..	374	308	312	152	149
Value[5] (million dollars)...	61	50	50	25	34
Unit value.....	$0.16	$0.16	$0.16	$0.17	$0.23
Total shipments:					
Quantity (million sq.ft.)..	907	812	791	386	397
Value[5] (million dollars)...	201	180	169	85	96
Unit value.....	$0.22	$0.22	$0.21	$0.22	$0.24
Slitting waste (million sq.ft.).....	118	103	104	48	47
Inventories (million sq.ft.).	50	52	37	46	44
Ratio of inventories to total shipments during the period (percent).....	5.5	6.4	4.7	6.0[7]	5.5[7]

[1] The data reflect total U.S. production of widestock and finished material thereof. LeaRonal's production of finished material from imported widestock is excluded.

[2] Total widestock.

[3] Producers estimated capacity on the basis of operating their plant facilities 168 hours per week, 48 to 52 weeks per year.

[4] Virtually all domestic shipments are of slit material. No domestic company transfers were reported.

[5] Net sales value, i.e., gross value less all discounts, allowances, rebates, and the value of returned goods.

[6] Most exports are of widestock material transferred to foreign affiliates.

[7] Annualized.

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

Table 3
Dry film photoresist: Average number of U.S. production and related workers and hours worked by and compensation paid to such workers, 1989-91, January-June 1991, and January-June 1992[1]

Item	1989	1990	1991	January-June-- 1991	1992
Average number of production and related workers	437	422	383	383	334
Hours worked by production and related workers (1,000 hours).....	821	793	725	365	315
Sq.ft. produced per hour worked.....	1,105	1,069	1,065	1,070	1,250
Total compensation paid to production and related workers (1,000 dollars)....	15,163	13,461	13,191	6,624	6,116
Hourly compensation paid to production and related workers.....	$18.47	$16.97	$18.19	$18.15	$19.42

[1] The data reflect all U.S. production of widestock and finished material thereof.

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

Financial Experience of U.S. Producers

Each of the major producers--Du Pont, Morton, and Hercules--supplied profit-and-loss information on their dry film photoresist operations. All are large, diversified, multi-national producers of chemicals and high-technology products. Although the dollar value of their individual dry film photoresist sales are substantial, such sales are small in comparison with overall sales. Total corporate net sales of Du Pont, Morton, and Hercules in 1991 were $38.7 billion, $1.9 billion, and $2.9 billion, respectively; their respective dry film photoresist sales were *** (*** percent of total sales), *** (*** percent), and *** (*** percent). Hercules manufactures dry film photoresist in the United States only; Du Pont also produces in Germany, and Morton also produces in England, Japan, and Taiwan.

The value and quantity of sales presented in this section of the report differ from those presented in the other sections. The difference is due to the way in which the petitioners accounted for exports. As stated previously, most exported dry film photoresist is transferred to foreign affiliates in widestock form--it is the affiliate that slits the product to customer specifications and makes the actual sale. The sales reported in this section reflect the quantities, revenues, and costs associated with these third party sales. In the other sections of the report, sales (i.e., shipments) reflect the quantity and value of the widestock transferred. (Petitioners maintain that this is how they actually account for such transactions, and that they are in fact transferring unfinished inventory).

Because of large differences between sales price and cost, and because Du Pont's exports constitute such a large portion of total sales, the data in this section are presented in two ways--with and without Du Pont's exports (or at least those exports that represent transfers to foreign affiliates, which are ***).[9] The latter data, excluding Du Pont's exports, are presented in appendix D.

OVERALL ESTABLISHMENT OPERATIONS

Financial data on the overall establishment operations[10] of the three producers are shown in table 4. Financial indicators steadily deteriorated from 1989 to 1991, as net sales, gross profits, and the gross profit margin decreased. At the same time, selling, general, and administrative (SG&A) expenses remained virtually constant while increasing steadily as a percent of sales. As a result, both operating and net profits steadily decreased. Further declines are evident from interim 1991 to interim 1992.

OPERATIONS ON DRY FILM PHOTORESIST

Aggregate financial data on the subject-product operations of the three producers are shown in table 5, and selected financial data for each company are shown in table 6. Aggregate net sales, whether measured by quantity, value, or on a per-unit basis, declined moderately from 1989 to 1991. Since cost of goods sold remained virtually constant on a per-unit basis, gross profits and gross profit margins also declined. As SG&A expenses increased, particularly relative to declining sales, operating profits and net profits in 1991 were reduced to about one-third of 1989 levels.

The trends from interim 1991 to interim 1992 were somewhat similar. A decrease in net sales value was almost offset by a decrease in cost of goods sold; however, SG&A expenses again increased, resulting in further reductions in profit levels.

Generally, the data for each company (table 6) followed the same trends as the aggregate data.

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[9] Du Pont accounts for *** of U.S.-produced dry film photoresist sales and *** of these sales are exports.

[10] Only Morton provided data on its overall establishment operations. Du Pont and Hercules did not submit such information on the grounds that other products produced in their establishments had no relation to dry film photoresist.

Table 4
Income-and-loss experience of U.S. producers on the overall operations of their establishments wherein dry film photoresist is produced, fiscal years 1989-91, January-June 1991, and January-June 1992[1]

Item	1989	1990	1991	January-June-- 1991	1992	
	Value (1,000 dollars)					
Net sales						
Cost of goods sold						
Gross profit						
Selling, general, and administrative expenses						
Operating income	*	*	*	*	*	*
Interest expense						
Other income, net						
Net income before income taxes						
Depreciation and amortization[2]						
Cash flow[2] [3]						
	Ratio to net sales (percent)					
Cost of goods sold						
Gross profit						
Selling, general, and administrative expenses	*	*	*	*	*	*
Operating income						
Net income before income taxes						
	Number of firms reporting					
Operating losses						
Net losses	*	*	*	*	*	*
Data						

[1] The firms and their respective fiscal yearends are Du Pont (Dec. 31), Morton (June 30), and Hercules (Dec. 31). Hercules was unable to provide useable interim data.

[2] The data do not include Du Pont, which was not able to provide depreciation and amortization information.

[3] Cash flow is defined as net income or loss plus depreciation and amortization.

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

Table 5
Income-and-loss experience of U.S. producers on their operations producing dry film photoresist, fiscal years 1989-91, January-June 1991, and January-June 1992[1]

Item	1989	1990	1991	January-June-- 1991	1992
	Quantity (1,000 sq.ft.)				
Net sales	*	*	*	*	*
	Value (1,000 dollars)				
Net sales					
Cost of goods sold					
Gross profit					
SG&A expense					
Operating income	*	*	*	*	*
Interest expense					
Other income, net					
Net income before income taxes					
Depreciation & amortization[2]					
Cash flow[2]					
	Value (per 1,000 sq.ft.)				
Net sales					
Cost of goods sold					
Gross profit	*	*	*	*	*
SG&A expenses					
Operating income					
	Ratio to net sales (percent)				
Cost of goods sold					
Gross profit					
SG&A expenses	*	*	*	*	*
Operating income					
Net income before income taxes					
	Number of firms reporting				
Operating losses					
Net losses	*	*	*	*	*
Data					

[1] The firms and their respective fiscal yearends are Du Pont (Dec. 31), Morton (June 30), and Hercules (Dec. 31). Hercules was unable to provide useable interim data.

[2] The data do not include Du Pont, which was unable to provide depreciation and amortization information.

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

Table 6
Income-and-loss experience of U.S. producers on their operations producing dry film photoresist, by firms, fiscal years 1989-91, January-June 1991, and January-June 1992

Item	1989	1990	1991	January-June--[1] 1991	1992
	Value (1,000 dollars)				
Net sales:					
Du Pont					
Morton					
Hercules					
Total					
Operating income or (loss):					
Du Pont					
Morton	*	*	*	*	*
Hercules					
Total					
Net income or (loss) before income taxes:					
Du Pont					
Morton					
Hercules					
Total					
	Ratio to net sales (percent)				
Operating income or (loss):					
Du Pont					
Morton					
Hercules					
Average					
Net income or (loss) before income taxes:	*	*	*	*	*
Du Pont					
Morton					
Hercules					
Average					
	Value (per 1,000 sq.ft.)				
Net sales:					
Du Pont					
Morton					
Hercules					
Average					
Operating income or (loss):	*	*	*	*	*
Du Pont					
Morton					
Hercules					
Average					

(table continued on next page)

Table 6--Continued
Income-and-loss experience of U.S. producers on their operations producing dry film photoresist, by firms, fiscal years 1989-91, January-June 1991, and January-June 1992

Item	1989	1990	1991	January-June--[1] 1991	1992
	Ratio to net sales (percent)				
Operating income or (loss):					
Du Pont					
Morton	*	*	*	*	*
Hercules					
Average					

[1] Hercules was unable to supply interim data.

