Dry Film Photoresist From Japan

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

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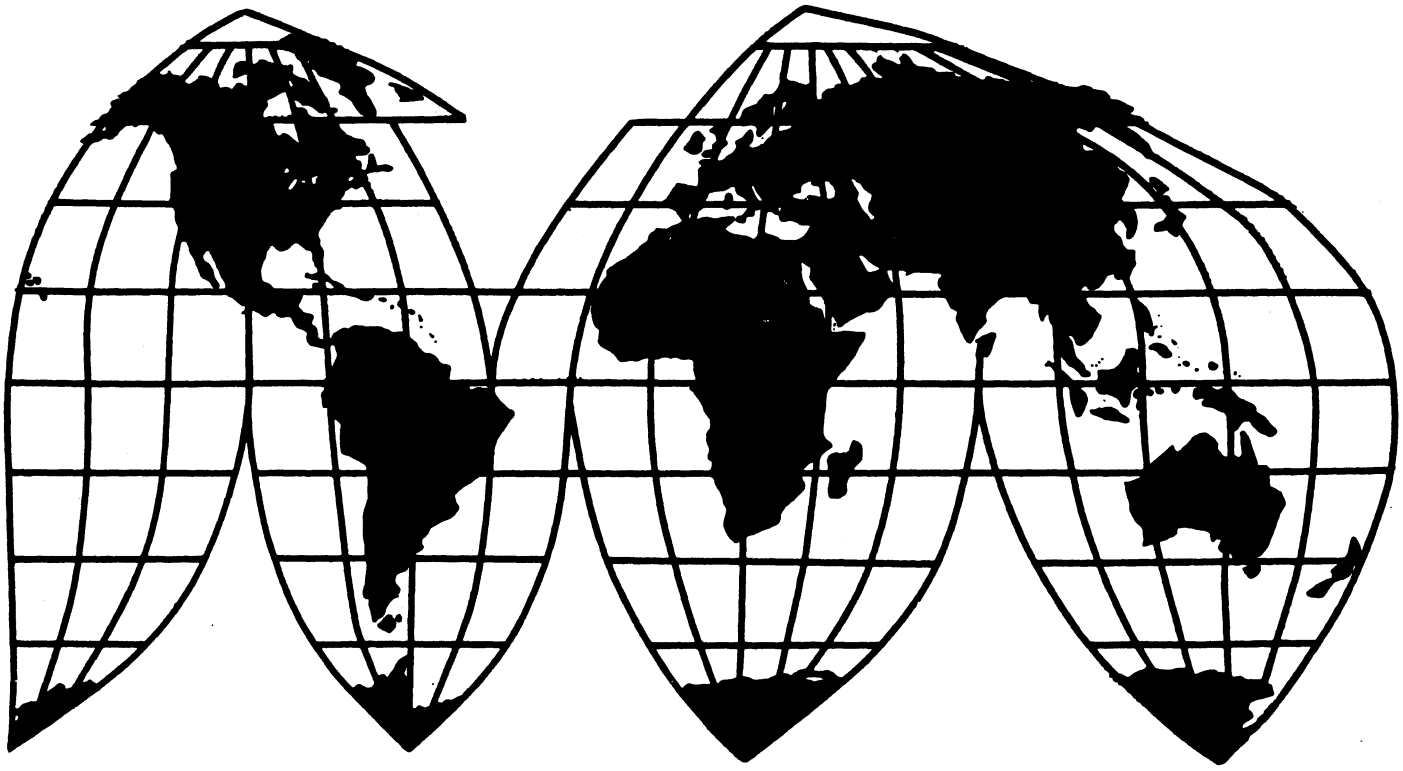
U.S. International Trade Commission



Washington, DC 20436

U.S. International Trade Commission

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DETERMINATION AND VIEWS OF THE COMMISSION

UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation No. 731-TA-622 (Final)

DRY FILM PHOTORESIST FROM JAPAN

Determination

On the basis of the record[1] developed in the subject investigation, the Commission determines, pursuant to section 735(b) of the Tariff Act of 1930 (19 U.S.C. § 1673d(b)) (the Act), that an industry in the United States is not materially injured or threatened with material injury, and the establishment of an industry in the United States is not 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, 3702.44.00, 3702.95.00, 3707.10.00, and/or 3707.90.30 of the Harmonized Tariff Schedule of the United States, that have been found by the Department of Commerce to be sold in the United States at less than fair value (LTFV).

Background

The Commission instituted this investigation effective December 30, 1992, following a preliminary determination by the Department of Commerce that imports of dry film photoresist from Japan were being sold at LTFV within the meaning of section 733(b) of the Act (19 U.S.C. § 1673b(b)). Notice of the institution of the Commission's investigation and of a public hearing 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 January 14, 1993 (56 F.R. 4443). The hearing was held in Washington, DC, on March 11, 1993, and all persons who requested the opportunity were permitted to appear in person or by counsel.

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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)).

VIEWS OF THE COMMISSION

Based on the record in this final investigation, we determine that the industry in the United States producing dry film photoresist is neither materially injured nor threatened with material injury by reason of imports of dry film photoresist ("DFP") from Japan that the Department of Commerce ("Commerce") has found to be sold at less than fair value ("LTFV").[1]

I. LIKE PRODUCT AND DOMESTIC INDUSTRY

A. Background and Products Subject to Investigation

In determining whether a domestic industry is materially injured or threatened with material injury by reason of the imports subject to investigation, we first define the "like product" and the domestic "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 . . . ."[2] 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 an investigation . . . ."[3]

Commerce has defined the imports subject to this investigation as:

> dry film photoresist (DFP) from Japan. Dry film photoresist means all forms and dimensions of solid photosensitive resin film, without sprocket holes, designed to be laminated onto a surface to permit etching or plating of a pattern. The photoresist film which comprise DFP are in dry film format, whether or

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

[2] 19 U.S.C. § 1677(4)(A).

[3] 19 U.S.C. § 1677(10).

not in rolls, and do not include bulk powder chemicals.[4]

Dry film photoresist is a type of photographic film (photosensitive resin) specially designed to be laminated onto a surface ("substrate") to permit precision etching or plating of a pattern. Dry film photoresist is used primarily in the etching and plating of patterns on high-density printed circuit boards (PCBs).[5] Dry film photoresist consists of five chemical components,[6] which are initially 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.[7] Before shipment to the end-user, the rolls are slit into widths that are exact multiples of the user's PCBs. Once slit, the rolls are considered "finished."[8]

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 process used by the PCB manufacturer. Films vary depending on whether the user requires a negative- or positive-working film,[9] the type of solvent and equipment

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[4] 58 Fed. Reg. 13739-40, March 15, 1993.

[5] Report at I-4-5.

[6] 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). Report at I-4.

[7] Id. at I-4.

[8] Id.

[9] With negative working film, the unexposed film is removed before etching or plating. With positive-working film, the exposed film is removed. All film

(continued...)

employed by the PCB manufacturer,[10] and whether the manufacturer is etching or plating.[11] Although all dry film manufacturers produce some types of dry film that are similar, the exact composition can vary by manufacturer. Dry film users report that certain DFP compositions, and often a certain manufacturer's product, work best in their respective processes. Finally, DFP is produced in several thicknesses to better accommodate users' needs.[12]

B. Like Product

In the preliminary investigation, we considered three like product issues: (1) whether slit and unslit DFP were included in one like product; (2) whether all types of DFP were included in one like product; and (3) whether the like product included photoresist other than dry film.

We found in the preliminary investigation that slit and unslit DFP constituted one like product. We based this determination on the fact that there are no independent uses for the widestock other than in the production of finished DFP, and that the unslit photoresist imparts the essential characteristics to the finished product. We also included all types of DFP in the like product based on similarities in characteristics and uses, similarities in production processes and production facilities, overlap in

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[9](...continued)
imported from Japan and nearly all dry film produced in the United States is negative working film. Report at I-5.

[10] There are three basic types of developing and stripping solutions: (1) aqueous (water based); (2) solvent-based; and (3) semi-aqueous, which is a combination of solvent and aqueous based solution. Each type of solvent and stripping solution require specially formulated films. To date, all imports from Japan and about 90 percent of U.S. production has been formulated for an aqueous developing solution. Report at I-5.

[11] If used for etching, a further consideration is whether the etching solutions are acid or alkaline based. Report at I-5.

[12] Id.

channels of distribution, and some degree of interchangeability. Finally, we did not include photoresists other than dry film in the like product. We found that other types of photoresist did not appear to be interchangeable with DFP to any substantial degree and that other types of photoresist differed from DFP in terms of their chemical characteristics, methods of use, and production processes and manufacturing techniques.[13]

The parties have made no new arguments in this final investigation regarding the definition of the like product.[14] In addition, no new evidence has been obtained that causes us to change the like product definition adopted in the preliminary investigation. Therefore, we find the like product in this final investigation to be the same as that in the preliminary investigation: dry film photoresist, slit or unslit, irrespective of the type of solvent used as a developing solution.

C. Domestic Industry/Related Parties

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 Dynachem, and Hercules) and Positec Photo Systems are the only firms known to produce widestock dry film photoresist, and finished material therefrom, in the United States in recent

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[13] See Dry Film Photoresist from Japan (Preliminary) USITC Pub. 2555 (August 1992) at 8-13 for a more extensive discussion of the like product.

[14] Petitioners and respondent Hitachi indicated that they agreed with our like product determination in the preliminary investigation. Petitioners' prehearing brief at 3-4, Hearing transcript at 135.

periods.[15]

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. ("Tokyo Ohka").[16] However, in late 1990, the company opened up its own slitting facility, and until November 1992 slit imported widestock domestically to its customers' specifications. In the preliminary investigation, we considered whether LeaRonal's slitting operations in the United States qualify it as a domestic producer of dry film photoresist and, if so, whether appropriate circumstances exist to exclude LeaRonal from the domestic industry as a related party.[17]

We noted in the preliminary investigation that the high cost of LeaRonal's slitting facility (approximately $1.5 million) was accounted for by the fact that the slitting of widestock requires special equipment and must be done in a clean-room environment. Further, because substances in the film are subject to environmental regulation, slitting waste and other unusable material must be disposed of in a special fashion, which adds to the cost of production. Nevertheless, the actual slitting operation itself is

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[15] 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.

[16] LeaRonal and Tokyo Ohka actively participated in the preliminary investigation. In November 1992, however, LeaRonal elected to withdraw from the U.S. dry film market, citing the arduous and "predetermined" nature of Commerce's LTFV investigation. The decision, according to LeaRonal, is irreversible. LeaRonal ceased importing and has disposed of most of its remaining inventory. All workers at its slitting facility have been laid off, and the facility is currently idle. Report at I-6-8; App. C.

[17] Petitioners argued in this final investigation that the Commission should adhere to its preliminary determination that the slitting of dry film in the United States is a minor operation insufficient to constitute domestic production of the "like product" in this case. Petitioners' prehearing brief at 5.

fundamentally a relatively minor finishing operation; i.e. the widestock is cut to appropriate size to meet the customer's needs. Indeed, no one, including LeaRonal, argued that this slitting operation is sufficient to make LeaRonal a domestic producer of dry film photoresist.[18] No new evidence has come to light on this issue in this final investigation. Accordingly, we see no reason to alter our finding from the preliminary investigation that LeaRonal is not a domestic producer of dry film photoresist.[19] [20] [21]

We also noted that, even if we had found LeaRonal's domestic slitting

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[18] For a more extensive discussion of LeaRonal's slitting operation and the factors the Commission considers in determining whether a firm qualifies as a domestic producer, see Dry Film Photoresist from Japan, Inv. No. 731-TA-622 (Preliminary) USITC Pub. 2555 (August 1992) at 14-15.

[19] Vice Chairman Watson determines that LeaRonal is a domestic producer of the like product. He notes that 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. In this regard, he has examined all of the relevant statutory factors for determining a domestic producer, including the firm's capital investment, technical expertise involved in U.S. production, value added, employment levels, and quantities and types of parts sourced in the United States. He finds that, in addition to value added, LeaRonal's capital expenditures and technical expertise in U.S. production is significant. Thus, he finds LeaRonal to be a part of the domestic industry. Having found that LeaRonal is a domestic producer, he further determines that LeaRonal should be excluded from the domestic industry under the related parties provision of the statute. As noted in the text, LeaRonal is a related party, and appropriate circumstances exist to exclude it from the domestic industry.

[20] Commissioner Crawford finds that LeaRonal is a domestic producer of the like product. She finds that 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. In her 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. She finds the value added in LeaRonal's slitting operations in California significant relative to the overall value of the product. Further, she finds that there is no separate market for the unfinished master rolls of dry film photoresist. For these reasons, she determines that LeaRonal is part of the domestic industry.

[21] Commissioner Brunsdale finds it unnecessary to reach the issue of whether LeaRonal is a domestic producer of the like product. Instead, she excludes LeaRonal under the related parties provision of the statute.

activities sufficient to consider it a domestic producer of the like product, we would find that it is a related party under the related parties provision of the statute,[22] and that appropriate circumstances exist to exclude it from the domestic industry.[23] LeaRonal imported all of its unslit dry film photoresist from respondent Tokyo Ohka for finishing in its U.S. facility, and was therefore an importer of the articles subject to investigation. No new evidence has come to light to change our view that the company appears to be shielded from any adverse effects caused by the imports, and in fact, appears to have benefited from the purchase of LTFV imports. Therefore, based on the record of this final investigation, we conclude that if LeaRonal were found to be a domestic producer, appropriate circumstances exist to exclude it from the domestic industry.[24]

IV. CONDITION OF THE INDUSTRY

In assessing whether there is material injury to a domestic industry by reason of dumped imports, we consider "all relevant economic factors which have a bearing on the state of the industry in the United States . . . ."[25]

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[22] 19 U.S.C. § 1677(4)(B)

[23] See USITC Pub. 2555 at 15, n. 40.

[24] Commissioner Crawford determines that LeaRonal should be excluded from the domestic industry under the related parties provision of the statute. Of particular note in her 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 produced no unfinished master rolls of dry film photoresist in the United States, and indicated in the preliminary investigation that it is unable or unwilling to do so. LeaRonal imported all of its widestock from Tokyo Ohka, which it in turn slits in its own domestic slitting facility. She finds that the fact that LeaRonal imported all of its unfinished dry film photoresist, and in fact, prior to 1990 imported all of its finished dry film photoresist, indicates that it would be shielded from any adverse effects by the imports, and would in fact benefit from the purchase of LTFV imports.