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

INVESTMENT IN PRODUCTIVE FACILITIES AND RETURN ON ASSETS

Data on investment in productive facilities and return on assets are shown in table 7.

CAPITAL EXPENDITURES

U.S. producers' capital expenditures are shown in table 8. ***.

RESEARCH AND DEVELOPMENT EXPENSES

Research and development expenditures of U.S. producers, shown in table 9, remained fairly constant from 1989 to 1991. Approximate yearly expenditures for Du Pont, Morton, and Hercules were ***, ***, and ***, respectively.

CAPITAL AND INVESTMENT

The Commission requested U.S. producers to describe any actual or potential negative effects of imports of dry film photoresist from Japan on their firms' growth, investment, ability to raise capital, and/or development and production efforts. Their responses are shown in appendix E.

Table 7
Value of assets and return on assets of U.S. producers' establishments wherein dry film photoresist is produced, fiscal years 1989-91, January-June 1991, and January-June 1992

Item	As of the end of fiscal year-- 1989	1990	1991	As of June 30--[1] 1991	1992
	Value (1,000 dollars)				
All products:					
Fixed assets:					
Original cost.....					
Book value.....					
Total assets[2].....	*	*	*	*	*
Dry film photoresist:					
Fixed assets:					
Original cost.....					
Book value.....					
Total assets[3].....					
	Return on book value of fixed assets (percent)[4]				
All products:					
Operating return[5].....					
Net return[6].....					
Dry film photoresist:	*	*	*	*	*
Operating return[4].....					
Net return[5].....					

[1] Data for Hercules are not available.
[2] Defined as book value of fixed assets plus current and noncurrent assets.
[3] Total establishment assets are apportioned, by firm, to product groups on the basis of the ratios of the respective book values of fixed assets.
[4] Computed using data from only those firms supplying both asset and income-and-loss information and, as such, may not be derivable from data presented.
[5] Defined as operating income or loss divided by asset value.
[6] Defined as net income or loss divided by asset value.
[7] Not applicable to partial-period data.

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

Table 8
Capital expenditures by U.S. producers of dry film photoresist, by products, fiscal years 1989-91, January-June 1991, and January-June 1992

(In thousands of dollars)

Item	1989	1990	1991	January-June--[1] 1991	1992
All products:					
Land and land improvements					
Building and leasehold improvements					
Machinery, equipment, and fixtures					
Total					
Dry film photoresist:	*	*	*	*	*	*	*
Land and land improvements					
Building and leasehold improvements					
Machinery, equipment, and fixtures					
Total					

[1] Hercules was unable to provide usable interim data.

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

Table 9
Research and development expenses of U.S. producers of dry film photoresist, by products, fiscal years 1989-91, January-June 1991, and January-June 1992

(In thousands of dollars)

Item	1989	1990	1991	January-June-- 1991	1992
All products	***	***	***	***	***
Dry film photoresist	***	***	***	***	***

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

CONSIDERATION OF THE ALLEGED THREAT OF MATERIAL INJURY

Section 771(7)(F)(i) of the Tariff Act of 1930 (19 U.S.C. 1677(7)(F)(i)) provides that--

In determining whether an industry in the United States is threatened with material injury by reason of imports (or sales for importation) of the merchandise, the Commission shall consider, among other relevant economic factors[11]--

(I) If a subsidy is involved, such information as may be presented to it by the administering authority as to the nature of the subsidy (particularly as to whether the subsidy is an export subsidy inconsistent with the Agreement),

(II) any increase in production capacity or existing unused capacity in the exporting country likely to result in a significant increase in imports of the merchandise to the United States,

(III) any rapid increase in United States market penetration and the likelihood that the penetration will increase to an injurious level,

(IV) the probability that imports of the merchandise will enter the United States at prices that will have a depressing or suppressing effect on domestic prices of the merchandise,

(V) any substantial increase in inventories of the merchandise in the United States,

(VI) the presence of underutilized capacity for producing the merchandise in the exporting country,

(VII) any other demonstrable adverse trends that indicate the probability that the importation (or sale for importation) of the merchandise (whether or not it is actually being imported at the time) will be the cause of actual injury,

(VIII) the potential for product-shifting if production facilities owned or controlled by the foreign manufacturers, which can be used to produce products subject to investigation(s) under section 701 or 731 or to final orders under section 706 or 736, are also used to produce the merchandise under investigation,

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[11] Section 771(7)(F)(ii) of the Act (19 U.S.C. 1677(7)(F)(ii)) provides that "Any determination by the Commission under this title that an industry in the United States is threatened with material injury shall be made on the basis of evidence that the threat of material injury is real and that actual injury is imminent. Such a determination may not be made on the basis of mere conjecture or supposition."

(IX) in any investigation under this title which involves imports of both a raw agricultural product (within the meaning of paragraph (4)(E)(iv)) and any product processed from such raw agricultural product, the likelihood that there will be increased imports, by reason of product shifting, if there is an affirmative determination by the Commission under section 705(b)(1) or 735(b)(1) with respect to either the raw agricultural product or the processed agricultural product (but not both), and

(X) the actual and potential negative effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the like product.[12]

Available information on the volume, U.S. market penetration, and pricing of imports of the subject merchandise (items (III) and (IV) above) is presented in the section entitled "Consideration of the Causal Relationship Between the Alleged LTFV Imports and the Alleged Material Injury" and information on the effects of imports of the subject merchandise on U.S. producers' existing development and production efforts (item (X)) is presented in appendix E. Available information on U.S. inventories of the subject product (item (V)); foreign producers' operations, including the potential for "product-shifting" (items (II), (VI), and (VIII) above); and any other threat indicators, if applicable (item (VII) above), is discussed below.

The design and constraints of production equipment combined with the immediate and varied needs of customers make it both inefficient and impractical for suppliers to make or import dry film photoresist to order. It is important for producers and importers alike to maintain a fairly broad and sufficiently large stock of the subject product. End-of-period inventories of all dry film photoresist imported from Japan, and the ratio of inventories to domestic shipments of such imports, are shown in the following tabulation:

Item	1989	1990	1991	Jan.-June-- 1991	1992
End-of-period inventories (1,000 sq.ft.)	***	***	***	***	***
Ratio of inventories to shipments (percent)	***	***	***	***	***

The data show a noticeable increase between 1989 and 1991 and a relatively high level of inventories in proportion to shipments.

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[12] Section 771(7)(F)(iii) of the Act (19 U.S.C. 1677(7)(F)(iii)) further provides that, in antidumping investigations, "...the Commission shall consider whether dumping in the markets of foreign countries (as evidenced by dumping findings or antidumping remedies in other GATT member markets against the same class or kind of merchandise manufactured or exported by the same party as under investigation) suggests a threat of material injury to the domestic industry."

Tokyo Ohka and Hitachi are the only known exporters of the subject product to the United States (although there are at least four other producers in Japan).[13] Their respective production, capacity, and shipments of the subject product are shown in tables 10 and 11. ***. So far as it is known, imports of Japanese-produced dry film photoresist are not subject to any antidumping duties in any foreign country.

Table 10
Dry film photoresist: Tokyo Ohka's production, capacity, and shipments, 1989-91, January-June 1991, and January-June 1992

Item	1989	1990	1991	January-June-- 1991	1992
Production[1] (million sq.ft.)					
Capacity[2] (million sq.ft.)					
Capacity utilization (percent)					
Shipments:[3]					
Home market (million sq.ft.)					
Exports to--					
United States (million sq.ft.)					
All others (million sq.ft.)	*	*	*	*	*	*	*
Total exports (million sq.ft.)					
Total shipments (million sq.ft.)					
Ratio of exports to total shipments (percent)					
Share of total exports exported to the United States (percent)					

[1] Finished material only. Data on total widestock production and slitting waste are unavailable.

[2] The capacity reported is based on operating 120 hours per week at one facility and maximum hours per week at another, 52 weeks per year.

[3] Finished material and widestock.

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

[13] Other known producers in Japan include Asahi Chemical Co., Mitsubishi Rayon, and Nippon Kosai (see transcript of conference, p. 140), in addition to one of the petitioners--Morton. Witnesses at the Commission's conference testified that Tokyo Ohka's and Hitachi's share of dry film photoresist shipments in Japan were about 12 percent and 50 percent, respectively (transcript of conference, pp. 105 and 140).

Table 11
Dry film photoresist: Hitachi's production, capacity, and shipments, 1989-91, January-June 1991, and January-June 1992

Item	1989	1990	1991	January-June-- 1991	1992
Production (million sq.ft.)..					
Capacity[1] (million sq.ft.)...					
Capacity utilization (percent).....					
Shipments:					
Home market (million sq.ft.).....					
Exports to--					
United States (million sq.ft.).....					
All others (million sq.ft.).....					
Total exports (million sq.ft.).....	*	*	*	*	*	*	*
Total shipments (million sq.ft.).....					
Slitting waste (million sq.ft.).....					
Ratio of exports to total shipments (percent).....					
Share of total exports exported to the United States (percent).....					

[1] The capacity reported is based on operating 144 hours per week, 52 weeks per year.

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

CONSIDERATION OF THE CAUSAL RELATIONSHIP BETWEEN THE ALLEGED LTFV IMPORTS AND THE ALLEGED MATERIAL INJURY

Imports

As stated previously, Tokyo Ohka and Hitachi are the only known sources of U.S. imports of the subject product in recent periods. Imports from these firms, and domestic shipments thereof, are shown in table 12. A noticeable increase is evident during the period for which the data were collected; however, the level of imports remained relatively modest in comparison to U.S. production. The fall in the unit value of imports from 1990 to 1991 reflects LeaRonal's shift to widestock imports following the completion of its slitting facility.

Table 12
Dry film photoresist: U.S. imports and shipments of imports from Japan, 1989-91, January-June 1991, and January-June 1992

Item	1989	1990	1991	January-June-- 1991	1992
	Quantity (1,000 sq.ft.)				
Imports	***	***	***	***	***
Shipments of imports	***	***	***	***	***
	Value, landed, duty-paid (1,000 dollars)				
Imports	***	***	***	***	***
Shipments of imports	***	***	***	***	***
	Unit value (per sq.ft.)				
Imports	***	***	***	***	***
Shipments of imports	***	***	***	***	***

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

U.S. Consumption and Market Penetration

From 1989 to 1991, apparent U.S. consumption of dry film photoresist declined by 8.8 percent in terms of quantity (13.2 percent by value) (table 13). Most sources agree that the decline was due to the shrinking size of PCBs (due to increased density), the shrinking number of PCB producers, and recessionary conditions in the U.S. and world markets. Despite the continuance of these factors, consumption increased by 7.5 percent (4.1 percent by value) from January-June 1991 to January-June 1992. Both U.S. producers and importers project a slight increase in consumption in 1992 over 1991 and have planned accordingly. As of July 31, LeaRonal's outstanding orders for the remainder of 1992 totalled *** sq. ft.

Shipments of Japanese imports accounted for a small but increasing share of U.S. consumption throughout the period for which data were collected, as shown in table 13. The share of U.S. producers declined reciprocally.

Table 13
Dry film photoresist: Apparent U.S. consumption and market shares, 1989-91, January-June 1991, and January-June 1992

(Quantity in 1,000 sq.ft.; value in 1,000 dollars)

Period	Domestic shipments of U.S. production[1]	Domestic shipments of imports	Apparent U.S. consumption	Ratio (percent) of domestic shipments to consumption: For imports from Japan	Ratio (percent) of domestic shipments to consumption: For U.S. production
	Quantity				
1989.....	533,271	***	***	***	***
1990.....	504,357	***	***	***	***
1991.....	478,340	***	***	***	***
Jan.-June--					
1991.....	234,296	***	***	***	***
1992.....	248,392	***	***	***	***
	Value[2]				
1989.....	139,461	***	***	***	***
1990.....	130,200	***	***	***	***
1991.....	118,705	***	***	***	***
Jan.-June--					
1991.....	60,353	***	***	***	***
1992.....	61,889	***	***	***	***

[1] U.S. producers report no U.S. company transfers.
[2] F.o.b. U.S. shipping point.

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

Pricing and Marketing Considerations

As indicated earlier, dry film photoresist is used primarily in the process of manufacturing PCBs.[14] Consequently, changes in U.S. demand for dry film are determined almost entirely by changes in the demand for U.S.-produced PCBs. Petitioners and respondents report that consumption of dry film declined during 1989-91. Reported factors contributing to this decline include poor performance of the U.S. economy, the outsourcing of PCBs to Asian producers, and technological changes that have reduced the surface area of PCBs and/or increased the use of liquid rather than dry film photoresist. Data covering U.S. shipments of PCBs show a 17 percent decline in terms of volume (square inches) during 1988-91.[15]

[14] Dry film is also used in chemical machining of precision parts. Morton reported that an estimated 5 percent of dry film sales go to that market.
[15] Henderson Ventures and Wm. E. Loeb & Associates, PCI Quarterly Forecast: Second Quarter, 1992, p. 2-5.

Older types of dry film and other products (e.g., solvent and semi-aqueous dry film, and screen printing) can be used to perform essentially the same tasks as aqueous dry film in the PCB manufacturing process. However, aqueous dry film has displaced these products, for the most part, because of ease of use and/or better performance characteristics. It is used almost exclusively by manufacturers of 1- and 2-sided PCBs and also for much of the production of multi-layer boards.[16] Newer products that achieve finer resolution such as electro-deposition and liquid photoresist also are being used by certain sectors of the PCB market. Although industry officials indicate that the use of liquid photoresist is limited to the production of some multi-layer and particularly high performance PCBs, these products are projected to grow at a faster rate over the next 5 years than conventional 1- and 2-sided PCB's.[17]

Different photoresist products can be used interchangeably to varying degrees. Aqueous dry film generally is characterized by U.S. manufacturers as a commodity product; nonetheless, products vary in terms of thickness, width, and the exact composition of the film. Differences in width and thickness are specified by customers and depend on the types of PCBs being manufactured. The chemical composition of the film is proprietary and varies by manufacturer, although different chemical compositions may achieve the same results in terms of image resolution and yield. Some dry film purchasers, as well as the petitioners and respondents, report no particular difference in quality between U.S. and Japanese products. Petitioners report that the products can be used interchangeably regardless of the country of origin. However, respondents noted that differences between manufacturers' aqueous dry film products may result in different PCB yields and sometimes require changes in PCB design and manufacturing processes. Manufacturers of PCBs contacted by Commission staff also report that different chemical compositions may require modifications to existing equipment and changes in other manufacturing inputs.[18]

Switching from semi-aqueous and, in particular, solvent dry film products to aqueous dry film requires some modifications to manufacturing equipment, processes, and product design. Products such as screen inks, electro-deposition photoresist, and liquid photoresist require investment in significantly different manufacturing equipment and processes.

U.S. producers and importers report that their customers have qualification procedures. According to Hitachi, the qualification process usually consists of three stages. The first two stages are designed to establish the performance characteristics of the product during the production

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[16] 1- and 2-sided boards accounted for 49 percent of U.S. shipments (in terms of square inches) in 1991 and are projected to account for 45 percent in 1996. PCI Quarterly Forecast, p. 2-7.

[17] Between 1991 and 1996, shipments of multi-layer and high performance PCB's are projected to grow at an average annual rate of 5.3 and 5.1 percent, respectively, while 1- and 2-sided PCB's are expected to decline by 1.3 percent. PCI Quarterly Forecast, p. 2-7.