[25] 19 U.S.C. § 1677(7)(C)(iii).

These include production, shipments, inventories, capacity utilization, market share, employment, wages, productivity, financial performance, ability to raise capital, and research and development.[26] No single factor is determinative, and we consider all relevant factors "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[27]

One condition of competition relevant to our analysis is the significant demand by customers for technical service and support.[28] Purchasers reported that DFP producers respond to the changing needs of PCB producers by improving and/or changing their products, including making film with higher resolution capabilities, wet processing film and film that is more conformable because it is thinner and softer.[29] Moreover, as demonstrated by LeaRonal, the construction of a slitting facility is a substantial financial undertaking.[30] Significant resources are required, therefore, for the capital expenditures, research and development efforts, and customer support services that are necessary to remain competitive in this dynamic market.[31]

Another condition of competition distinctive to this industry is that consumption of dry film photoresist is primarily driven by the demand for printed circuit boards. Production of PCBs declined from 1990 to 1991.[32] Reported factors contributing to this decline include reduction in military

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[26] Id.

[27] Id.

[28] Report at I-27-29.

[29] Id. at I-29.

[30] See supra at 9.

[31] Report at I-23, I-29.

[32] Id. at I-26.

expenditures, the poor performance of the U.S. economy, and outsourcing of PCBs to Asian producers.[33] However, industry estimates project the U.S. PCB industry's production to increase at an average annual rate of over 5 percent through 1994.[34]

To some extent, technological changes in the PCB industry have also affected demand for dry film photoresist. The shrinking size of PCBs due to increased density decreases the amount of dry film photoresist used in the manufacture of PCBs.[35] While the PCB board size has decreased, however, the number of boards produced in the United States is increasing, thus offsetting any size reductions that are occurring.[36] In addition, because multilayer PCBs potentially have more surface area than 1- and 2-sided PCBs, the growth in the multilayer sector may increase domestic consumption of dry film photoresist.[37] We have viewed the condition of the domestic industry in light of these factors.[38]

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[33] Id.

[34] Id. at I-27.

[35] Id. at I-26.

[36] Id. at I-27.

[37] Id.

[38] In this final investigation, the Commission requested industry data for the standard three year period (and any interim period) of investigation, which in this case was the period from 1990 to 1992. We have considered petitioners' arguments that we consider the 1989 industry data obtained in the preliminary investigation. However, we have discretion to set the period of investigation, and we have generally looked at a three year (and interim period) period of investigation. There is no compelling reason in this investigation to extend the period of investigation beyond the standard time frame. Moreover, data which are in the record for 1989 are not directly comparable to the 1990 to 1992 data, because adjustments were made by petitioners to correct inaccuracies in the data previously submitted for 1990 and 1991. No such adjustments were made, however, to the 1989 data. Additionally, a petitioner corrected its data as a result of Commission verification.

Apparent U.S. consumption by quantity of dry film photoresist declined from 1990 to 1991, and then increased in 1992 to levels above that of 1991.[39] U.S. producers' market share declined slightly, but remained above 96 percent throughout the period of investigation.[40]

Domestic production decreased from 848 million square feet in 1990 to 772 million square feet in 1991, and then returned to 848 million square feet in 1992.[41] 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 decreased from 1,228 million square feet in 1990 to 1,167 million square feet in 1991, and then increased to 1,194 million square feet in 1992. Capacity utilization decreased from 69.1 percent in 1990 to 66.2 percent in 1991, and then increased to 71.0 percent in 1992.[42] Domestic shipments measured by quantity declined from 497 million square feet in 1990 to 468 million square feet in 1991, and then increased in 1992, to 501 million square feet.[43] Inventories, both in terms of absolute value and as a percentage of shipments, fluctuated throughout the period of investigation, decreasing from 1990 to 1991, and then increasing in 1992.[44]

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

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[39] Report at I-24-25.

[40] Id. at I-25.

[41] Id. at I-11.

[42] Id.

[43] Id.

[44] Id.

throughout the period of investigation, while hourly compensation increased steadily throughout the period of investigation.[45] Productivity declined slightly from 1,069 square feet per hour in 1990 to 1,065 square feet per hour in 1991, and then jumped to 1,268 square feet per hour in 1992.

Capital expenditures fluctuated throughout the period of investigation, increasing from 1990 to 1991, and then decreasing in 1992.[46] Research and development expenditures declined slightly from 1990 to 1991, and then increased in 1992, to levels above that of 1990.[47]

Financial results were down in 1991 compared to 1990 as all levels of profitability fell.[48] Small decreases in both sales quantities and unit sales value resulted in a moderate decrease in net sales value. At the same time, cost of goods sold and SG & A expenses both increased modestly.[49] As a result, operating income and net income and cash flow decreased significantly. However, the industry's financial condition improved in 1992.[50] Decreases in unit sales values were offset by increases in sales quantities, resulting in a modest increase in net sales value.[51] Since both unit cost of goods sold and unit SG & A expenses decreased to below 1990 levels, operating income increased.[52] In short, notwithstanding the overall decline in unit values and employment, the industry's financial indicators showed signs of improvement in

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[45] Id. at I-12.

[46] Id. at I-18.

[47] Id.

[48] Id. at I-13; Table 5.

[49] Id. at I-15, Table 5.

[50] Id.

[51] Id.

[52] Id.

the last full year of the period of investigation.[53]

V. NO MATERIAL INJURY BY REASON OF LTFV IMPORTS

In determining whether the domestic industry is materially injured by reason of the imports under investigation, the statute directs us to consider:

> (I) the volume of imports of the merchandise which is the subject of the investigation,
>
> (II) the effect of imports of that merchandise on prices in the United States for like products, and
>
> (III) the impact of imports of such merchandise on domestic producers of like products, but only in the context of production operations within the United States.[54]

In making this determination, we may consider "such other economic factors as are relevant to the determination . . . ."[55] 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.[56] [57] [58] Finally, we

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[53] Chairman Newquist and Commissioner Rohr find that the domestic industry producing dry film photoresist is not experiencing material injury. Nonetheless, they consider, had there been material injury to the domestic industry, whether such injury is by reason of LTFV imports of dry film photoresist from Japan.

[54] 19 U.S.C. § 1677(7)(B)(i).

[55] 19 U.S.C. § 1677(7)(B)(ii).

[56] Chairman Newquist, Commissioner Rohr and Commissioner Nuzum note that the Commission need not determine that imports are "the principal, a substantial or a significant cause of material injury." S. Rep. No. 249, 96th Cong., 1st Sess. 57 and 74 (1979). Rather, a finding that imports are a cause of material injury is sufficient. See, e.g., Metallverken Nederland, B.V. v. United States, 728 F. Supp. 730, 741 (CIT 1989); Citrosuco Paulista S.A. v. United States, 704 F. Supp. 1075, 1101 (CIT 1988).

[57] Vice Chairman Watson notes that the courts have interpreted the statutory requirement that the Commission consider whether there is material injury "by reason of" the subject imports in a number of different ways. Compare, e.g., United Engineering & Forging v. United States, 779 F. Supp. 1375, 1391 (CIT 1991)("rather it must determine whether unfairly-traded imports are contributing to such injury to the domestic industry. Such imports, therefore need not be the only cause of harm to the domestic industry" (citations

(continued...)

are directed to "evaluate all relevant factors . . . within the context of the business cycle and the conditions of competition that are distinctive to the affected industry."[59]

I. Volume of Imports

In this investigation, the volume of imports from Japan was very small

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[57](...continued)
omitted)); Metallverken Nederland B.V. v. United States, 728 F. Supp. 730, 741 (CIT 1989)(affirming a determination by two Commissioners that "the imports were a cause of material injury"); USX Corporation v. United States, 682 F. Supp. 60, 67 (CIT 1988)("any causation analysis must have at its core, the issue of whether the imports at issue cause, in a non de minimis manner, the material injury to the industry. . .")

Accordingly, Vice Chairman Watson has decided to adhere to the standard articulated by Congress in the legislative history of the pertinent provisions, which states that the Commission must satisfy itself that, in light of all the information presented, there is a "sufficient causal link between the less-than-fair-value imports and the requisite injury." S. Rep. No. 249, 96th Cong., 1st Sess. 75 (1979).

[58] Commissioner Brunsdale and Commissioner Crawford note that the statute requires that the Commission determine whether a domestic industry is "materially injured by reason of" the allegedly LTFV imports. They find that the clear meaning of the statute is to require a determination on whether the domestic industry is materially injured by reason of LTFV imports, not by reason of LTFV imports among other things. Many, if not most, domestic industries are subject to injury from more than one economic factor. Of these factors, there may be more than one that independently is causing material injury to the domestic industry. It is assumed in the legislative history that the "ITC will consider information which indicates that harm is caused by factors other than the less-than-fair-value imports." S. Rep. No. 249 at 75. However, the legislative history makes it clear that the Commission is not to weigh or prioritize the factors that are independently causing material injury. Id. at 74; H.R. Rep. No. 317 at 47. The Commission is not to determine if the allegedly LTFV imports are "the principal, a substantial or a significant cause of material injury." S. Rep. No. 249 at 74. Rather, it is to determine whether any injury "by reason of" the allegedly LTFV imports is material. That is, the Commission must determine if the subject imports are causing material injury to the domestic industry. "When determining the effect of imports on the domestic industry, the Commission must consider all relevant factors that can demonstrate if unfairly traded imports are materially injuring the domestic industry." S. Rep. No. 71, 100th Cong., 1st Sess. 116 (1987) (emphasis supplied).

[59] 19 U.S.C. § 1677(7)(C).

throughout the period.[60] Import volume from Japan decreased slightly from 1990 to 1991, and then increased in 1992 to a level somewhat higher than 1990 levels.[61] Shipments of imports from Japan in terms of volume showed a marginal increase between 1990 and 1991 and a larger increase between 1991 and 1992.[62] The market share held by imports likewise increased marginally between 1990 and 1991 before increasing at a somewhat greater rate between 1991 and 1992.[63] However, subject imports accounted for less than 4 percent of U.S. consumption consistently throughout the period of investigation.[64]

Year-to-year changes in the volume of imports in this investigation might appear substantial when viewed in isolation; however, these changes must be considered in light of the very small base from which they are measured. Moreover, the statute directs us to consider the volume of imports relative to domestic production or consumption.[65] In this investigation, there are essentially two competing sources of dry film photoresist -- the United States and Japan. During the period of investigation, imports from Japan always accounted for less than 4 percent of domestic consumption, which means that the U.S. producers always accounted for more than 96 percent of domestic consumption.[66] Relative to domestic production -- which includes production of dry film photoresist for export -- imports from Japan were proportionally

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[60] Report at I-24-25.

[61] Id.

[62] Id. at 25, Table 14.

[63] Id.

[64] Id.

[65] 19 U.S.C. § 1677(7)(C)(i).

[66] Report at I-25, Table 14.

even smaller.[67] In sum, for this domestic industry, which has a very dominant position in the U.S. market, we find that the volume of imports and the rate of increase in that volume are not significant.

II. Price Effects of Imports

We also analyzed the price effects of imports on the domestic industry. Importers only sold dry film to firms purchasing quantities amounting to less than 3 million square feet per year. All three U.S. producers sold to customers purchasing less than 3 million square feet, as well as those purchasing more.[68] Hence, thus far, the subject imports competed successfully only on sales to smaller accounts, which are generally charged a higher price than the larger accounts.

Overall, both domestic and imported prices for all products for which pricing data were obtained generally declined between January 1990 and December 1992.[69] Price comparisons were mixed, with both under- and over-selling by imports reported. Out of thirty comparisons between average unit values of domestic and import sales to customers purchasing less than 3 million square feet annually, underselling was observed in 22 occurrences, with margins ranging from 1.2 to 12.0 percent.[70] We note that one importer consistently oversold the domestic product.[71] Although the record reflects fairly widespread underselling by the subject imports, we are not persuaded

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[67] Id. at Table D-1.

[68] 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. Report at I-33.

[69] Report at I-34-43.

[70] Id. at I-40-41.

[71] Id. at I-34-43.

that this underselling had a significant price suppressive or depressive effect on the domestic market, particularly in view of the small volume and the commensurately small market share that the imported product occupies in the marketplace.

Moreover, considerations other than price are important to customers in purchasing this product. Dry film photoresist typically accounts for less than 5 percent of total production costs of the printed circuit board.[72] Purchasers generally focus on technical performance, product quality, and cost requirements when evaluating various types of dry film photoresist. Indeed, the overwhelming number of purchasers who identified the most important factors affecting their purchasing decisions listed technical performance and/or quality as the most important consideration.[73] If a switch to a lower priced dry film generates a reduction in PCB production yields, the decline in yields generally outweighs any savings in the costs of materials resulting from changing dry film types.[74]

This is exemplified in the anecdotal evidence given by purchasers. Many found the domestic product to be superior in their particular processes, and would not switch to the imported product based only on price. Indeed, the lost sales allegations in this investigation indicate that several purchasers who purchased the imported product because of price experienced quality and/or yield problems in their particular processes, and hence, returned to one of the domestic suppliers.[75] Conversely, there were several purchasers who found

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[72] Id. at I-30.

[73] Id. at I-27-28.

[74] Id. at I-30.

[75] Id. at Appendix G.

that the imported product offered superior yields when compared to the domestic product in their particular processes. One purchaser stated that he would have paid a higher price for the Japanese product rather than purchase the U.S. product because of this quality difference.[76] Further, approximately 77 percent of dry film purchasers reported some type of qualification requirement.[77]

In view of the foregoing, we find that the subject imports have not had a significant adverse effect on prices in the United States for dry film photoresist.

III. Impact of Imports

In addition to considering the volume of subject imports, and the effect of subject imports on prices in the United States, we have considered the impact of imports on the domestic industry producing dry film photoresist. In this case, we find the small volume of imports from Japan have not had a significant adverse impact on the domestic industry.[78] The petitioners' dry film operations are established operations which have supplied the overwhelming majority of U.S. customers for as long as the technology has been in use.[79] Even in the face of import competition, the industry has continued to supply over 96 percent of the market.

A further indication that the imports are not a cause of material injury to the domestic industry can be seen in the fact that from 1990 to 1991, the

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[76] Id. at Appendix G.

[77] Id. at I-30.

[78] For one industry, an apparently small volume of imports may have a significant impact on the market, for another, the same volume may not be significant. S. Rep. No. 249, 96th Congress, 1st Session, 88 (1979).