[18] Telephone conversation with ***, who indicated that the products of the various U.S. and Japanese manufacturers sometimes require equipment and manufacturing process modifications.

process. The third stage involves more extensive production runs lasting 1 to 2 weeks, during which the dry film manufacturer provides full time technical assistance. Purchasers indicate that the qualification process can range from 2 weeks to up to 3 months.[19]

Dry film manufacturers continue to provide technical assistance once the qualification process is completed and the sale has been made. Respondents emphasize the importance of technical assistance in terms of product differentiation. Some of the purchasers contacted by Commission staff also have identified technical support as a factor contributing to their sourcing decisions.[20]

Dry film accounts for a relatively small portion (4-7 percent) of the total cost of a PCB.[21] However, PCB manufacturers, in an effort to increase overall productivity, have focused increasingly on controlling inventory costs.[22] Dry film manufacturers and importers typically carry high levels of inventory to allow them to make frequent shipments to their customers in order to accommodate fluctuations in orders for PCBs.

Dry film is priced on a square-foot basis. In some cases manufacturers price their products on an f.o.b. basis (from the local warehouse); in other cases, freight and charges for equipment are included in the price.[23] Manufacturers may sell the product on the basis of internal price lists and generally scale their prices according to product type, volume, and service requirements.[24] One importer and two producers reported that 65-99 percent of their sales are on a spot basis, with contract sales accounting for the remainder. Contracts typically cover 1 to 2 year periods, with release provisions based on price and quantity.

Importers and producers, with the exception of Du Pont, indicated that transportation costs are not a significant factor in determining the price of the product. One producer, Hercules, estimated that transportation costs (including transportation to warehouse) amounted to approximately *** percent of the final product's cost. Morton estimated that transportation costs amounted to approximately *** percent of the total delivered cost of its products. Producers ship dry film from their slitting facilities to warehouses located near areas where their customers are concentrated.[25] The extent to which transportation costs are included in the price of dry film varies by manufacturer.

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[19] Variations in the length of time relate to the complexity of the PCB's being produced. Telephone conversations with *** of *** and *** of ***. *** also noted that OEM's may require even longer qualification periods.

[20] Telephone conversations with *** and ***.

[21] Estimate reported by purchasers of dry film contacted by Commission staff. The figure varies, depending on the type of PCB being produced.

[22] PCI Quarterly Forecast, p. 2-6.

[23] ***.

[24] ***.

[25] Importers and producers reported that a significant percentage of their shipments were to customers within 100 miles of their warehouses. ***.

PRICE TRENDS

The Commission requested price and quantity data from U.S. producers and importers for their overall sales of dry film and sales to their largest customers by quarter during January 1989-June 1992.[26] U.S. producers and importers were requested to submit separate pricing data for their annual sales to (a) firms purchasing under 3 million square feet per year and (b) firms purchasing 3 million square feet or over.[27] To date, importers have only sold dry film to firms purchasing quantities amounting to less than 3 million square feet per year. All three U.S. producers reported sales in the over 3 million square feet per year category.

The Commission requested pricing data for the following product specifications:

Product 1: Aqueous, for acidic etching application, 1.3 mils thickness (0.0013 inches)

Product 2: Aqueous, for alkaline etching application, 1.5 mils thickness (0.0015 inches)

Product 3: Aqueous, for plating application, 1.5 mils thickness (0.0015 inches)

Product 4: Aqueous, for plating application, 2.0 mils thickness (0.0020 inches)

All of the respondents (three U.S. producers and two importers) submitted useable pricing data. In the case of one U.S. producer and both importers, prices were submitted for 1.5-mil, all-purpose dry film rather than (or in addition to) product 2 or 3 because the companies could not determine the end use of the product. Differences in the prices reported for these two products were slight. As a result, data covering products 2 and 3 are combined in the following sections on sales and price comparisons. Reported pricing data accounted for approximately 57 and 99 percent of total shipments of U.S.-produced and Japanese dry film, respectively. Unit values reported below are shown by annual sales volume under 3 million square feet and for sales to all purchasers regardless of sales volume.[28] Unit values reported by U.S. importers of the Japanese product are also shown by company because one importer, LeaRonal, opened its slitting facility in the United States in the fourth quarter of 1990 and Hitachi did not enter the market until 1991.

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[26] Producers and importers were unable to provide largest-shipment data on a comparable basis in a number of cases. Therefore, pricing information for all sales is presented in this section.

[27] This volume break was requested by the petitioners because competition from Japanese-produced dry film to date allegedly has occurred almost exclusively in sales to smaller purchasers, i.e., those buying less than 3 million square feet per year.

[28] Data reported for annual sales totalling over 3 million square feet are shown in app. F.

Annual Sales Under 3 Million Square Feet

Average unit values of all types of dry film from U.S. and Japanese sources generally declined between January 1989 and June 1992 (table 14). The decline in Japanese average unit values was slowed somewhat by the entrance of Hitachi into the market. That company's unit values remain significantly higher than those of the other importer as well as all three U.S. manufacturers. Two factors contributing to Hitachi's higher prices are smaller sales volumes and the added cost of transporting fully finished (slit) dry film from Japan.[29] In addition, the company's products do not exactly match the descriptions for products 1 and 2.[30]

Average unit values for domestic product 1 (aqueous dry film for acidic etching application, 1.3 mils in thickness) declined 4 percent between 1989 and the second quarter of 1992. Japanese product 1 was not sold in the U.S. market until the third quarter of 1991. Average unit values for Japanese product 1 declined by 29 percent between July 1991 and June 1992, in contrast to a 4 percent decline in the price of the U.S.-produced product during the same period.

Average unit values for domestic products 2 and 3 (aqueous dry film for plating or alkaline etching application, 1.5 mils in thickness) also declined by 4 percent during the 1989-92 period. LeaRonal sold this product during the entire period; the company's reported average unit values declined by *** percent. Hitachi started selling this product during the third quarter of 1991. Its reported unit values show an increase of *** percent over the past 4 quarters.

Reported values for product 4 (aqueous dry film for plating application, 2.0 mils in thickness), display patterns similar to the other products. Average unit values for domestic product 4 declined 5 percent over the period. LeaRonal's reported average unit values dropped by *** percent. Hitachi reported sales only for the first 2 quarters of 1992, with average unit values declining *** percent over that period.

With the exception of product 4 (which registered a slow, but steady decline), sales data provided by domestic producers do not show steady declines in terms of average unit values. Unit values for domestic product 1 and combined data for products 2 and 3 fluctuated during the 3-1/2-year period. LeaRonal's reported sales data for product 4 and its combined data for products 2 and 3 show steady, more rapid declines. To some extent the declines may relate to changes in volume and the opening of the company's slitting facility in the United States during the fourth quarter of 1990.

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[29] Because of packaging requirements, fully finished, slit dry film photoresist has higher shipping costs than unslit master rolls.

[30] Hitachi reported data for product 1 that covered sales of 1.5 rather than 1.3 mil dry film. Sales data reported for product 2 included 1.5 and 2.0 rather than just 1.5 mil dry film.

Table 14
Dry film photoresist: U.S. producers' and importers' average unit values (cents per square foot) and quantities (1,000 square feet) of sales to customers with annual purchases of less than 3 million square feet, by quarters, January 1989-June 1992

Period	United States		LeaRonal		Hitachi		Japanese	
	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity
	Product 1							
1989:								
Jan.-Mar...	24.6	4,269						
Apr.-June..	23.9	3,627						
July-Sept..	25.2	7,471						
Oct.-Dec...	24.8	6,202						
1990:								
Jan.-Mar...	24.8	5,648						
Apr.-June..	23.8	5,081						
July-Sept..	25.1	5,763	*	*	*	*	*	*
Oct.-Dec...	25.1	5,186						
1991:								
Jan.-Mar...	25.1	4,851						
Apr.-June..	25.1	4,071						
July-Sept..	24.9	5,113						
Oct.-Dec...	24.9	4,791						
1992:								
Jan.-Mar...	24.6	5,422						
Apr. June..	23.6	4,849						
	Products 2 and 3							
1989:								
Jan.-Mar...	28.2	26,480						
Apr.-June..	30.2	16,580						
July-Sept..	28.3	34,888						
Oct.-Dec...	27.3	33,475						
1990:								
Jan.-Mar...	28.1	37,985						
Apr.-June..	27.2	37,011						
July-Sept..	28.1	37,120						
Oct.-Dec...	28.0	34,043	*	*	*	*	*	*
1991:								
Jan.-Mar...	28.0	36,993						
Apr.-June..	27.8	35,922						
July-Sept..	28.0	34,917						
Oct.-Dec...	27.9	33,161						
1992:								
Jan.-Mar...	27.2	35,089						
Apr.-June...	27.2	33,605						

See footnote at end of table.

Table 14--Continued
Dry film photoresist: U.S. producers' and importers' average unit values (cents per square foot) and quantities (1,000 square feet) of sales to customers with annual purchases of less than 3 million square feet, by quarters, January 1989-June 1992

Period	United States		LeaRonal		Hitachi		Japanese	
	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity
	Product 4							
1989:								
Jan.-Mar...	30.6	16,523						
Apr.-June..	30.7	15,105						
July-Sept..	30.8	14,334						
Oct.-Dec...	30.2	14,750						
1990:								
Jan.-Mar...	31.0	18,013						
Apr.-June..	31.3	18,857						
July-Sept..	31.2	16,173						
Oct.-Dec...	30.6	15,291	*	*	*	*	*	*
1991:								
Jan.-Mar...	30.6	15,932						
Apr.-June..	29.9	15,031						
July-Sept..	29.4	15,720						
Oct.-Dec...	29.3	14,033						
1992:								
Jan.-Mar...	29.3	15,232						
Apr.-June..	29.2	15,931						

[1] No data reported.

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

Total Annual Sales

The average unit values of shipments reported by U.S. producers to all customers regardless of level of purchases declined somewhat during the 1989-92 period (table 15). Average unit values for product 1 declined at the same rate (4 percent) as average unit values reported for sales under 3 million square feet. Total sales of products 2 and 3 show a faster rate of decline (6 percent in terms of average unit values) than sales under 3 million square feet. Average unit values reported for product 4 show a slower overall rate of decline (4 percent).[31]

UNIT VALUE COMPARISONS

Thirty-two comparisons between U.S. and Japanese average unit values were possible for sales to customers purchasing less than 3 million square feet annually. In 19 of these comparisons, the Japanese product undersold the domestic product, with margins ranging from 0.3 to 7.8 percent (table 16). In 13 cases the Japanese product was priced above the domestic product, with margins ranging from 0.8 to 44.5 percent. Average unit values reported for Hitachi's sales ***. In contrast, data reported by LeaRonal show ***.

In terms of total sales to all customers regardless of level of purchases, differences in average unit values were smaller. In 11 of these 32 comparisons, the Japanese product undersold the domestic product, with margins ranging from 0.1 to 3.6 percent (table 16). In 21 cases, the Japanese product was priced above the domestic product, with margins ranging from 0.1 to 53.2 percent.

Exchange Rates

Quarterly data reported by the International Monetary Fund indicate that during January 1989-March 1992 the nominal value of the Japanese yen declined 17.3 percent through the beginning half of the period (reaching its lowest point in the second quarter of 1990) and then returned to its initial January-March 1989 value by the end of the period (table 17).[32] Adjusted for movements in producer price indexes in the United States and Japan, the real value of the Japanese currency showed an overall depreciation of 1 percent for the period January 1989 through March 1992.

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[31] U.S. importers did not report annual sales over 3 million square feet to any U.S. customers; therefore their results are the same as those shown in table 14.

[32] International Financial Statistics, July 1992.

Table 15
Dry film photoresist: U.S. producers' and importers' average unit values (cents per square foot) and quantities (1,000 square feet) of sales to all customers, by quarters, January 1989-June 1992

Period	United States		LeaRonal		Hitachi		Japanese	
	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity
				Product 1				
1989:								
Jan.-Mar...	24.0	7,319						
Apr.-June..	23.4	6,786						
July-Sept..	24.7	10,272						
Oct.-Dec...	24.3	9,082						
1990:								
Jan.-Mar...	23.9	10,964						
Apr.-June..	23.3	10,671						
July-Sept..	24.0	11,375	*	*	*	*	*	*
Oct.-Dec...	24.0	10,327						
1991:								
Jan.-Mar...	23.8	9,091						
Apr.-June..	23.7	8,421						
July-Sept..	23.5	9,302						
Oct.-Dec...	23.4	9,091						
1992:								
Jan.-Mar...	23.6	10,525						
Apr.-June..	23.0	9,874						
				Products 2 and 3				
1989:								
Jan.-Mar...	28.0	27,252						
Apr.-June..	29.7	17,981						
July-Sept..	27.9	37,582						
Oct.-Dec...	26.8	36,572						
1990:								
Jan.-Mar...	27.5	43,255						
Apr.-June..	26.6	42,734						
July-Sept..	27.5	42,571						
Oct.-Dec...	27.4	39,258	*	*	*	*	*	*
1991:								
Jan.-Mar...	27.5	42,274						
Apr.-June..	27.2	41,587						
July-Sept..	27.3	40,931						
Oct.-Dec...	27.3	38,692						
1992:								
Jan.-Mar...	26.5	41,733						
Apr.-June..	26.4	39,939						

See footnote at end of table.

Table 15--Continued
Dry film photoresist: U.S. producers' and importers' average unit values (cents per square foot) and quantities (1,000 square feet) of sales to all customers, by quarters, January 1989-June 1992

Period	United States		LeaRonal		Hitachi		Japanese	
	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity
	Product 4							
1989:								
Jan.-Mar...	29.2	19,804						
Apr.-June..	29.2	18,293						
July-Sept..	28.8	18,271						
Oct.-Dec...	28.8	18,021						
1990:								
Jan.-Mar...	29.8	20,912						
Apr.-June..	30.0	21,931						
July-Sept..	29.8	20,492						
Oct.-Dec...	28.9	20,455	*	*	*	*	*	*
1991:								
Jan.-Mar...	28.9	21,048						
Apr.-June..	28.3	20,246						
July-Sept..	28.1	19,182						
Oct.-Dec...	28.1	17,474						
1992:								
Jan.-Mar...	27.8	19,899						
Apr.-June..	27.9	20,157						

[1] No data reported.

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

Table 16
Dry film photoresist: Margins of under/(over) selling for unit values of sales to customers with annual purchases of less than 3 million square feet and to all customers, by quarters, January 1989-June 1992

Period	Product 1			Products 2 and 3			Product 4		
	LeaRonal	Hitachi	Japan	LeaRonal	Hitachi	Japan	LeaRonal	Hitachi	Japan
	Under 3 million square feet								
1989:									
Jan.-Mar...									
Apr.-June..									
July-Sept..									
Oct.-Dec...									
1990:									
Jan.-Mar...									
Apr.-June..									
July-Sept..	*	*	*	*	*	*	*		
Oct.-Dec...									
1991:									
Jan.-Mar...									
Apr.-June..									
July-Sept..									
Oct.-Dec...									
1992:									
Jan.-Mar...									
Apr.-June..									
	Total sales								
1989:									
Jan.-Mar...									
Apr.-June..									
July-Sept..									
Oct.-Dec...									
1990:									
Jan.-Mar...									
Apr.-June..									
July-Sept..									
Oct.-Dec...	*	*	*	*	*	*	*		
1991:									
Jan.-Mar...									
Apr.-June..									
July-Sept..									
Oct.-Dec...									
1992:									
Jan.-Mar...									
Apr.-June..									

[1] No comparisons possible.