[79] E.g., Report at I-5.

domestic industry's profitability declined significantly while the market share of the imported product remained fairly stable.[80] On the other hand, the domestic industry experienced recovering profitability from 1991 to 1992 even while the market share of the Japanese imports increased at a sharper rate than from 1990 to 1991.[81]

We therefore determine that the U.S. industry producing dry film photoresist is not materially injured by reason of the subject imports.

VI. NO THREAT OF MATERIAL INJURY BY REASON OF LTFV IMPORTS

We further determine that there is no threat of material injury by reason of LTFV imports from Japan.[82]

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[80] See supra at 15, 17-18.

[81] Id.

[82] Under the statute, the Commission is required to consider the following criteria.

> (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 probability that importation (or sale for importation) of the merchandise (whether

(continued...)

The statute directs us to determine whether an industry in the United States is threatened with material injury by reason of imports "on the basis of evidence that the threat of material injury is real and that actual injury is imminent." Our decision "may not be made on the basis of mere conjecture or supposition."[83] [84]

We have considered all the statutory factors that are relevant to this

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[82](...continued)
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 1671 or 1673 of this title or to final orders under section 1671e or 1673e of this title, are also used to produce the merchandise under investigation,

(IX) in any investigation under this title which involves imports of both raw agricultural product (within the meaning of paragraph (4)(E)(iv) and any product processed from such raw agricultural product, the likelihood 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.

19 U.S.C. § 1677(7)(F)(i), as amended by 1988 Act sections 1326(b), 1329. In addition, the Commission must consider whether dumping findings or antidumping remedies in markets of foreign countries against the same class or kind of merchandise suggest a threat of material injury to the domestic industry. See 19 U.S.C. section 1677(7)(F)(iii), as amended by 1988 Act section 1329.

[83] 19 U.S.C. § 1677(7)(F)(ii). An affirmative threat determination must be based upon "positive evidence tending to show an intention to increase the levels of importation." Metallverken Nederland B.V. v. U.S., 744 F.Supp. 281, 287 (CIT 1990), citing American Spring Wire, 8 CIT at 28, 590 F.Supp. at 1280.

[84] This antidumping investigation does not involve subsidies or agricultural products, any potential for product shifting due to other findings or orders under the antidumping or countervailing duty laws, or dumping findings or remedies in third countries.

investigation. We do not find that there is any increase in production capacity or unused capacity in Japan likely to result in a significant increase in imports to the United States. We also find that the record does not support a finding that there will be any rapid increase in United States market penetration of dry film photoresist from Japan, nor is there a likelihood that the penetration will increase to an injurious level. We base these findings in part on the fact that it is difficult for any company to enter (or reenter, as in the case of LeaRonal and Hitachi) the U.S. dry film photoresist market. Because of the large number of PCB manufacturers, differences in their individual manufacturing processes, necessary qualification procedures, and degree of technical knowledge and assistance required, developing a customer base for dry film photoresist is a relatively slow and uncertain process.[85] To successfully compete with U.S. producers on a large scale, foreign manufacturers need well-trained and responsive marketing and servicing organizations, in addition to slitting facilities, in close proximity to the U.S. market. Such organizations and facilities are costly, take time to develop, and may require substantial investment on the part of the foreign manufacturer before payback or return on investment is realized.[86]

We have considered the representations made by LeaRonal that their decision to leave the U.S. dry film photoresist market is irreversible.[87] [88] [89]

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[85] Report at I-22-23.

[86] Id. at I-23.

[87] In November, 1992, faced with Commerce's LTFV investigation, Tokyo Ohka and LeaRonal elected to discontinue selling dry film photoresist in the United States. LeaRonal ceased importing at that time and has disposed of most of its remaining inventory. All workers at its slitting facility have been laid

(continued...)

Moreover, we find that even if LeaRonal were to reenter the U.S. market, the reentry would be difficult, and thus, would not support a finding that a threat to the domestic industry is real and that actual injury is imminent. We have also considered the fact that Hitachi, which ceased exporting to the U.S. as a result of Commerce's preliminary investigation, has expressed a desire to continue in its efforts to enter the U.S. in the event of a negative determination in this investigation. However, Hitachi had an extremely small U.S. market share during the period of investigation -- accounting for a small fraction of the Japanese imports which, as noted, accounted for less than 4 percent of U.S. consumption.[90] Further Hitachi's capacity utilization was

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[87](...continued)
off, and the facility itself is currently idle. The decision, according to LeaRonal, is irreversible. They submitted a public news release and Form 10-Q statements to that effect to the Commission. Report at I-6-8; App. C.

[88] Vice Chairman Watson, Commissioner Brunsdale and Commissioner Nuzum note that they normally would view a foreign producer or importer's exit from the U.S. market with some skepticism when it occurs during the pendancy of an antidumping investigation. Such an exit might well be motivated by a desire to affect the outcome of the investigation (specifically, to increase the likelihood of a negative determination) and to reenter the U.S. market only after a negative determination. Based on the record in this investigation and on LeaRonal's representations in particular, however, they are persuaded that any likely reentry into the U.S. market by Japanese producers of dry film photoresist is unlikely to pose a real and imminent threat of material injury to the domestic industry.

[89] Chairman Newquist concurs that the evidence on record in this final investigation does not meet the statutory criteria for an affirmative finding of a threat of material injury. Unlike some of his colleagues, however, he is skeptical that the barriers to reentry are as great as alleged by the respondents. Moreover, Chairman Newquist recognizes there is a real possibility that unfair imports of dry film from Japan may, at some later time, materially injure or threaten to materially injure the domestic industry. Chairman Newquist notes that his negative determination here in no way prejudices his deliberations in any future investigations of dry film photoresist from Japan.

[90] Report at I-23.

well over 90 percent throughout the period of investigation.[91] Hitachi also persistently oversold U.S. producers.[92] As a result, we do not find that Hitachi's possible efforts to reenter the U.S. market support a finding that the threat of material injury to the domestic industry is real and that actual injury is imminent.

Finally, we have considered the fact that there are other manufacturers of dry film photoresist in Japan.[93] The record does not support a finding, however, that any of these manufacturers currently exports to the United States, nor does the record support a finding that any of these producers intend to enter the U.S. market in the near future. The fact that any company may enter the U.S. market does not, in and of itself, necessarily support a conclusion that the threat of material injury to the domestic industry is real and that actual injury is imminent.

We further determine that the record does not support a finding that imports will enter the United States at prices that will have a depressing or suppressing effect on domestic prices. As discussed above, the record does not support a finding of significant price depression or suppression by the subject imports, nor does the record support a finding that significant price suppression or depression is likely to occur in the future.

We are also directed to consider any substantial increase in inventories in the United States. Inventories increased from 1990 to 1991, and decreased from 1991 to 1992. The decline in inventories reflects LeaRonal's decision in

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[91] Id. at I-22.

[92] Id. at I-34-43.

[93] Id. at I-21.

1992 to discontinue importing and withdraw from the market.[94]

We find the domestic industry's development and production efforts are not adversely affected by the subject imports. Research and development expenses remained relatively stable throughout the period of investigation.[95] Moreover, there is evidence in the record that new types of photoresist are being introduced.[96]

Finally, we find no other demonstrable adverse trends that indicate the probability that importation of the merchandise will be the cause of actual injury.

We therefore determine that the industry producing dry film photoresist is not threatened with material injury by reason of LTFV imports from Japan.

Conclusion

Based on the record in this final investigation, we determine that a domestic industry producing dry film photoresist is neither materially injured nor threatened with material injury by reason of LTFV imports from Japan.

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[94] Id. at I-20.

[95] Id. at I-18.

[96] Id. at I-5, I-29.

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, the Commission instituted and conducted a preliminary antidumping investigation (No. 731-TA-622) under section 733(a) of the Tariff Act of 1930 (19 U.S.C. 1673b(a)), and on August 26, 1992, determined that there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury by reason of such imports. Commerce, therefore, continued its investigation into the existence and extent of LTFV sales and, on December 30, 1992, published an affirmative preliminary determination in the Federal Register (57 F.R. 62297). On the basis of Commerce's preliminary determination, the Commission instituted a final antidumping investigation effective the same date.

Notice of the institution of the Commission's final investigation and of a public hearing 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 January 14, 1993 (58 F.R. 4443). Commerce continued its LTFV investigation and issued an affirmative final determination on March 9, 1993 (published in the Federal Register of March 15 (58 F.R. 13739)).[1] The Commission held its public hearing on March 11, 1993, in Washington, DC,[2] and voted on April 22. Dry film photoresist has not been the subject of any other investigation conducted by the Commission.

NATURE AND EXTENT OF THE LTFV SALES

At least five firms in Japan are known to produce dry film photoresist--Tokyo Ohka Kogyo (Tokyo Ohka); Hitachi Chemical Co., Ltd. (Hitachi); Asahi Chemical Co.; Mitsubishi Rayon; and Nippon Kosai.[3] Only the products of Tokyo Ohka and Hitachi, however, have been exported to the United States in other than sample quantities, and Tokyo Ohka alone accounted for about *** percent of the exports during the period for which data were collected (1990-92). Commerce selected Tokyo Ohka as the sole mandatory respondent in its investigation. For lack of this firm's cooperation, however, Commerce used petitioners' information as the best available. On the basis of home-market prices for this firm and prices paid by unrelated customers in the United

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[1] A copy of Commerce's notice of its final LTFV determination is shown in app. A.

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

[3] In addition to these firms, two of the petitioners--Du Pont and Morton--have facilities in Japan for slitting, the final step in the subject product's production. The role of slitting in the production process for dry film photoresist is described in the following section.

States from January 1, 1992, to June 30, 1992, Commerce found a final dumping margin of 52.37 percent, applicable to all producers and exporters in Japan.

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 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,[4] 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. Because of the exacting nature of PCB production, slitting requires special equipment, special handling, and a clean-room environment. As a result, it is a relatively costly procedure, accounting for about 20 percent of the total cost of producing and selling the subject product. (Its share of production costs alone, i.e., raw materials, labor, and factory overhead, is about 35 percent). 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

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[4] 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).

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 suit users' specific 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 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. Further adjustments in the film's composition may be necessary after testing it with the user's equipment, and follow-up adjustments may also be required. 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 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 specific PCB etching and plating processes for which it is designed and used; however, there are at least two older technologies for PCB production still in use and the development of new technologies continues. Of the older technologies, one utilizes <u>liquid</u> film photoresists and another uses screen printing. Dry film photoresist was first developed by Du Pont in 1968 as an alternative to these processes,[5] 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 have made it the method of choice for fine and/or

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[5] 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.

densely patterned etching and plating, and today nearly all high-density PCBs--particularly those used in the computer, military, and telecommunications industries--are manufactured with the subject product. The development of certain liquid and other types of resists, however, has continued, and some provide resolution capabilities that are equal to or superior to those of dry film photoresist. Although the processes utilizing them are still relatively few in number, the technology for PCB manufacture is a rapidly evolving one and the subject product's future place in the industry is uncertain.

U.S. Tariff Treatment

In its notice of final LTFV determination, Commerce identified seven subheadings of the Harmonized Tariff Schedule of the United States (HTS) that are potentially applicable to the subject product: 3702.39.00, 3702.42.00, 3702.43.00, and 3702.44.00, which 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; 3702.95.00, which provides for similar film with sprocket holes; 3707.10.00, which applies to sensitized emulsions for photographic uses; and 3707.90.30, which applies to other chemical preparations for photographic uses. The column 1-general (most-favored-nation) rates of duty for subheadings 3707.10.00 and 3707.90.30, applicable to imports from Japan, are 3.0 percent and 8.5 percent ad valorem, respectively; for all other subheadings noted, it is 3.7 percent ad valorem.

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 1990-92 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, leased a building in Orange, CA, and, at a cost of $1.5 million, transformed it into a slitting facility that produced finished dry film photoresist from widestock material it imported from Tokyo Ohka. (As noted previously, the cost of slitting is about 20 percent of the total cost of producing and selling the subject product). The cost of the slitting equipment alone was about $1 million. In November 1992, however, faced with Commerce's LTFV investigation, Tokyo Ohka and LeaRonal elected to discontinue selling dry film photoresist in the United States. LeaRonal ceased importing at that time and has disposed of most of its remaining inventory. All workers at its slitting facility have been laid off, and the facility itself is

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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.

Table 1
Dry film photoresist: U.S. producers, plant locations, and respective shares of domestic production and shipments, 1990-92[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 produced finished material from imported widestock from October 1990 to February 1992, is excluded. The quantity of LeaRonal's widestock imports in 1992 was equivalent to *** percent of U.S. production; its domestic shipments of finished material were about *** percent of the domestic shipments 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] ***.

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

currently idle.[7] Positec, which only last 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.

[7] LeaRonal's options for this facility are limited. ***. Although the facility could be adapted to other products--for example, its slitters could be used to cut paper--there is already available a wide range of facilities and equipment more specifically designed for such products.

U.S. IMPORTERS

LeaRonal accounted for about *** percent of the dry film photoresist imported from Japan in 1990-92. A manufacturer and distributor of products used in PCB production, it began importing the subject product in finished form from Tokyo Ohka in 1988 to complement the other products it provides its customers. Following the completion of its slitting facility in October 1990, it began to import widestock material only--from which it made finished dry film photoresist for about 30 of its 40 customers. In November 1992, however, Tokyo Ohka and LeaRonal elected to withdraw from the U.S. dry film market, citing the arduous and "predetermined" nature of Commerce's LTFV investigation. The decision, according to LeaRonal, is irreversible. A public news release and Form 10-Q statements to this effect are shown in appendix C. As noted above, LeaRonal ceased importing and has disposed of most of its remaining inventory, and the facility itself is currently idle.

One other firm accounts for most of the remaining imports from Japan: Hitachi Chemical Co. America, Ltd., a subsidiary of Hitachi--the other Japanese firm that produces and exports the subject material to the United States. Hitachi America imported small but increasing quantities from late 1991 to the end of 1992, when the liquidation of imports was suspended and importers were required to post bond in the amount of Commerce's preliminary LTFV margin. Unlike LeaRonal it has no U.S. slitting facility and imported finished dry film photoresist only. (Prior to its availability through Hitachi America, a relatively small quantity of Hitachi's film was purchased and exported by *** for direct consumption in the manufacture of PCBs. *** was the importer of record for this material).

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 700-800 firms, both large and small, that manufacture PCBs. About three dozen of these are large original equipment manufacturers (OEMs)--such as IBM, Texas Instruments, and AT&T--that use the PCBs in the manufacture of telecommunications equipment, computers, automotive equipment, military hardware, and consumer electronic devices. The remaining PCB manufacturers supply other firms that produce these products. PCB manufacturers purchase dry film either directly from U.S. producers or indirectly through a small number of firms, such as LeaRonal and Hitachi America, which distribute a variety of products related to the production of PCBs.