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

Table 17
Exchange rates:[1] Indexes of nominal and real exchange rates of the Japanese yen, and indexes of producer prices in the United States and Japan,[2] by quarters, January 1989-March 1992

Period	U.S. producer price index	Japanese producer price index	Nominal exchange rate index	Real exchange rate index[3]
1989:				
January-March.....	100.0	100.0	100.0	100.0
April-June.....	101.8	102.6	93.0	93.8
July-September.....	101.4	103.5	90.3	92.1
October-December....	101.8	103.2	89.8	91.1
1990:				
January-March.....	103.3	103.7	86.8	87.2
April-June.....	103.1	104.5	82.7	83.9
July-September.....	104.9	104.5	88.4	88.1
October-December....	108.1	105.2	98.2	95.6
1991:				
January-March.....	105.9	105.3	96.0	95.5
April-June.....	104.8	104.8	92.9	92.9
July-September.....	104.7	104.5	93.6	93.5
October-December....	104.8	103.8	99.2	98.2
1992:				
January-March.....	104.6	103.5	100.0	99.0

[1] Exchange rates expressed in U.S. dollars per Japanese yen.

[2] Producer price indexes--intended to measure final product prices--are based on period-average quarterly indexes presented in line 63 of the International Financial Statistics.

[3] The real exchange rate is derived from the nominal rate adjusted for relative movements in producer prices in the United States and Japan.

Note.--January-March 1989 = 100.

Source: International Monetary Fund, International Financial Statistics, July 1992.

Lost Sales and Revenues

The Commission received allegations of lost sales and lost revenues from all three principal domestic producers, Du Pont, Morton, and Hercules.[33] The 27 lost sales allegations amounted to approximately $5.5 million and involved 20.7 million square feet allegedly purchased from Japanese suppliers during the period January 1989-June 1992. The 18 lost revenue allegations totalled $735,875 and involved 23.9 million square feet of dry film. Staff contacted 8 purchasers who accounted for 13 of the allegations. These allegations amounted to *** and involved *** square feet of dry film. The following provides a summary of the information obtained from these purchasers.

*** was named by *** in one lost sale allegation that totalled *** and involved *** square feet of dry film. *** stated that the company no longer uses Japanese-produced dry film because his company was not satisfied with product quality. He stated that *** did buy dry film from *** because it was offered a substantial price break. He could not confirm the precise date and the value and quantity information alleged by ***, but he did verify product thickness and the year of the sale. He also noted that his company now purchases dry film from ***.

*** was named by *** in one lost sale allegation. *** verified that his company bought dry film from *** in ***, but could not verify the precise quantity or price. He stated that ***'s prices are within a few cents per square foot of the U.S. producer's, the company's service is superior, and product quality is comparable.[34]

*** was named by *** in two lost sales allegations. The company was also named by *** in one lost sale allegation. *** stated that the volumes and prices alleged by the two companies seemed reasonably accurate. However, he noted that he was not involved with the specific transactions. He stated that the decision to switch to ***'s product was based solely on price. He also noted that *** had to make a number of adjustments to its manufacturing processes after it switched suppliers.[35]

*** was cited by *** in a lost sale allegation for *** involving *** square feet of dry film photoresist in ***. *** allegedly purchased the product from Japanese sources at a price of *** cents per square foot. ***, purchaser of this product for ***, could not recall the specific prices involved in the sale and did not know the country of origin of the *** product. *** did state that *** purchased the product from *** on the basis of price and quality. He also reported that *** started purchasing dry film photoresist in ***.

***, located in ***, was cited by *** in a lost sale allegation for *** involving *** square feet of dry film photoresist in ***. ***, purchaser of this product for ***, reported that it did switch from *** to *** at that time

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[33] All allegations involved aqueous film.

[34] ***.

[35] *** filed an affidavit in respondent's brief stating that there is increased competition in the U.S. dry film market.

because of a *** cent price reduction. However, *** switched back to *** within 2 months because of quality problems with *** product. *** stated that *** product did not stick to the circuit boards, resulting in a large number of rejects costing the company thousands of dollars. *** commented that its experience with ***'s product was so bad that ***. *** currently purchases all of its dry film photoresist requirements from ***. *** reported that he has seen the price for this product decline over the past year due to the increased competition in the market.

*** was cited by *** in a lost sale allegation for *** involving *** square feet of dry film photoresist and a lost revenue allegation for *** involving *** square feet. Both allegations involved an original *** quote that occurred in ***. ***, purchaser of this product for ***, reported that *** had purchased Japanese product from *** for evaluation by its engineering department. *** reported that the product was not performing satisfactorily, possibly even causing problems, and *** ended the evaluation after about a month. *** currently purchases dry film photoresist from *** domestic sources, ***.

*** was cited by *** in two lost sale allegations for *** involving *** square feet of dry film photoresist and two lost revenue allegations for *** involving *** square feet. Both allegations involved an original *** quote that occurred in ***. ***, purchaser of this product for ***, claimed no specific knowledge of the sales but reported that *** had purchased *** product only in ***. *** purchased dry film photoresist product from *** prior to and after these 2 months. *** reported that he did not know the reason for switching to ***, but *** switched back to *** because of problems with the *** product and the lack of servicing from ***. *** commented that *** provided immediate servicing to ***.

*** was cited by *** in a lost sale allegation for *** involving *** square feet. *** was able to confirm the alleged time period and price but could not confirm the quantity reported by ***. *** stated that the company did consider buying the product from *** but did not make the purchase because of quality problems. Although the quality problems were not insurmountable, time consuming and costly changes in ***'s manufacturing processes would have been required in order to maintain reasonable yields. *** indicated that price was not the most important factor affecting the company's choice of suppliers and that his company uses U.S.-produced dry film. However, he went on to note that his company used the lower price quotes given by *** to attempt to negotiate lower prices from its current supplier.

APPENDIX A

FEDERAL REGISTER NOTICES

INTERNATIONAL TRADE COMMISSION

[Investigation No. 731-TA-622 (Preliminary)]

Dry Film Photoresist From Japan

AGENCY: United States International Trade Commission.

ACTION: Institutional and scheduling of a preliminary antidumping investigation.

SUMMARY: The Commission hereby gives notice of the institution of preliminary antidumping investigation No. 731-TA-622 (Preliminary) under section 733(a) of the Tariff Act of 1930 (19 U.S.C. 1673b(a)) to determine whether there is a reasonable indication that an industry in the United States is materially injured, or is threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of imports from Japan of dry film photoresist, provided for in subheadings 3702.39.00, 3702.42.00, 3702.43.00, and 3702.44.00 of the Harmonized Tariff Schedule of the United States, that are alleged to be sold in the United States at less than fair value. The Commission must complete preliminary antidumping investigations in 45 days, or in this case by August 31, 1992.

For further information concerning the conduct of this investigation and rules of general application, consult the Commission's Rules of Practice and Procedure, part 201, subparts A through E (19 CFR part 201), and part 207, subparts A and B (19 CFR part 207).

EFFECTIVE DATE: July 16, 1992.

FOR FURTHER INFORMATION CONTACT: Larry Reavis (202-205-3185), Office of Investigations, U.S. International Trade Commission, 500 E Street SW., Washington, DC 20436. Hearing-impaired persons can obtain information on this matter by contacting the Commission's TDD terminal on 202-205-1810. Persons with mobility impairments who will need special assistance in gaining access to the Commission should contact the Office of the Secretary at 202-205-2000.

SUPPLEMENTARY INFORMATION:

Background

This investigation is being instituted in response to a petition filed on July 16, 1992, by E.I. Du Pont de Nemours & Company, Wilmington, DE; Morton International, Inc., Tustin, CA; and Hercules Incorporated, Middleton, DE.

Participation in the investigation and public service list—Persons (other than petitioners) wishing to participate in the investigation as parties must file an entry of appearance with the Secretary to the Commission, as provided in §§ 201.11 and 207.10 of the Commission's rules, not later than seven (7) days after publication of this notice in the Federal Register. The Secretary will prepare a public service list containing the names and addresses of all persons, or their representatives, who are parties to this investigation upon the expiration of the period for filing entries of appearance.

Limited disclosure of business proprietary information (BPI) under an administrative protective order (APO) and BPI service list—Pursuant to § 207.7(a) of the Commission's rules, the Secretary will make BPI gathered in this preliminary investigation available to authorized applicants under the APO issued in the investigation, provided that the application is made not later than seven (7) days after the publication of this notice in the Federal Register. A separate service list will be maintained by the Secretary for those parties authorized to receive BPI under the APO.