To date, LeaRonal and Hitachi America have only sold to the smaller PCB manufacturers, although offers to some of the larger firms have been made. The U.S. industry defines large users as those purchasing over 3 million sq. ft. per year. Such users constitute only about 10 percent of the total number of PCB manufacturers, but account for well over half the total quantity of dry film photoresist consumed in the United States. (Because sales prices to large-volume customers are generally lower, the proportion of U.S. consumption they represent in terms of value is somewhat smaller). In 1992 the total quantity of dry film photoresist consumed in the United States was about *** sq. ft. valued at about ***.

Because of nuances in each PCB manufacturer's process, the supplier's attention to the user's needs, both before and after the sale, is as important as the dry film itself--which is usually purchased on a loose contractual basis for the user's annual or biannual needs. Before initially supplying a PCB manufacturer, producers and importers must evaluate the manufacturer's operations in order to recommend or develop a specific resist. Thereafter, as part of the contractual arrangement, producers and importers are often called upon to make corrections and adjustments for the PCB manufacturer or otherwise insure that the process using the film is working correctly and efficiently. Because of the time involved in evaluating and adjusting film for each process and the potential complications arising therefrom, PCB manufacturers place extraordinary emphasis on film quality (batch consistency), technical attributes (its compatibility with their specific process), and service (responsiveness to periodic adjustment needs). Once satisfied, they are typically reluctant to switch suppliers. The degree of reluctance, however, varies from user to user. In general, the larger the user, the more technologically sophisticated and exacting is its PCB manufacturing process; and, the more exacting the process, the more risk and downtime is involved in switching. The time required to fully replace one manufacturer's dry film photoresist with that of another can vary from one or two days for the smallest users making relatively simple PCBs to several months for the largest users making PCBs for state-of-the-art computers and aerospace components. A further discussion of purchasing considerations and their ramifications for pricing comparisons is presented in the section of this report entitled "Pricing and Marketing Considerations."

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 decreased.[8] The net effect, combined with other factors, has been a relatively flat or somewhat declining level of consumption of the subject product in recent periods, boosted by an improvement in general economic conditions in 1992.

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 1990-92,[9] the period for which data were collected.[10] (LeaRonal's

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[8] According to Elmer Hayes, Director of Primary Imaging for Morton, as many as 1,300 PCB manufacturers were operating in the United States in 1988 (see transcript of hearing, p. 23).

[9] The data do not include Positec, which converted existing capacity to the production of dry film photoresist in 1992 and to date has produced only small quantities.

[10] Data for 1989, as shown in the Commission's staff report for its preliminary investigation, may not be strictly comparable to the data for 1990-92 shown throughout the remainder of this report. Questionnaire

(continued...)

production of finished dry film photoresist from imported widestock, which accounted for about *** percent of domestic finished dry film photoresist production in 1990-92, is excluded from the data). After falling somewhat from 1990 to 1991, trends in much of the aggregate data show recovery in 1992. Selected summary data related to the alleged material injury showing period-by-period percentage changes are presented in appendix D.

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. Despite the noticeable dips in 1991, variations in the data are not particularly large--year-to-year changes are less than 10 percent. If the data in table 2 are compared with data for 1989 as reported in the Commission's preliminary investigation, however, there is a clear decline in production, capacity utilization, and shipments from 1989 to 1991. The capacity changes shown were 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 slit 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, employed about *** production and related workers). Unlike production and shipments, employment appears not to have recovered from 1991 to 1992, although hourly compensation and productivity gains are apparent.

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[10] (...continued)
respondents revised much of their previously reported data for 1990 and 1991 and were not given the opportunity to make corresponding revisions for 1989.

Table 2
Dry film photoresist: U.S. production, average practical capacity, capacity utilization, domestic shipments, exports, and end-of-period inventories, 1990-92[1]

Item	1990	1991	1992
Production[2] (million sq.ft.).	848	772	848
Capacity[3] (million sq.ft.)...	1,228	1,167	1,194
Ratio of production to capacity (percent).....	69.1	66.2	71.0
Domestic shipments:[4]			
Quantity (million sq.ft.)..	497	468	501
Value[5] (million dollars)...	128	116	123
Unit value (per sq.ft.)....	$0.26	$0.25	$0.25
Exports:[6]			
Quantity (million sq.ft.)..	316	322	335
Value[5] (million dollars)...	53	54	55
Unit value (per sq.ft.)....	$0.17	$0.17	$0.16
Total shipments:			
Quantity (million sq.ft.)..	813	790	836
Value[5] (million dollars)...	181	170	178
Unit value (per sq.ft.)....	$0.22	$0.22	$0.21
Slitting waste (million sq.ft.).....	104	109	107
Inventories (million sq.ft.).	52	37	52
Ratio of inventories to total shipments during the period (percent).....	6.4	4.7	6.2

[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.

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, 1990-92[1]

Item	1990	1991	1992
Average number of production and related workers	371	332	302
Hours worked by production and related workers (1,000 hours).....	793	725	669
Sq.ft. produced per hour worked.....	1,069	1,065	1,268
Total compensation paid to production and related workers (1,000 dollars)....	14,810	14,655	14,487
Hourly compensation paid to production and related workers.....	$18.68	$20.21	$21.65

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

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

Financial Experience of U.S. Producers

All three major producers--Du Pont, Morton, and Hercules--supplied profit-and-loss information on their dry film photoresist operations. The companies are all large, diversified, multinational producers of chemicals and high-technology products. While the dollar value of dry film photoresist sales is substantial, it represents a small portion of each producer's overall net sales. For instance, total corporate net sales for Du Pont, Morton, and Hercules in 1991 were $38.7 billion, $1.9 billion, and $2.9 billion, respectively, while their respective dry film photoresist sales were *** (*** percent of total sales), *** (*** percent), and *** (*** percent). In addition to its operations in the United States, Du Pont has dry film photoresist manufacturing establishments in Germany; Morton has plants in England, Japan, and Taiwan; and Hercules has them in England.

The value of sales presented in this section of the report differs from that presented in the other sections, and the difference is due to the way in which 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 value of the widestock transferred. Petitioners maintain that they are in fact

transferring unfinished inventory, and such transactions are normally accounted for in this fashion.

The staff verified Morton's and Du Pont's data. As a result, Morton made changes to its financial and pricing data; there were no changes to Du Pont's data.

OVERALL ESTABLISHMENT OPERATIONS

Although Morton and Hercules provided financial data on their overall establishment operations (table 4), Du Pont did not. Du Pont maintained (and the staff confirmed during verification) that establishment data were not especially relevant to this investigation. Whereas dry film photoresist net sales represented about *** percent of Morton's 1992 establishment net sales (*** out of ***) and *** percent of Hercules' (*** out of ***), they only represented about *** percent of Du Pont's (*** out of ***). Since Du Pont's data dwarf data for Morton and Hercules, and since including Du Pont's data would result in dry film photoresist net sales representing less than 10 percent of overall establishment net sales, Du Pont's overall establishment data are not included. Therefore, table 4 consists of Morton's and Hercules' overall establishment operations and Du Pont's dry film photoresist operations.

Since dry film photoresist net sales accounted for about three-quarters of establishment net sales from 1990 to 1992, the data are very similar. Accordingly, the following discussion will be limited to operations on dry film photoresist.

OPERATIONS ON DRY FILM PHOTORESIST

Aggregate financial data on the subject-product operations of the three producers are shown in table 5.[11] Financial results were down in 1991, as all levels of profitability fell. Small decreases in both sales quantities and unit sales value resulted in a moderate decrease in net sales value. At the same time, cost of goods sold and SG&A expenses both increased modestly. As a result, operating and net income and cash flow were all about half of the previous levels.

The 1992 results were marginally better. Sales quantities increased faster than unit sales value decreased, resulting in a small increase in net sales value. Since both unit cost of goods sold and unit SG&A expenses decreased to below 1990 levels, operating income increased.

The variance analysis (table 6) provides a clear picture of the interaction of prices, volume, and costs. As the data show, 1991 operating results were down because of decreased prices and increased costs. In 1992,

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[11] Du Pont and Hercules reported data for their 3 years ending Dec. 31, 1990, 1991, and 1992, and Morton reported data for its 3 years ending June 30, 1990, 1991, and 1992.

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 1990-92[1]

Item	1990		1991		1992		
	Value (1,000 dollars)						
Net sales							
Cost of goods sold							
Gross profit							
SG&A expenses							
Operating income							
Startup or shutdown expenses	*	*	*	*	*	*	*
Interest expense							
Other income, net							
Net income before income taxes							
Depreciation and amortization							
Cash flow[2]							
	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).

[2] 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 1990-92

Item	1990		1991		1992		
	Quantity (1,000 sq.ft.)						
Net sales	*	*	*	*	*	*	*
	Value (1,000 dollars)						
Net sales							
Cost of goods sold							
Gross profit							
SG&A expenses							
Operating income							
Startup or shutdown expenses	*	*	*	*	*	*	*
Interest expense							
Other income, net							
Net income before income taxes							
Depreciation & amortization							
Cash flow							
	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							

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

Table 6
Variance analysis of U.S. producers on their operations producing dry film photoresist, fiscal years 1990-92[1]

(In thousands of dollars)

Item	1990-92		1990-91		1991-92		
Net sales:							
Price variance.....							
Volume variance.....							
Total net sales variance[2]							
COGS:							
Cost variance.....							
Volume variance.....	*	*	*	*	*	*	*
Total COGS variance[2].....							
Gross profit variance[2].....							
SG&A expenses:							
Expense variance.....							
Volume variance.....							
Total SG&A variance[2].....							
Operating income variance[2].....							

[1] Unfavorable variances are shown in parentheses; all others are favorable.
[2] Comparable to changes in net sales; cost of goods sold; gross profit; SG&A expenses; and operating income, as presented in table 5.

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

decreased costs offset continued price decreases, resulting in increased operating profits. When comparing 1992 to 1990, the decrease in operating profits is solely attributable to decreased prices. In all periods, increases or decreases in sales revenues due to changes in volume were basically offset by the corresponding decrease or increase in costs due to the change in volume. Selected financial data for each company are shown in table 7. There appear to be large differences between the three producers with respect to unit cost of goods sold and SG&A expenses. However, during the verifications, staff found that the differences were largely because of the way the different producers capture and classify cost items. For example, research and development costs, technical services, and environmental expenses can be classified as either cost of goods sold or SG&A expenses, depending upon their nature. In order to present comparable data, cost of goods sold and SG&A expenses are presented separately and in the aggregate.

* * * * * * *

Table 7
Income-and-loss experience of U.S. producers on their operations producing dry film photoresist, by firms, fiscal years 1990-92

Item	1990		1991		1992	
*	*	*	*	*	*	*

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 8. Data for all products are not presented because only one producer could provide information on establishment assets.

Table 8
Value of assets and return on assets of U.S. producers' operations producing dry film photoresist, fiscal years 1990-92

Item	As of the end of fiscal year--						
	1990		1991		1992		
	Value (1,000 dollars)						
Fixed assets:							
Original cost	*	*	*	*	*	*	*
Book value							
	Return on book value of fixed assets (percent)						
Operating return[1]							
Net return[2]	*	*	*	*	*	*	*

[1] Defined as operating income or loss divided by asset value.
[2] Defined as net income or loss divided by asset value.

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

CAPITAL EXPENDITURES

U.S. producers' capital expenditures are shown in table 9. ***.

Table 9
Capital expenditures by U.S. producers of dry film photoresist, by products, fiscal years 1990-92

(In thousands of dollars)

Item	1990		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							

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

RESEARCH AND DEVELOPMENT EXPENSES

Research and development expenditures of U.S. producers, shown in table 10, remained fairly constant from 1990 to 1992. Approximate yearly expenditures for Du Pont, Morton, and Hercules were ***, ***, and ***, respectively.

Table 10
Research and development expenses of U.S. producers of dry film photoresist, by products, fiscal years 1990-92

(In thousands of dollars)

Item	1990		1991		1992		
All products	*	*	*	*	*	*	*
Dry film photoresist							

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

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.

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[12]--

> (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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[12] 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.[13]

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 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.

Because of the longer lead times needed when ordering from foreign sources, importers maintain relatively large inventories in proportion to shipments. 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	1990	1991	1992
End-of-period inventories (1,000 sq.ft.)	***	***	***
Ratio of inventories to shipments (percent)	***	***	***

The decline in inventories in 1992 reflects LeaRonal's decision in November 1992 to discontinue importing and withdraw from the market.

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[13] 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 account for virtually all imports of the subject product in the United States and over 60 percent of that produced and sold in Japan.[14] Their respective production, capacity, and shipments of the subject product for recent periods are shown in tables 11 and 12. Full 1992 data and 1993 projections are available for Hitachi only.

* * * * * * *

Table 11
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.

[14] As noted previously, there are at least three other producers in Japan. Witnesses at the Commission's preliminary conference testified that Tokyo Ohka's and Hitachi's shares of dry film photoresist shipments in Japan were about 12 percent and 50 percent, respectively (transcript of conference, pp. 105 and 140).

Table 12
Dry film photoresist: Hitachi's production, capacity, and shipments, actual 1990-92 and projected 1993

Item	Actual experience			Projection
	1990	1991	1992	1993
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.

The future for Japanese-produced dry film photoresist in the United States depends in large part on the Commission's determination in the current investigation. Tokyo Ohka, as discussed previously, has indicated its permanent retirement from the U.S. market, but ***. Although currently dormant with respect to imports, Hitachi America is in a position to resume importing; and, with the addition of a slitting facility, could in time become a sizable competitor--at least for the small- to medium-sized accounts. LeaRonal has closed but not disposed of its slitting facility and could lease, sell, or reopen it under a toll agreement as the future situation warrants. In any case it is not likely that large quantities of dry film photoresist will enter the United States in the immediate future. Since Tokyo Ohka's withdrawal from the market and Hitachi's suspension of imports, all of LeaRonal's and Hitachi America's customers have turned, or returned, to U.S. producers for the bulk of their needs; and, because of the large number of

PCB manufacturers, the nuances of their individual processes, necessary qualification procedures, and degree of technical knowledge and assistance required, developing a customer base for dry film photoresist is a relatively slow and uncertain process. To successfully compete with U.S. producers on a large scale, foreign manufacturers need well-trained and responsive marketing and servicing organizations, in addition to slitting facilities, in close proximity to the U.S. market. Such organizations and facilities are costly, take time to develop, and may require substantial commitment on the part of the foreign manufacturer before payback or return on investment is realized. The risk for potential suppliers is substantial and effectively deters producers from actively seeking to penetrate offshore markets where other producers are well-established. Indeed, Tokyo Ohka only entered the U.S. market on the initiation of LeaRonal, which, as mentioned previously, sought to complement its existing line of products already sold to existing customers. Hitachi entered marginally and experimentally at the behest of transplanted Asian PCB manufacturers that were already familiar with Hitachi's product, and gradually thereafter began to develop a larger market. (Hitachi's development plans, as outlined by its U.S. representative, are reproduced in the appendices of its post-hearing brief).

Although to date imports from Japan have been relatively modest and will likely remain modest in the immediate future, they may have had and could have a more considerable impact on market behavior, including price. The connection between imports of Japanese dry film photoresist and U.S. producers' prices will be discussed in following sections. So far as it is known, imports of Japanese-produced dry film photoresist are not subject to any antidumping duties in any foreign country.

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

Imports

As stated previously, Tokyo Ohka and Hitachi have been the only regular sources of U.S. imports of the subject product in recent periods.[15] Imports from these firms, and domestic shipments thereof, are shown in table 13. 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. There have been no imports in 1993. LeaRonal ceased importing in November 1992 following Tokyo Ohka's decision to withdraw from the U.S. market; Hitachi-America ceased importing in December 1992 following Commerce's preliminary LTFV determination. Both companies, however, have continued to ship the subject product out of existing U.S. inventories.

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[15] It is highly likely that sample quantities from other producers and countries have been imported by PCB manufacturers from time to time. One PCB manufacturer, for example, reported importing 20,000 sq. ft. from a Korean producer in 1992--the imports were not continued.

Table 13
Dry film photoresist: U.S. imports and shipments of imports from Japan, 1990-92

Item	1990	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 1990 to 1992, apparent U.S. consumption of dry film photoresist remained relatively stable, dipping about 6 percent in 1991 before recovering in 1992 (table 14). If the consumption data shown in table 14 are compared to data for 1989 as reported in the Commission's preliminary investigation, there is a noticeable decline in consumption from 1989 to 1991. Most sources agree that any increase in the use of dry film photoresist relative to other resists during this period was offset by the shrinking size of PCBs (due to increased density) and a host of interrelated factors (including a worldwide recession, declining numbers of PCB producers, and a shift in PCB production to Asia) that resulted in declining PCB production. Although an improvement in general economic conditions may boost consumption somewhat in the near future, the continuance of the foregoing factors, combined with the continued development and application of new types of resists, is likely to prevent any major increases in the use of the subject product.

Shipments of imports from Japan accounted for a small but increasing share of U.S. consumption throughout the period for which data were collected, as shown in table 14. Because Japan was the only source of imports, U.S. producers' share declined reciprocally. The situation has reversed in 1993, after LeaRonal's withdrawal from the market and Hitachi America's cessation of imports. All domestic purchasers have now turned or returned to U.S. producers for the bulk of their needs. In terms of value, however, U.S. producers may have been less successful in reclaiming the market. In some cases the prices negotiated for return sales have been less than those in effect prior to users' switching to imports. As a result of several factors--

Table 14
Dry film photoresist: Apparent U.S. consumption and market shares, 1990-92

(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				
1990.....	496,560	***	***	***	***
1991.....	468,258	***	***	***	***
1992.....	501,468	***	***	***	***
	Value[2]				
1990.....	128,218	***	***	***	***
1991.....	116,403	***	***	***	***
1992.....	122,504	***	***	***	***

[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.

including an ongoing recession, increasing worldwide competition between PCB manufacturers, the lower pricing to some small- and medium-sized accounts affected by imports, wide-spread knowledge of prices and accepted price differentials for large and small purchasers, and individual efforts to retain accounts in the face of competition, real or potential, PCB manufacturers have become increasingly aggressive in price negotiations. A more detailed discussion of U.S. producers' and importers' price experience follows.

Pricing and Marketing Considerations

The pricing and marketing practices of U.S. and Japanese dry film producers are influenced by changes in overall market conditions and by technological developments affecting the design and production of PCBs. In addition, changes in Federal Government regulations affecting workplace safety, emissions, and hazardous waste disposal have had an impact on users of dry film photoresist. These changes have influenced the demand for existing types of dry film photoresist and have contributed to efforts to develop new types of dry film as well as substitute products. Information presented in the following sections is drawn from responses to questionnaires sent by the Commission to petitioners, respondents, and purchasers of dry film photoresist; Commission staff interviews with purchasers, producers and other industry officials; and from other industry sources.

The Commission sent questionnaires to 110 firms believed to be purchasers of dry film photoresist. Value and quantity data for all purchases during the period January 1990-December 1992 as well as additional market information were requested. Seventy-nine responses were received, of which 76 provided usable value and quantity data. These firms' purchases amounted to approximately 42 percent of shipments of U.S.-produced and 45 percent of Japanese-produced dry film photoresist sold in the U.S. market in 1992. Of the 76 firms, 45 reported total purchases of dry film of less than 3 million square feet.

OVERALL MARKET CONDITIONS

As indicated earlier, dry film photoresist is used primarily in the process of manufacturing PCBs.[16] 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 1990-91. Reported factors contributing to this decline include reduction in military expenditures, the poor performance of the U.S. economy, and outsourcing of PCBs to Asian producers. Data covering U.S. shipments of PCBs show a 17 percent decline in terms of volume during 1988-91.[17]

To some extent, changes in PCB technology contributed to the decline in overall dry film use. For example, the increased density of PCBs has reduced the surface area requirements for dry film in some instances. In addition, some manufacturers of multi-layer PCBs are testing or have begun to use substitutes such as liquid photoresist for certain applications. Ongoing changes in PCB design and manufacturing processes also continue to generate changes in technical requirements that cannot be met by all types of dry film.[18] Structural changes that have resulted from the exit of many marginal U.S. PCB producers also may have had a negative effect on some dry film suppliers.[19]

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[16] 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.

[17] Henderson Ventures and Wm. E. Loeb & Associates, PCI Quarterly Forecast: Second Quarter, 1992, p. 2-5.

[18] Purchasers frequently indicated that particular manufacturing processes and specific PCB designs may require specific types of dry film that may not be widely available in order to achieve acceptable production yields.

[19] The petitioners' posthearing brief (Attachment A) documents the exit of a number of PCB manufacturers from the industry over the past 3 years. The list includes companies that have restructured their operations as well as those that have gone out of business. During this period, the number of captive suppliers in the industry declined significantly, while the number of merchant companies increased. Although the industry is highly unconcentrated, the top 10 manufacturers are increasing their share of the market (to an estimated 18 percent in 1993). Moreover, U.S. industry sales are projected to return to 1989 levels by the end of 1993. Harvey Miller, "Tracking the Top 10 PCB Manufacturers," PC FAB, Dec. 1992, pp. 40-42.

Despite these trends, U.S. producers reported gains in sales quantities between 1991 and 1992. *** noted in its questionnaire that although board size is shrinking, the number of boards produced in the United States is expected to increase, thus offsetting any size reductions that are occurring. In addition, because multilayer PCBs potentially have more surface area than 1- and 2-sided PCBs, the growth in the multilayer sector may contribute to the dry film market's growth. Industry estimates project the U.S. PCB industry's production to increase at an average annual rate of over 5 percent through 1994.[20] Purchasers who responded to the Commission's questionnaire reported a 27 percent increase in their total purchases of all types of U.S. and Japanese-produced dry film between 1990 and 1992.

PURCHASE CONSIDERATIONS

Purchasers were asked to identify the three most important factors affecting their purchasing decisions. Overwhelmingly, purchasers responding to this question identified technical performance and/or quality as the most important consideration (figure 1). Factors identified as the second most important were more evenly distributed between price, technical support, and quality/performance. Price was identified by the majority of purchasers as the third most important factor governing their purchasing decisions, with technical support cited frequently as well.[21] Delivery and/or availability and preference for traditional suppliers (or partnership agreements) were also cited by purchasers as important considerations.[22] Purchaser responses to this question were consistent with their responses to other questions regarding substitutability and qualification requirements.

Product Development And Evaluation

Purchasers generally focus on technical performance, product quality, and cost (including capital investment) requirements when evaluating various types of dry film photoresist or other products which can be substitutes for dry film photoresist. All three factors affect manufacturing yields and profitability. Although there are 3 basic types of dry film photoresist, aqueous dry film is the most common form used today because of its relative ease of use in the production process and/or better performance characteristics.[23] It is used almost exclusively by manufacturers of 1- and

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[20] Phil Lapin, "The U.S. Printed Circuit Board Market Forecast and Commentary," Dec. 1992.

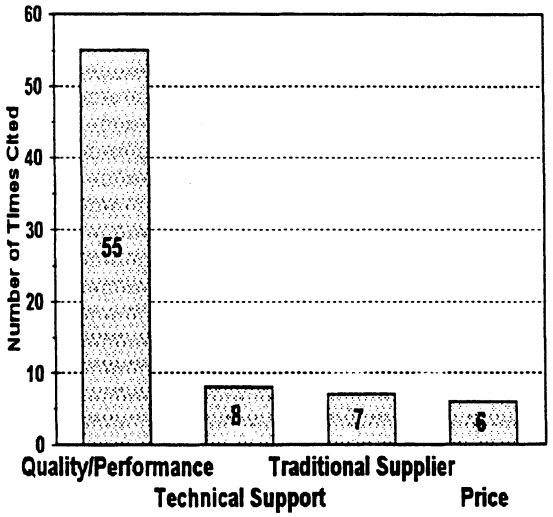
[21] The provision of technical assistance by dry film manufacturers once the qualification process is completed and the sale has been made was emphasized by the respondents as well as by purchasers.

[22] In addition, purchasers listed factors such as extension of credit, logistical support, reputation, and "made in U.S.A." as considerations.

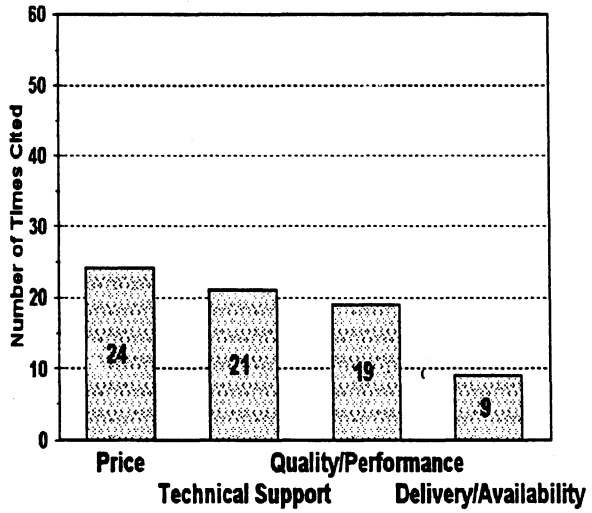
[23] Aqueous dry film requires the use of fewer hazardous chemicals and consequently has lower production and disposal costs than semi-aqueous or solvent dry film.

Figure 1: Factors Affecting Purchase Decisions

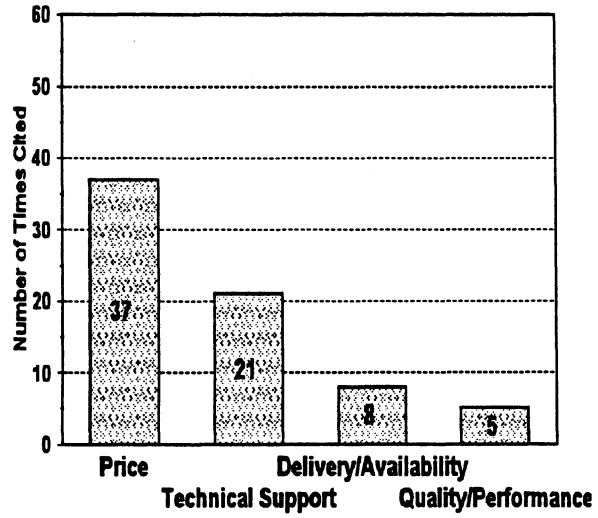
Most Important Factors



Second Most Important Factors



Third Most Important Factors



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

2-sided PCBs and also for most of the production of multi-layer boards.[24] As a result, the following discussion will be limited to different types of aqueous dry film.

Different types of aqueous dry film can be used interchangeably to varying degrees depending, in part, on the product itself and on the manufacturing process being used by the PCB producer. Purchasers reported that all of the dry film manufacturers respond to changing conditions in the market by improving/changing their products. When asked to describe new types of dry film, purchasers listed various incremental changes or improvements including film with higher resolution capabilities, wet processing film, and film that is thinner and softer (more conformable).[25] Purchasers also noted that, to date, a limited number of films that work well with specific processes such as gold plating have been developed.[26] A number of purchasers indicated that dry film manufacturers have or are in the process of developing significantly different types such as positive-acting dry film.

Although all of the dry film manufacturers produce some types of dry film that are similar, the exact composition of the products is proprietary and can vary by manufacturer.[27] Because of differences in chemical composition and specific qualities of the various types of film, many purchasers reported that switching from one type of film to another created potential problems in terms of PCB quality and production yields.[28] Purchasers noted that changing dry film types (or suppliers) involves assessing (1) the dry film's ability to work throughout all phases of the production process, (2) actual improvements in performance and yields, and (3) reductions in costs associated with the manufacturing process (i.e., reduction in manufacturing time, ease of operator use, and reduction in disposal costs). The expected benefits are then weighed against the costs associated with changing to the new film type.[29]

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[24] Shifting from older technologies such as solvent-based dry film requires significant investment in new equipment. Nonetheless, the benefits derived from using aqueous dry film rather than the older technologies generally outweigh the cost of switching.

[25] *** responded by stating "(New types of dry film) are numerous. All manufacturers are improving the product and introduce new films on a regular basis. (M)ost new films offer increased resolution and ease of processing."

[26] *** noted that deep gold plating "is the hardest test for dry film resist." Other purchasers also noted problems using various types of film with this process. Specialty films developed for specific applications may be priced higher than other, general-purpose dry film. For example, ***. These sales were excluded for the value and quantity data presented below.

[27] ***.

[28] *** discussed the issue of substitution in great detail and summed up by stating "And so I reiterate, one dry film is not the same as another no matter who makes it. What we have is compatable (sic) with our chemistry and we like it like that."