Conference

The Commission's Director of Operations has scheduled a conference in connection with this investigation for 9:30 a.m. on August 6, 1992, at the U.S. International Trade Commission Building, 500 E Street SW., Washington, DC. Parties wishing to participate in the conference should contact Larry Reavis (202-205-3185) not later than August 5, 1992, to arrange for their appearance. Parties in support of the imposition of antidumping duties in this investigation and parties in opposition to the imposition of such duties will each be collectively allocated one hour within which to make an oral presentation at the conference. A nonparty who has testimony that may aid the Commission's deliberations may request permission to present a short statement at the conference.

Written Submissions

As provided in §§ 201.8 and 207.15 of the Commission's rules, any person may submit to the Commission on or before August 11, 1992, a written brief

containing information and arguments pertinent to the subject matter of the investigation. Parties may file written testimony in connection with their presentation at the conference no later than three (3) days before the conference. If briefs or written testimony contain BPI, they must conform with the requirements of §§ 201.6, 207.3, and 207.7 of the Commission's rules.

In accordance with §§ 201.16(c) and 207.3 of the rules, each document filed by a party to the investigation must be served on all other parties to the investigation (as identified by either the public or BPI service list), and a certificate of service must be timely filed. The Secretary will not accept a document for filing without a certificate of service.

Authority: This investigation is being conducted under authority of the Tariff Act of 1930, title VII. This notice is published pursuant to § 207.12 of the Commission's rules.

By Order of the Commission.

Issued: July 17, 1992.

Paul R. Bardos,

Acting Secretary.

[FR Doc. 92-17375 Filed 7-22-92; 8:45 am]

BILLING CODE 7020-02-M

[A-588-828]

Initiation of Antidumping Duty Investigation: Dry Film Photoresist From Japan

AGENCY: Import Administration, International Trade Administration, Department of Commerce.

EFFECTIVE DATE: August 12, 1992.

FOR FURTHER INFORMATION CONTACT: Bill Crow, Office of Antidumping Investigations, Import Administration, International Trade Administration, U.S. Department of Commerce, 14th Street and Constitution Avenue, NW., Washington, DC 20230; telephone (202) 377-0116.

INITIATION OF INVESTIGATION:

The Petition

On July 16, 1992, we received a petition filed in proper form by E.I. Du Pont de Nemours & Company, Morton International and Hercules Incorporated (the petitioners). A supplement to the petition was received on July 29, 1992. In accordance with 19 CFR 353.12, the petitioners allege that dry film photoresist (DFP) from Japan is being, or is likely to be, sold in the United States at less than fair value (LTFV) within the meaning of section 731 of the Tariff Act of 1930, as amended (the Act), and that these imports are materially injuring, or threaten material injury to, a U.S. industry.

The petitioners have stated that they have standing to file the petition because they are interested parties, as defined under section 771(9)(C) of the Act, and because they have filed the petition on behalf of the U.S. industry producing the product that is subject to this investigation. If any interested party, as described under paragraphs (C), (D), (E), or (F) of section 771(9) of the Act, wishes to register support for, or opposition to, this petition, it should file a written notification with the Assistant Secretary for Import Administration.

Under the Department's regulations, any producer or reseller seeking exclusion from a potential antidumping duty order must submit its request for exclusion within 30 days of the date of the publication of this notice. The procedures and requirements are contained in 19 CFR 353.14.

Scope of Investigation

The products covered by this investigation are all forms of dry film photoresist from Japan. Dry film photoresist includes all forms and dimensions of solid photosensitive resin film in rolls, without sprocket holes,

designed to be laminated onto a surface to permit etching or plating of a pattern. The majority of DFP is provided for under subheading 3702.43.00.00 of the Harmonized Tariff Schedule of the United States (HTSUS). DFP may also be imported into the United States under subheadings 3702.39.00.00, 3702.42.00.00, 3702.44.00.60, 3702.95.00.00, and 3707.90.30.00 of the HTSUS. Although the HTSUS subheadings are provided for convenience and customs purposes, our written description of the scope of this investigation is dispositive.

United States Price and Foreign Market Value

Petitioners' estimate of U.S. price is based on sales to the second unrelated U.S. customer. Petitioners deducted the first unrelated purchaser's estimated profit, estimated material losses in further manufacture of the DFP, movement charges, rebates, slitting and packing costs, warehousing, imputed credit and selling expenses.

Petitioners estimated foreign market value based on large volume purchases of DFP in Japan. Petitioners made deductions from the home market price for estimated material losses in further manufacture of the DFP for slitting and for packing costs. Based on petitioners' calculations, dumping margins range from 36 to 60 percent. For purposes of this initiation, no adjustments were made to petitioners' calculations. If it becomes necessary at a later date to consider the petition as a source of best information available (BIA), we may review all of the bases for the petitioners' estimated dumping margins in determining BIA.

Initiation of Investigation

We have examined the petition on dry film photoresist from Japan and have found that the petition meets the requirements of section 732(b) of the Act and 19 CFR 353.12. Therefore, we are initiating an antidumping duty investigation to determine whether imports of DFP are being, or are likely to be, sold in the United States at less than fair value.

Preliminary Determination by the International Trade Commission

The International Trade Commission (ITC) will determine by August 31, 1992, whether there is a reasonable indication that imports of DFP from Japan are materially injuring, or threaten material injury to, a U.S. industry. A negative ITC determination will result in the investigation being terminated; otherwise, the investigation will proceed according to statutory and regulatory time limits

This notice is published pursuant to section 732(c)(2) of the Act and 19 CFR 353.13(b).

Dated: August 5, 1992.

Joseph A. Spetrini,

Acting Assistant Secretary for Import Administration.

[FR Doc. 92-19097 Filed 8-11-92; 8:45 am]

BILLING CODE 3510-DS-M

APPENDIX B

CALENDAR OF PUBLIC CONFERENCE

CALENDAR OF PUBLIC CONFERENCE

Investigation No. 731-TA-622 (Preliminary)

Dry Film Photoresist from Japan

Those listed below appeared at the United States International Trade Commission's conference held in connection with the subject investigation at 9:30 a.m. on August 6, 1992, in the Hearing Room (room 101) of the USITC Building, 500 E Street, SW, Washington, DC.

In support of the imposition of antidumping duties

Wilmer, Cutler & Pickering--Counsel
Washington, DC
on behalf of

E.I. Du Pont de Nemours & Co.

Mr. Douglas Johnston, Business Manager, Primary Imaging

Morton International, Inc.

Mr. Elmer Hayes, Director of Primary Imaging

Hercules Incorporated

Mr. Scott Schaake, Product Manager, Dry Film Photoresist

John D. Greenwald, Esq.--OF COUNSEL

In opposition to the imposition of antidumping duties

Sidley & Austin
Washington, DC
on behalf of

Tokyo Ohka Kogyo and LeaRonal, Inc.

Mr. Richard Kessler, Executive VP, LeaRonal, Inc.
Mr. John King, General Manager, West Coast Processing Facility and Director, Imaging Chemicals
Mr. Fred Schears, McCurdy Circuits

Judith H. Bello, Esq.--OF COUNSEL

In opposition to the imposition of antidumping duties--Continued

McDermott, Will & Emery
Washington, DC
on behalf of

Hitachi Chemical Co., Ltd. and Hitachi Chemical Co. America, Ltd.

Mr. T. Hamajima, President, Hitachi Chemical Co. America, Ltd.
Mr. Chris Glover, Manager, Photec Market Development, Hitachi Chemical Co. America, Ltd.