[29] *** noted that "(c)hanging dry film types typically would require 3-6 mos evaluation and cost payback schedules of 1 year or less. Cost estimate: 1/4 eng. 1 technician, 1/4 prod mgr., 1 production operator, unforeseen

(continued...)

As noted above, purchasers also consider the price of the dry film when they decide whether to switch. For the majority of purchasers the price of the dry film is not the most important factor because dry film typically accounts for less than 5 percent of total production costs.[30] As a result, if a switch to a lower-priced dry film generates a reduction in PCB production yields, the decline in yields generally outweighs any savings in the costs of materials resulting from changing dry film types. Nonetheless, some purchasers did indicate that substituting different types of dry film was neither difficult nor costly. These purchasers reported that the various types of dry film produced by different manufacturers worked with their production processes; consequently, considerations such as the cost of the film were important.

PCB manufacturers and other users of dry film also have the option of using screen printing or liquid photoresist processes in lieu of aqueous dry film. To switch to either type of process involves significant costs in terms of investment in equipment and facilities.[31] Moreover, neither type of process currently serves as a viable substitute for the vast majority of dry film users. Screen printing does not provide the resolution required by most U.S. PCB manufacturers. The newer types of liquid photoresist systems are still under development and are being used by a limited number of PCB manufacturers.[32]

Qualification Processes And Technical Support

U.S. producers and importers report that their customers have qualification procedures. Approximately 77 percent of purchasers reported some type of qualification requirement. Although descriptions of the qualification process vary, firms generally reported that they run controlled tests to establish the performance characteristics of the product during the production process. The firms then conduct more extensive production runs,

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[29] (...continued)
process problems/scrap while perfecting parameters, additional materials inventory, and assuming no new equipment needed = $20k - $50k." *** stated that "(t)he quality varies from supplier to supplier but most can be substituted.... Time required to change is 3-6 mos. Cost would be in excess of $10,000 per incident." *** noted that "Most are substitutable but require numerous process changes. Benefits expected might be higher yields, lower cost. Changes like this may take weeks to implement. Risk is high."

[30] The figure varies, depending on the type of PCB being produced. Approximately 80 percent of purchasers reported costs within this range. In terms of material inputs only, dry film accounts for approximately 10 percent of total costs.

[31] For example, ***, a user of ***, indicated that the system required a capital investment of $500,000 to $1 million for equipment and facilities. *** estimated that *** system would require approximately $1.2 million for the initial equipment and 3 to 6 months to purchase the equipment.

[32] Only 5 percent of the purchasers responding to the Commission's questionnaire reported using liquid photoresist systems. None of these firms relied on liquid systems exclusively.

during which the dry film manufacturer provides significant levels of technical assistance. Purchasers reported qualification processes of varying degrees of complexity and time, with larger firms reporting longer, more complicated requirements.[33] Firms producing products for the defense industry also reported specific testing requirements related to procurement guidelines. Purchasers reported that qualification processes ranged from a few weeks to four months.

***. Thirty-nine percent of the purchasers responding to the Commission's questionnaire reported qualification failures. These failures included products manufactured by *** U.S. dry film producers as well as ***. For the most part, reported qualification failures resulted from the dry film not performing properly; however, in some cases purchasers indicated that technical support was also an issue.

Other Considerations

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. Although dry film accounts for a relatively small portion of their total cost of production, PCB manufacturers, in an effort to improve overall productivity, have increasingly focused on controlling inventory costs.[34] Sixty-seven percent of purchasers reported receiving shipments on a weekly basis. The majority of purchasers also noted that delivery lead times range from 1 to 2 days for both suppliers of U.S. and Japanese dry film.

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.[35] Approximately 35 percent of purchasers reported that dry film manufacturers occasionally include charges for equipment in their quotes for dry film. In most cases, the purchasers indicated that the dry film producers added a surcharge for the equipment to the square foot price for the dry film over some period of time.[36]

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[33] One purchaser, ***, reported that its customers, ***, exercise some control over its purchasing decisions and qualification process because of quality and/or technical performance concerns.

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

[35] The petitioners' posthearing brief states that *** have utilized surcharge arrangements at one time or another.

[36] Descriptions of this practice also suggest that in some instances the equipment is sold at a significantly discounted price or with no charges for interest. For example, *** reported that "potential suppliers will, at times, offer 'no cost' utilization of equipment for some time in order to obtain business." *** noted "*** offered some equipment installed with no downpayment no interest. Cost to be paid monthly as a surcharge to film used over two years." *** reported "Equipment--made available by adding a surcharge to dryfilm price, that surcharge is absorbed by the supplier, in

(continued...)

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.[37] *** reported that *** 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. Fifty-eight percent of purchasers reported buying 100 percent of their dry film under contract; 25 percent reported no contract purchases, with the remaining firms utilizing contracts for varying amounts of their annual purchases. Contracts generally ranged from 1 to 2 years, with varying provisions regarding payment terms.

Purchasers generally indicated that pricing was negotiable. Forty-four percent reported that they contacted 2 to 3 suppliers when they were preparing to renegotiate. Forty-two percent reported that they discussed other manufacturers' pricing (without identifying the source of the competing price quotes) during the negotiation process.

*** indicated that transportation costs are not a significant factor affecting their customers' purchasing decisions.[38] Producers generally ship dry film from their slitting facilities to warehouses located near areas in which their customers are concentrated.[39] The three U.S. producers estimated that transportation costs account for roughly *** percent of the total delivered cost of their products. The extent to which transportation costs are included in the price of dry film varies by manufacturer. Approximately 80 percent of the purchasers reported that transportation costs were not a major factor affecting purchasing decisions.

*** sell some of their production through distributors. *** estimated that approximately *** percent of its sales were to distributors; ***. *** estimated that its distributors ***. *** reported that it sells dry film through ***. ***.

COMPARISONS OF U.S. AND JAPANESE SUPPLIERS

Purchasers were asked to rate U.S. and Japanese products (suppliers) in terms of various factors related to the purchase of dry film. One question asked the purchasers to identify whether the Japanese or U.S. products were superior (or equal) with respect to various factors, regardless of whether the purchasers actually had bought the Japanese product. Twenty-eight purchasers (including some firms that had not purchased the Japanese product) responded

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[36] (...continued)
effect, making it free to us." *** reported that "Some suppliers will not sell technology without dry film purchases."

[37] *** U.S. manufacturers reported that they developed price lists for internal use only. ***. *** reported relying on price lists.

[38] *** indicated that transportation costs did influence their customers' purchasing decisions.

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

to this question.[40] The following tabulation provides a summary of these purchasers' answers (in percent of responses).

Factor	U.S.	Japan	Equal	No response	Total
Availability.....	36	0	61	3	100
Reliability of supply..	33	3	61	3	100
Delivery time.....	36	0	61	3	100
Delivery terms.....	36	7	57	0	100
Service/support.....	33	14	50	3	100
Product quality.....	29	25	43	3	100
Lowest price.....	14	64	22	0	100

In a similar question, purchasers of the Japanese products were asked to rate the importance of various factors that influence purchasing decisions. Nineteen purchasers responded to this question. As the following tabulation illustrates (in percent of responses), the majority of respondents rated quality, service, speed of delivery, and, to a lesser extent, price as "very important."

Factor	Very important	Somewhat important	No important	No response	Total
Quality.....	95	5	0	0	100
Service.....	74	26	0	0	100
Speed of delivery.....	74	26	0	0	100
Price.....	58	42	0	0	100
Traditional source.....	26	37	32	5	100
Credit terms.....	21	58	16	5	100
Alternative suppliers..	11	47	32	10	100

PRICE TRENDS

The Commission requested value and quantity data from U.S. producers and importers for their sales of dry film to customers whose accounts with the respective firms amounted to less than 3 million square feet per year and for overall sales of dry film by quarter during January 1990-December 1992.[41] 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, however, reported sales in the over-3-million-square-feet-per-year category.

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[40] For the most part, the remaining purchasers either indicated they did not have enough knowledge of the Japanese product to respond or simply left the question blank.

[41] 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).

The Commission requested pricing data for the following product specifications:

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

Product 2: Aqueous, for plating or alkaline etching application, 1.5 mils thickness (0.0015 inch)

Product 3: Aqueous, for plating application, 2.0 mils thickness (0.0020 inch)

All of the respondents (three U.S. producers and two importers) submitted useable value and quantity data.[42] Reported quantity data accounted for approximately 55 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. 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.

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 1990 and December 1992 (table 15). The decline in Japanese average unit values was slowed somewhat by the entrance of Hitachi into the market. That company's unit values remained 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.[43] In addition, the company's products do not exactly match the descriptions for products 1 and 2.[44]

Average unit values for domestic product 1 (aqueous dry film for acidic etching application, 1.3 mils in thickness) declined 2.4 percent between January 1990 and December 1992. Japanese product 1 was not sold in the U.S.

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[42] During the preliminary investigation separate data were requested for 1.5 mil dry film for plating and etching applications respectively. One U.S. producer and both importers submitted pricing data for 1.5-mil, all-purpose dry film rather than (or in addition to) the separate categories because the companies could not determine the end use of the product. Differences in the prices reported for these 2 products were slight. As a result, data covering the 2 products were combined in the preliminary staff report and companies were not asked to report separate pricing data in the final investigation.

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

[44] 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 1.5 mil dry film.

ble 15
y film photoresist: U.S. producers' and importers' average unit values (cents per uare foot) and quantities (1,000 square feet) of sales to customers with annual rchases of less than 3 million square feet, by quarters, January 1990-December 1992

	United States		LeaRonal		Hitachi		Japanese	
riod	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quanti
				Product 1				
90:								
Jan.-Mar...	24.9	5,236						
Apr.-June..	25.2	4,599						
July-Sept..	25.2	5,618						
Oct.-Dec...	25.3	5,024						
91:								
Jan.-Mar...	25.3	4,690						
Apr.-June..	25.5	3,765	*	*	*	*	*	*
July-Sept..	25.1	4,926						
Oct.-Dec...	25.2	4,589						
92:								
Jan.-Mar...	25.0	4,423						
Apr. June..	24.0	4,672						
July-Sept..	24.1	4,815						
Oct.-Dec...	24.3	4,542						
				Product 2				
90:								
Jan.-Mar...	28.2	30,137						
Apr.-June..	28.1	29,683						
July-Sept..	28.0	31,623						
Oct.-Dec...	28.2	28,233						
91:								
Jan.-Mar...	28.3	29,799						
Apr.-June..	28.2	30,372	*	*	*	*	*	*
July-Sept..	28.0	30,395						
Oct.-Dec...	27.7	30,017						
92:								
Jan.-Mar...	27.5	30,427						
Apr.-June..	27.6	28,987						
July-Sept..	26.6	30,859						
Oct.-Dec...	27.2	31,797						

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 customers with annual purchases of less than 3 million square feet, by quarters, January 1990-December 1992

Period	United States		LeaRonal		Hitachi		Japanese	
	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Qua
	Product 3							
1990:								
Jan.-Mar...	31.1	13,868						
Apr.-June..	31.4	13,254						
July-Sept..	31.4	13,690						
Oct.-Dec...	31.6	12,309						
1991:								
Jan.-Mar...	31.6	14,852						
Apr.-June..	31.3	14,654	*	*	*	*	*	*
July-Sept..	30.9	15,099						
Oct.-Dec...	31.0	13,965						
1992:								
Jan.-Mar...	30.7	14,429						
Apr.-June..	30.6	15,087						
July-Sept..	30.5	16,028						
Oct.-Dec...	30.2	17,027						

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

market until the third quarter of 1991. Average unit values for Japanese product 1 declined by *** percent between July 1991 and December 1992, in contrast to a 3.2 percent decline in the price of the U.S.-produced product during the same period.

Average unit values for domestic product 2 (aqueous dry film for plating or alkaline etching application, 1.5 mils in thickness) declined by 3.5 percent during the 1990-92 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 next 5 quarters.

Reported values for product 3 (aqueous dry film for plating application, 2.0 mils in thickness) display patterns similar to the other products. Average unit values for domestic product 3 declined 2.9 percent over the period. LeaRonal's reported average unit values dropped by *** percent. Hitachi reported sales only for 1992, with average unit values declining *** percent over that period.

Although unit values for domestic product 1 fluctuated slightly over the period, data for products 2 and 3 show relatively steady declines in terms of unit values.[45] LeaRonal's reported sales data for products 2 and 3 show ***. 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.

Total Annual Sales

The average unit values of shipments reported by U.S. producers to all customers regardless of level of purchases also declined during 1990-92 (table 16). Average unit values for product 1 declined at a faster rate (7.9 percent) than average unit values reported for sales under 3 million square feet. The average unit value of total sales of products 2 and 3 also declined--by 4.0 and 2.7 percent, respectively.[46]

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[45] In terms of volume, domestic products 2 and 3 increased during the 3-year period, while product 1 declined somewhat. One factor contributing to the decline in domestic product 1 is *** reported *** of this product.

[46] 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 15.

Table 16
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 quarter January 1990-December 1992

Period	United States		LeaRonal		Hitachi		Japanese	
	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Qua
	Product 1							
1990:								
Jan.-Mar...	23.9	10,550						
Apr.-June..	23.9	10,160						
July-Sept..	24.0	11,231						
Oct.-Dec...	24.1	10,166						
1991:								
Jan.-Mar...	23.9	8,931						
Apr.-June..	23.8	8,117	*	*	*	*	*	*
July-Sept..	23.5	9,115						
Oct.-Dec...	23.5	8,889						
1992:								
Jan.-Mar...	23.0	10,350						
Apr.-June..	22.4	9,696						
July-Sept..	22.0	11,806						
Oct.-Dec...	22.0	11,770						
	Product 2							
1990:								
Jan.-Mar...	27.6	34,773						
Apr.-June..	27.5	33,795						
July-Sept..	27.5	35,749						
Oct.-Dec...	27.7	32,158						
1991:								
Jan.-Mar...	27.6	34,216						
Apr.-June..	27.5	35,175	*	*	*	*	*	*
July-Sept..	27.2	35,654						
Oct.-Dec...	27.3	33,452						
1992:								
Jan.-Mar...	26.7	37,085						
Apr.-June..	26.6	35,324						
July-Sept..	26.6	36,173						
Oct.-Dec...	26.5	37,294						

ble 16--Continued
y film photoresist: U.S. producers' and importers' average unit values (cents per uare foot) and quantities (1,000 square feet) of sales to all customers, by quarters, nuary 1990-December 1992

Period	United States		LeaRonal		Hitachi		Japanese	
	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quanti
	Product 3							
90:								
Jan.-Mar...	29.6	16,765						
Apr.-June..	29.5	17,117						
July-Sept..	29.5	17,660						
Oct.-Dec...	29.4	17,418						
91:								
Jan.-Mar...	29.8	19,851						
Apr.-June..	29.3	19,871	*	*	*	*	*	*
July-Sept..	29.3	18,528						
Oct.-Dec...	29.5	17,376						
92:								
Jan.-Mar...	28.8	19,098						
Apr.-June..	28.9	19,315						
July-Sept..	28.8	21,306						
Oct.-Dec...	28.8	21,384						

[1] No data reported.

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

UNIT VALUE COMPARISONS

Thirty comparisons between U.S. and Japanese average unit values were possible for sales to customers purchasing less than 3 million square feet annually. In 22 of these comparisons, the Japanese product undersold the domestic product, with margins ranging from 1.2 to 12.0 percent (table 17). In 8 cases the Japanese product was priced above the domestic product, with margins ranging from 0.2 to 43.4 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 16 of these 30 comparisons, the Japanese product undersold the domestic product, with margins ranging from 0.4 to 7.6 percent (table 17). In 12 cases, the Japanese product was priced above the domestic product, with margins ranging from less than 0.8 to 53.3 percent. In 2 cases, the U.S. and Japanese products had the same average unit values.

PURCHASER PRICE TRENDS

The Commission requested product-specific quantity and value data for the 1990-92 period. Product specifications for which pricing data were requested were the same as those requested from producers and importers.[47] Seventy respondents to the purchaser's questionnaire reported usable product-specific data. The companies were divided into those purchasers reporting total annual purchases of dry film amounting to less than 3 million square feet per year and all purchasers. Because dry film purchasers often source the material from more than one company, the 3 million square foot subcategory is not directly comparable to the subcategory reported for producer and importer data.

Annual Purchases Under 3 Million Square Feet

Unlike the data reported by U.S. producers and importers, average unit values reported by purchasers did not show decreases across all product categories during 1990-92. Unit values reported for purchases of U.S. product 1 declined through June 1992 and then increased during the second half of 1992, registering an 11 percent gain over the first quarter of 1990 (table 18). Unit values for Japanese product 1 generally declined during 1991-92.[48] Unit values reported for U.S. products 2 and 3 decreased by 7 and 9 percent, respectively, over the 3-year period; most of this decline occurred during 1992. Data reported for Japanese product 2 show no overall change

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[47] Value and quantity data were requested for dry film photoresist in thicknesses of 1.3 mils, 1.5 mils, and 2.0 mils. For exact product specifications, please see p. I-34 of this report.

[48] Data reported for product 1 during January 1990 through June 1991 represent the imports of one company, ***. *** imported the product ***. Consequently the data may not be directly comparable to subsequent value data reported by other purchasers.

ble 17
y film photoresist: Margins of under/(over) selling for unit values of sales to stomers with annual purchases of less than 3 million square feet and to all customers, quarters, January 1990-December 1992

(In percent)

riod	Product 1		Product 2		Product 3	
	LeaRonal	Hitachi Japan	LeaRonal	Hitachi Japan	LeaRonal	Hitachi Japa
	Under 3 million square feet					
90:						
Jan.-Mar...						
Apr.-June..						
July-Sept..						
Oct.-Dec...						
91:						
Jan.-Mar...						
Apr.-June..	*	*	*	*	*	*
July-Sept..						
Oct.-Dec...						
92:						
Jan.-Mar...						
Apr.-June..						
July-Sept..						
Oct.-Dec...						
	Total sales					
90:						
Jan.-Mar...						
Apr.-June..						
July-Sept..						
Oct.-Dec...						
91:						
Jan.-Mar...						
Apr.-June..	*	*	*	*	*	*
July-Sept..						
Oct.-Dec...						
92:						
Jan.-Mar...						
Apr.-June..						
July-Sept..						
Oct.-Dec...						

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

Table 18
Dry film photoresist: U.S. purchasers' average unit values and quantities of purchases from U.S. producers and Japanese suppliers, by purchaser size, by products, and by quarters, January 1990-December 1992

(Values in dollars per square foot; quantities in 1,000 square feet)

Period	Product 1				Product 2				Product 3			
	United States		Japan		United States		Japan		United States		Japan	
	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity	Average unit value	Quantity
	Under 3 million square feet											
1990:												
Jan.-Mar...	0.27	1,622	***	***	0.28	3,875	***	***	0.33	1,613	***	***
Apr.-June..	0.27	1,323	***	***	0.28	4,139	***	***	0.32	2,142	***	***
July-Sept..	0.26	1,941	***	***	0.30	3,847	***	***	0.32	2,369	***	***
Oct.-Dec...	0.26	1,614	***	***	0.29	6,109	***	***	0.32	2,930	***	***
1991:												
Jan.-Mar...	0.27	1,390	***	***	0.29	4,061	***	***	0.32	2,892	***	***
Apr.-June..	0.26	1,996	***	***	0.29	3,974	***	***	0.32	2,785	***	***
July-Sept..	0.26	2,130	***	***	0.30	3,763	***	***	0.33	1,989	***	***
Oct.-Dec...	0.26	2,355	***	***	0.29	5,376	***	***	0.32	2,107	***	***
1992:												
Jan.-Mar...	0.25	2,304	***	***	0.28	4,163	***	***	0.32	2,400	***	***
Apr.-June..	0.25	2,073	***	***	0.27	4,565	***	***	0.31	2,352	***	***
July-Sept..	0.30	2,630	***	***	0.27	5,904	***	***	0.31	2,662	***	***
Oct.-Dec...	0.30	2,995	***	***	0.26	6,482	***	***	0.30	2,935	***	***
	All purchases											
1990:												
Jan.-Mar...	0.24	6,838	***	***	0.25	16,208	***	***	0.27	11,447	***	***
Apr.-June..	0.23	7,742	***	***	0.26	15,375	***	***	0.33	11,295	***	***
July-Sept..	0.24	8,053	***	***	0.25	15,557	***	***	0.27	12,011	***	***
Oct.-Dec...	0.24	6,865	***	***	0.26	17,151	***	***	0.27	12,518	***	***
1991:												
Jan.-Mar...	0.22	9,882	***	***	0.25	15,414	***	***	0.27	12,966	***	***
Apr.-June..	0.22	11,549	***	***	0.26	15,375	***	***	0.27	12,743	***	***
July-Sept..	0.22	11,907	***	***	0.25	16,307	***	***	0.27	13,195	***	***
Oct.-Dec...	0.22	12,155	***	***	0.26	18,271	***	***	0.27	13,271	***	***
1992:												
Jan.-Mar...	0.22	12,580	***	***	0.26	16,293	***	***	0.27	14,715	***	***
Apr.-June..	0.21	13,066	***	***	0.25	15,370	***	***	0.27	13,633	***	***
July-Sept..	0.23	12,627	***	***	0.25	17,446	***	***	0.27	16,630	***	***
Oct.-Dec...	0.24	13,175	***	***	0.25	18,568	***	***	0.27	17,634	***	***

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

during 1990-92. However, data reported for Japanese product 3 decreased steadily, by a total of *** percent over the period.

In terms of volume, reported quarterly purchases of all three U.S. products increased steadily, by a total of 85, 67, and 82 percent for products 1, 2 and 3, respectively, during 1990-92. During the same period, reported purchases of Japanese products 2 and 3 grew by 22 and 783 percent, respectively. Reported purchases of Japanese product 1 increased sharply in the third quarter of 1991 when Hitachi entered the U.S. market, but did not increase significantly during July 1991 through December 1992.

The value and quantity data reported for purchases of the U.S. product include direct purchases from manufacturers and purchases from distributors. As figure 2 shows, unit values reported for purchases of all three Japanese products were generally lower than those reported for purchases from U.S. distributors, but were higher than those reported for direct purchases from U.S. manufacturers. Unit values reported for Japanese products 1 and 3 also tended to decline relative to those reported for direct purchases from U.S. manufacturers during 1992. Quantity and unit value data disaggregated by source are reported in appendix F.[49]

Total Purchases

With the exception of two companies, purchases of all three products by companies with total annual purchases of over 3 million square feet were limited to U.S. products. As a result there are only minor differences between the trends reported in the above section and those for total annual purchases of the Japanese product. Unit value data reported for total purchases of U.S. product 1 declined in 1991 and then returned to the 1990 level. Unit values for products 2 and 3 were flat during the 3-year period. In contrast, quantity data reported for all three U.S. products increased steadily during 1990-92. Product 1 increased by 93 percent; product 2 by 15 percent; and product 3 by 54 percent.

Exchange Rates

Quarterly data reported by the International Monetary Fund indicate that during January 1990-December 1992 the nominal value of the Japanese yen fluctuated but showed an overall appreciation of 20.6 percent over its January-March 1990 value by the end of the period (table 19).[50] Adjusted for movements in producer price indexes in the United States and Japan, the real value of the Japanese currency showed an overall appreciation of 15.6 percent for the period January 1990 through December 1992.

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[49] In addition to showing value and quantity trends, app. F shows the number of reporters in each quarter by product type and purchasing source. In specific quarters, there are a limited number of reporters within certain subgroups of the sample.

[50] International Financial Statistics, January 1993.

Figure 2: Dry Film Photoresist: Average unit values by channel of distribution and product type for sales under 3 million square feet, 1990-92

* * * * * * *

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

Table 19
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 1990-December 1992

Period	U.S. producer price index	Japanese producer price index	Nominal exchange rate index	Real exchange rate index[3]
1990:				
January-March.....	100.0	100.0	100.0	100.0
April-June.....	99.8	100.8	95.3	96.3
July-September.....	101.6	100.8	101.8	101.0
October-December....	104.7	101.4	113.1	109.6
1991:				
January-March.....	102.5	101.6	110.5	109.5
April-June.....	101.5	101.1	106.9	106.5
July-September.....	101.4	100.8	107.8	107.2
October-December....	101.5	100.1	114.2	112.6
1992:				
January-March.....	101.3	99.8	115.2	113.5
April-June.....	102.3	99.8	113.5	110.7
July-September.....	102.8	99.7	118.4	114.8
October-December....	103.1	98.8	120.6	115.6

[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 1990 = 100.

Source: International Monetary Fund, International Financial Statistics, February 1993.

Lost Sales and Revenues[51]

During this investigation the Commission received allegations of lost sales and lost revenues from all three principal domestic producers, Du Pont, Morton, and Hercules. The 27 lost sales allegations amounted to approximately $5.5 million and involved 20.7 million square feet of dry film photoresist allegedly purchased from Japanese suppliers during January 1989-June 1992. ***. The 18 lost revenue allegations totalled $735,875 and involved 23.9

[51] All allegations involved aqueous film.

million square feet of dry film.[52]

Of the 32 purchasers named in the allegations, 21 responded to the Commission's questionnaires. Some of the information contained in the lost sale and lost revenue allegations was verified to some extent. However, some of the allegations could not be verified to the extent claimed by the petitioners.[53] In cases where the allegations were confirmed to some extent, the information reported by purchasers shows that their decisions to switch suppliers may have been the result of problems with quality or competition from U.S. producers rather than price competition from the suppliers of the Japanese products. However, lower prices for the Japanese products contributed to purchasers' decisions to switch to Japanese suppliers in some instances. A number of purchasers reported testing the Japanese products and then switching back to a U.S. product after the test was completed (and the Japanese product failed). Appendix G provides detailed information gained from questionnaire responses and conversations with company officials of 26 firms regarding specific allegations.

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[52] The numbers cited above refer to allegations submitted during the preliminary investigation. In the final investigation, the petitioners submitted 23 lost sales allegations valued at $4.3 million and involving 16.6 million square feet of dry film allegedly purchased from Japanese suppliers during January 1989-June 1992. They also submitted 14 lost revenue allegations totalling $655,375 and involving 19.6 million square feet of dry film. None of the petitioners reported any additional allegations regarding lost sales or lost revenues during the final investigation. *** did not list allegations regarding incidents that occurred in 1989 in its final questionnaire. In addition, 1 lost sale allegation and 4 lost revenue allegations contained incomplete information and therefore were not included in the above totals.

[53] In particular, in many of *** allegations the volumes cited refer to the annual volume of dry film purchased by the respective dry film users rather than to the volume that the companies had purchased from ***. In addition, in some cases, purchasers switched from one U.S. producer to another; in those cases, the alleged lost sale occurred, but not as a result of competition from the suppliers of the Japanese products.

APPENDIX A

COMMERCE'S NOTICE OF FINAL LTFV DETERMINATION

DEPARTMENT OF COMMERCE

International Trade Administration

[A-588-828]

Notice of Final Determination of Sales at Less Than Fair Value: Dry Film Photoresist From Japan

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

EFFECTIVE DATE: March 15, 1993.

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) 482-0116.

FINAL DETERMINATION: We determine that dry film photoresist from Japan is being, or is likely to be, sold in the United States at less than fair value, as provided in section 733 of the Tariff Act of 1930, as amended (the Act). The estimated margin is shown in the "Suspension of Liquidation" section of this notice.

Case History

Since the preliminary determination of sales at less than fair value in this investigation on December 22, 1992, (57 FR 62297, December 30, 1992), the following events have occurred.

On January 19, 1993, Hitachi Chemical Co., Ltd., an exporter not selected as a respondent in this investigation, and Hitachi Chemical Co. America, Ltd., a related importer, filed a case brief commenting on the Department's preliminary determination. On January 19, 1993, petitioners requested an extension to file a case brief; on January 19, 1993, the Department granted an extension until January 21, 1993. On January 21, 1993, petitioners filed their case brief and the Department instructed them to refile the public version of certain pages of the case brief, ranging proprietary numbers pursuant to 19 CFR 352.32(b)(1). On January 22, 1993, petitioners resubmitted those pages. On January 25, 1993, Hitachi Chemical Co., Ltd., and Hitachi Chemical Co. America, Ltd., and petitioners filed rebuttal briefs.

Scope of Investigation

The products covered by this investigation are dry film photoresist (DFP) from Japan. DFP means all forms and dimensions of solid photosensitive resin film, without sprocket holes, designed to be laminated onto a surface to permit etching or plating of a pattern.