Carl W. Schwarz, Esq.--OF COUNSEL

Circuit Technology, Inc.
Redmond, WA

Mr. Robert G. Baldridge

APPENDIX C

SELECTED DATA RELATED TO THE ALLEGED MATERIAL INJURY AND THE CAUSAL RELATIONSHIP BETWEEN THE ALLEGED LTFV IMPORTS AND THE ALLEGED MATERIAL INJURY

Table C-1
Dry film photoresist: Summary data concerning the U.S. market, 1989-91, January-June 1991, and January-June 1992

(Quantity=1,000 square feet, value=dollars, unit values and unit labor costs are per square foot, period changes=percent, except where noted)

Item	Reported data			Jan.-June--		Period changes			
	1989	1990	1991	1991	1992	1989-90	1990-91	1989-91	Jan.-June 1991-92
U.S. consumption quantity:									
Amount									
Producers' share 1/									
Importers' share: 1/									
Japan 2/									
U.S. consumption value:									
Amount									
Producers' share 1/									
Importers' share: 1/	*	*	*	*	*	*	*		
Japan 2/									
U.S. importers' imports from Japan: 2/									
U.S. shipments quantity									
U.S. shipments value									
Unit value									
Ending inventory qty									
U.S. producers'--									
Average capacity quantity	1,193,250	1,228,478	1,167,463	583,981	565,679	+3.0	-5.0	-2.2	-3.1
Production quantity	906,600	847,669	772,276	390,469	393,885	-6.5	-8.9	-14.8	+0.9
Capacity utilization 1/	76.0	69.0	66.1	66.9	69.6	-7.0	-2.9	-9.8	+2.8
U.S. shipments:									
Quantity	533,271	504,357	478,340	234,296	248,392	-5.4	-5.2	-10.3	+6.0
Value	139,461	130,200	118,705	60,353	61,889	-6.6	-8.8	-14.9	+2.5
Unit value	$0.26	$0.26	$0.25	$0.26	$0.25	-1.3	-3.9	-5.1	-3.3
Export shipments:									
Quantity	373,631	308,021	312,281	151,625	149,010	-17.6	+1.4	-16.4	-1.7
Exports/shipments 1/	41.2	37.9	39.5	39.3	37.5	-3.3	+1.6	-1.7	-1.8
Value	61,165	50,198	50,444	25,036	33,726	-17.9	+0.5	-17.5	+34.7
Unit value	$0.16	$0.16	$0.16	$0.17	$0.23	-0.4	-0.9	-1.3	+37.1
Ending inventory quantity	50,264	51,589	36,925	45,666	43,743	+2.6	-28.4	-26.5	-4.2
Inventory/shipments 1/	5.5	6.4	4.7	5.9	5.5	+0.8	-1.7	-0.9	-0.4
Production workers	437	422	383	383	334	-3.4	-9.2	-12.4	-12.8
Hours worked (1,000s)	821	793	725	365	315	-3.4	-8.6	-11.7	-13.7
Total comp. ($1,000)	15,163	13,461	13,191	6,624	6,116	-11.2	-2.0	-13.0	-7.7
Hourly total compensation	$18.47	$16.97	$18.19	$18.15	$19.42	-8.1	+7.2	-1.5	+7.0
Productivity (1,000 square foot/hour)	1,104.3	1,068.9	1,065.2	1,069.8	1,250.4	-3.2	-0.3	-3.5	+16.9
Unit labor costs	$0.02	$0.02	$0.02	$0.02	$0.02	-5.1	+7.6	+2.1	-8.5
Net sales value									
COGS/sales 1/									
Operating income (loss)	*	*	*	*	*	*	*		
Op. income (loss)/sales 1/									

1/ 'Reported data' are in percent and 'period changes' are in percentage-point.
2/ The only foreign source for dry film photoresist is Japan.

Note.--Period changes are derived from the unrounded data. Part-year inventory ratios are annualized.

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

APPENDIX D

INCOME AND LOSS EXPERIENCE OF U.S. PRODUCERS ON THEIR OPERATIONS PRODUCING DRY FILM PHOTORESIST EXCLUDING EXPORT SALES BY DU PONT

Table D-1
Income-and-loss experience of U.S. producers on their operations producing dry film photoresist, excluding export sales by Du Pont which are slit by a foreign affiliate, fiscal years 1989-91, January-June 1991, and January-June 1992[1]

Item	1989	1990	1991	January-June-- 1991	1992
	Quantity (1,000 square feet)				
Net sales	*	*	*	*	*
	Value (1,000 dollars)				
Net sales					
Cost of goods sold					
Gross profit					
SG&A expense					
Operating income	*	*	*	*	*
Interest expense					
Other income, net					
Net income before income taxes					
Depreciation & amortization					
Cash flow					
	Value (per 1,000 square feet)				
Net sales					
Cost of goods sold	*	*	*	*	*
Gross profit					
SG&A expenses					
Operating income					
	Ratio to net sales (percent)				
Cost of goods sold					
Gross profit					
SG&A expenses	*	*	*	*	*
Operating income					
Net income before income taxes					
	Number of firms reporting				
Operating losses					
Net losses	*	*	*	*	*
Data					

[1] The firms and their respective fiscal yearends are Du Pont (Dec. 31), Morton (June 30), and Hercules (Dec. 31). Hercules was unable to provide useable interim data.

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

Table D-2
Income-and-loss experience of Du Pont on its operations producing dry film photoresist, excluding export sales which are slit by a foreign affiliate, fiscal years 1989-91, January-June 1991, and January-June 1992,

Item	1989	1990	1991	January-June-- 1991	1992	
	Value (1,000 dollars)					
Net sales.....						
Operating income	*	*	*	*	*	*
Net income before income taxes.....						
	Ratio to net sales (percent)					
Operating income	*	*	*	*	*	*
Net income before income taxes.....						
	Value (per 1,000 square feet)					
Operating income.....	*	*	*	*	*	*

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

APPENDIX E

COMMENTS RECEIVED FROM U.S. PRODUCERS ON THE IMPACT OF IMPORTS OF DRY FILM PHOTORESIST FROM JAPAN ON THEIR GROWTH, INVESTMENT, ABILITY TO RAISE CAPITAL, AND/OR EXISTING DEVELOPMENT AND PRODUCTION EFFORTS

COMMENTS RECEIVED FROM U.S. PRODUCERS ON THE IMPACT OF IMPORTS OF DRY FILM PHOTORESIST FROM JAPAN ON THEIR GROWTH, INVESTMENT, ABILITY TO RAISE CAPITAL, AND/OR EXISTING DEVELOPMENT AND PRODUCTION EFFORTS

The Commission requested U.S. producers to describe any actual or anticipated negative effects of imports of dry film photoresist from Japan on their growth, investment, ability to raise capital, or existing development and production efforts, including efforts to develop a derivative or more advanced version of the product. Their responses are as follows:

* * * * * * *

APPENDIX F

AVERAGE UNIT VALUES OF U.S.-PRODUCED DRY FILM PHOTORESIST SOLD TO CUSTOMERS WITH ANNUAL PURCHASES OF GREATER THAN 3 MILLION SQUARE FEET

Table F-1
Dry film photoresist: U.S. producers' average unit values (cents per square foot) and quantities (1,000 square feet) of sales to customers with annual purchases of more than 3 million square feet, by quarters, January 1989-June 1992

Period	Product 1		Products 2 and 3		Product 4	
	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity
1989:						
Jan.-Mar....	23.2	3,051	23.7	772	22.0	3,281
Apr.-June...	22.9	3,159	23.5	1,401	22.1	3,189
July-Sept...	23.2	2,801	22.0	2,694	21.6	3,936
Oct.-Dec....	23.2	2,880	21.1	3,097	22.6	3,271
1990:						
Jan.-Mar....	22.9	5,316	22.8	5,270	22.2	2,899
Apr.-June...	22.8	5,591	22.6	5,723	22.2	3,074
July-Sept...	22.8	5,612	23.7	5,451	24.2	4,320
Oct.-Dec....	22.9	5,140	23.4	5,215	24.0	6,165
1991:						
Jan.-Mar....	22.4	4,240	23.8	5,281	23.6	5,116
Apr.-June...	22.4	4,350	23.7	5,666	23.7	5,215
July-Sept...	21.7	4,189	23.2	6,014	22.3	3,462
Oct.-Dec....	21.7	4,300	23.3	5,531	23.2	3,441
1992:						
Jan.-Mar....	22.4	5,103	22.8	6,644	23.2	4,667
Apr.-June...	22.5	5,025	22.2	6,334	23.0	4,227

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