The photoresist chemicals which comprise DFP are in dry film format, whether or not in rolls, and do not include bulk powder chemicals. In light of its dry film format, DFP may be entering the United States under Harmonized Tariff Schedule of the United States (HTSUS) subheading 3707.90.30 and categories 3702.39.00.00, 3702.42.00.60, 3702.43.00.00, 3702.44.00.00, 3702.95.00.00 and 3707.10.00.00. Although the HTSUS subheadings and categories are provided for convenience and customs purposes, our written description of the scope of this investigation is dispositive.

Period of Investigation

The period of investigation is from January 1, 1992, through June 30, 1992.

Best Information Available

We have determined, in accordance with section 776(c) of the Act, that the use of best information available (BIA) is appropriate for sales of subject merchandise in this investigation. In deciding whether to use BIA, section 776(c) provides that the Department may take into account whether the respondent was able to produce information requested in a timely manner and in the form required. In this case, Tokyo Ohka Kogyo (TOK) did not do so.

As outlined in our preliminary determination, the Department granted repeated requests by TOK for extensions in order for the company to gather and process the information requested in the Department's questionnaire. On November 2, 1992, TOK informed the Department that it would not respond to sections B and C of the questionnaire. TOK's refusal to provide this information denied the Department the information required to calculate an antidumping duty margin. Consequently, we based our preliminary determination in this investigation on BIA. As BIA, we selected the highest margin calculated from information provided in the petition and in a supplement to the petition received on July 29, 1992.

As noted in our notice of initiation, for purposes of the initiation, no adjustments were made to petitioners' calculations. However, the Department noted that if it became necessary at a later date to consider the petition as a source of BIA, we might review all of the bases for the petitioners' estimated dumping margins in determining BIA. The petitioners' methodology for calculating the estimated dumping margins was discussed in detail in our notice of initiation (57 FR 36066, August 12, 1992). The Department's methodology for calculating the preliminary estimated dumping margin was discussed in detail in our preliminary determination notice (57 FR 62297, December 30, 1992). Because some of the data in the petition were not presented accurately or appeared insufficiently documented, we made modifications to petitioners' estimated dumping margins. The resulting margins ranged from 13.60 to 30.49 percent.

For purposes of this final determination, since respondent has been uncooperative in this investigation, we are continuing to apply the highest margin derived from the corrected information presented in the petition as BIA for TOK. Based on a reexamination of our preliminary calculations, and the comments received in the briefing process, we have recalculated new margins from the information presented in the petition. (See *Comments*, below.)

Interested Party Comments

Comment 1

Petitioners maintain that the Department properly resorted to BIA in the preliminary determination of sales at less than fair value and should adhere in the final determination to its practice of selecting the highest dumping margin calculated from information provided in the petition. Petitioners cite section 776(c) of the Act, which directs the Department to use BIA "whenever a party or any other person refuses or is unable to produce information requested in a timely manner and in the form required, or otherwise significantly impedes an investigation * * *." Petitioners maintain that TOK's November 2, 1992, letter informing the Department that it would not respond to sections B and C of the Department's antidumping questionnaire constitutes a refusal to cooperate. Citing Final Determination of Sales at Less than Fair Value: Sulfanilic Acid from India, 58 FR 3251 (January 8, 1993), *inter alia*, petitioners argue that the Department should follow its longstanding BIA policy and assign to TOK the highest dumping margin calculated from information contained in the petition.

DOC Position

We agree with petitioners. In deciding whether to use best information available, section 776(c) provides that the Department shall take into account whether the respondent was able to produce information requested in a timely manner and in the form required. In this case, TOK did not do so. TOK's refusal to provide this data denies the Department the information required to calculate an antidumping duty margin. Thus we are basing the final determination on BIA.

Comment 2

In their margin calculations in the petition, petitioners based U.S. price on the sale from LeaRonal, the reseller of TOK's dry film photoresist products, to the next unrelated purchaser in the United States. Petitioners maintain that the Department should deduct LeaRonal's U.S. warehousing and U.S. packing from its resale price in order to derive the proper U.S. price in calculating an estimated dumping margin from information contained in the petition as BIA. Petitioners maintain that the U.S. warehousing expenses and packing expenses should not be treated as purchase price circumstance of sales adjustments, as they had been in the preliminary determination. Petitioners maintain that because the gross price used in the petition was the price from LeaRonal to an unrelated purchaser, and since the warehousing and packing expenses represent costs to LeaRonal as the reseller/further manufacturer in the U.S., these expenses should be directly deducted from the gross U.S. price.

Hitachi maintains that the Department's treatment of these expenses for the preliminary determination was correct.

DOC Position

We agree with petitioners. Petitioners estimates account for expenses which LeaRonal incurs in reselling the subject merchandise. We have deducted these expenses directly from the resale price, rather than treat them as circumstance of sale adjustments.

Comment 3

Petitioners maintain that the Department should deduct LeaRonal's total selling expenses from the gross U.S. price and not just limit adjustment to U.S. warehousing expenses, as the Department did in the preliminary determination. Petitioners maintain that the 10 percent estimate used in the petition is a conservative estimate of LeaRonal's expenses as a converter and reseller of DFP. Petitioners point out that the domestic industry did not have access to TOK's sales price to LeaRonal (the first unrelated purchaser in the United States), and therefore derived the U.S. price from the price at which LeaRonal resells TOK's DFP after warehousing the imported master rolls, slitting, and then repackaging them.

Petitioners estimated LeaRonal's U.S. selling expenses at 10 percent of its U.S

ling price. They based the figure on statutory minimum rate allowed for ling, General and Administrative &A) expenses in the Department's of constructed value (CV). In the ition, this 10 percent figure included itioners' estimate of all expenses ated to reselling DFP to the next tomer, including LeaRonal's cost of P samples and of rebates. Petitioners agree with the Department's racterization of the selling expenses being undocumented. Petitioners int to data contained in the injury tion of the petition which presents ormation on the U.S. DFP industry's ent financial performance. itioners maintain that this ormation, which shows actual U.S. &A expenses to be much larger than estimated 10 percent, makes itioners' original estimate extremely nservative.

Hitachi maintains that the Department rectly concluded that the petitioners vided insufficient information to ke an appropriate price adjustment, d that since petitioners had not plemented the information regarding ling expenses, the Department should t depart from its earlier calculations.

OC Position

We agree with petitioners. In the liminary determination, the partment erroneously concluded that 10 percent estimate pertained to K's selling expenses, rather than to re-sale effort required by LeaRonal. sed on the SG&A expenses provided the injury section of the petition, the percent figure used in the petition is easonable estimation of LeaRonal's ling expenses. The calculation in the tition did not clearly reference that s comparison was submitted in the ury section of the petition. Because did not give petitioners the portunity to address perceived ficiencies before initiating the vestigation, petitioners' first portunity to address the issue of ling expense estimates occurred in preliminary process. Moreover, the tition affidavits from managers within U.S. DFP industry do reference imates of selling expenses, thereby cumenting petitioners' estimation of lling expenses for LeaRonal. Because warehousing was deducted rectly from LeaRonal's gross U.S. ice to an unrelated purchaser, prior to justing for selling expenses incurred, e Department did not deduct aRonal's total selling expenses nclusive of warehousing) from the es U.S. price, as petitioners have quested. Accordingly, for the purposes the final determination, we have deducted LeaRonal's estimated selling expenses of 10 percent from gross U.S. price, net of petitioners' estimate of LeaRonal's U.S. warehousing expenses, so as not to double-count warehousing expenses.

Comment 4

Petitioners maintain that, in light of the fact that LeaRonal sold the same type of merchandise through the same channels in the U.S. market and offered the same service and technical support in making these sales, the Department should use the domestic industry's total SG&A data in the petition as the basis for estimating LeaRonal's selling expenses in the United States.

DOC Position

We disagree with petitioners. The various expenses which LeaRonal incurs, (e.g., rebate programs, direct selling expenses such as warehousing, etc.), should be deducted from the gross U.S. price. The SG&A figures given in the injury section of the petition pertain to the overall operation of U.S. companies and are not limited to the estimated expenses associated with the further manufacture and reselling of DFP by LeaRonal. The Department cannot accurately ascertain from the information on the record which part of the referenced total SG&A expenses would be allocable to the further manufacture and reselling of DFP. We are thus using the 10 percent figure which was originally estimated by petitioners for LeaRonal's total selling expenses, net of separately deducted warehousing expenses.

Comment 5

Hitachi maintains that the Customs Service has recently informed it by Notice of Action that DFP is not being classified as a "film." According to the January 12, 1993, document which Hitachi submitted for the record, the Customs Service indicated that certain Hitachi entries of DFP were not of "film." Rather, Customs classified these Hitachi entries as emulsions, in solid form, layered on both sides with plastic. Such merchandise is classified under HTSUS item number 3707.10.00.00 which provides for "Sensitized Emulsions." Accordingly, Customs form 29 instructed Hitachi that the duty rate for this category is 3 percent. Hitachi maintains that the Department should therefore reduce its deduction for U.S. duty in its margin calculations from 3.7 to 3 percent.

DOC Position

We disagree with Hitachi. As Hitachi noted, this 1993 re-classification notice is very recent. The pricing considerations which exporters and importers confronted during the POI would have included the original U.S. duty of 3.7 percent; this is the correct duty rate for establishing the estimated margin of dumping during the POI.

Comment 6

Hitachi maintains that it should not receive the highest margin calculated as best information available. Instead, Hitachi maintains that it should receive the lowest margin calculated from data contained in the petition, which it considers to still be a relatively adverse result. Hitachi argues that to apply the punitive highest margin to all other exporters is unfair and inconsistent with past Department practice. Hitachi maintains that it is the Department's normal practice to assign the most punitive rate based on BIA when a company refuses to participate in an investigation. Hitachi cites the Final Antidumping Duty Determination: Aspheric Ophthalmoscopy Lenses from Japan, 57 FR 6703 (February 27, 1992) and Final Determination of Sales at Less than Fair Value: Circular Welded Non-Alloy Steel Pipe from Brazil, 57, FR 42940, 42942 (September 17, 1992), to support its argument that the Department has clearly adopted a two-tier approach for determining the level of "adversity" of BIA to be applied, assigning lower rates for respondents who cooperate in an investigation, while applying rates based on more adverse assumptions for respondents who do not cooperate.

Hitachi maintains that in choosing TOK as the sole mandatory respondent in this investigation, the Department relieved Hitachi of any obligation to submit a questionnaire response or otherwise to participate in the investigation. It maintains that, until it was too late for Hitachi to apply as a voluntary respondent, the company had every reason to believe that TOK would participate in the investigation and would support a non-BIA result. According to Hitachi, its expectation of TOK's cooperation in the investigation, combined with the fact that the Department has not encouraged voluntary questionnaire responses in the past, led Hitachi to choose not to undertake the costly and burdensome task of preparing and trying to submit a voluntary response. Hitachi maintains that it has not failed in any way to cooperate in this investigation.

Petitioners counter that the Department should continue to use the BIA rate assigned to TOK as the "all others" rate in this case. Petitioners maintain that Hitachi misstates the

Department's policy when Hitachi asserts that the Department has refrained from using punitive BIA rates as the "all others" rate in dumping investigations and administrative reviews. According to petitioners, the Department's policy is to use all affirmative rates, including rates based on BIA, in calculating the "all others" rate. Therefore, according to petitioners, in an investigation, such as this proceeding, where the only affirmative margin is a punitive BIA rate, the Department correctly follows this policy and bases the "all others" rate exclusively on the BIA-based margin for the sole uncooperative respondent. As past precedent, petitioners cite Final Determination of Sales at Less Than Fair Value: Steel Wire Rope from India, 56 FR 46285, 46286 (September 11, 1992) and Final Determination of Sales at Less Than Fair Value: Personal Word Processors from Japan, 56 FR 31101, 31109–31110 (July 9, 1991).

Petitioners assert that Hitachi's argument that it has not failed to cooperate in this investigation is a moot point because the Department does not make such distinctions in cases where the only affirmative rate calculated in the investigation is an adverse BIA rate. Further, petitioners maintain that Hitachi had every opportunity to file a voluntary response after the initiation of the investigation and chose not to submit the data required to receive its own dumping margin. Petitioners assert that Hitachi knew as early as November 2, 1992, that TOK was an uncooperative respondent subject to a punitive BIA rate, and still did not attempt to file a voluntary response.

DOC Position

It is incumbent upon a non-mandatory respondent to submit voluntary responses in order to ensure that it does not receive a BIA rate based on the non-cooperation of named (*i.e.*, mandatory) respondents. The Department's practice in calculating the "all others" rate has been to use a weighted-average of all margins in a given investigation which are not zero or *de minimis*, including those based on BIA. In this case there is only one respondent, and thus only one margin, based on BIA. The Department is therefore continuing to use the BIA margin derived from information contained in the petition and applied to the respondent TOK for "all other" producers/exporters, including Hitachi.

Comment 7

Hitachi maintains that the Department should not deduct an estimated profit of eight percent from LeaRonal's U.S. resale price as part of the calculation of TOK's estimated dumping margin.

Petitioners maintain that the Department should continue to deduct an estimated profit of eight percent from LeaRonal's U.S. resale price.

DOC Position

We disagree with Hitachi. The profit associated with LeaRonal's resale must be deducted in order to derive the sales price between TOK and LeaRonal, the basis for price comparison purposes. Petitioners relied on the eight percent profit figure which is the Department's statutory estimate of minimum company profitability set forth in section 773(e)(B)(ii) of the Act in order to estimate the profit earned by LeaRonal in reselling DFP to unrelated purchasers. We are therefore continuing to use this reasonable estimate of LeaRonal's profit portion of its resale price in the calculation of the BIA margin.

Continuation of Suspension of Liquidation

In accordance with section 735 of the Act, we are directing the Customs Service to continue to suspend liquidation of all entries of DFP produced or exported from Japan, that are entered, or withdrawn from warehouse, for consumption on or after the date of publication of this notice in the Federal Register. The Customs Service shall require a cash deposit or posting of a bond equal to the estimated final dumping margin, as shown below. The suspension of liquidation will remain in effect until further notice.

Manufacturer/producer/exporter	Margin percentage
Tokyo Ohka Kogyo	52.37
All Others	52.37

ITC Notification

In accordance with section 735(d) of the Act, we have notified the ITC of our determination.

As our final determination is affirmative, the ITC will determine whether these imports are materially injuring, or threaten material injury to, the U.S. industry within 45 days.

This determination is published pursuant to section 735(d) of the Act (19 U.S.C. 1673d(d)) and 19 CFR 353.20(a)(4).

Dated: March 8, 1993.

Joseph Spetrini,

Acting Assistant Secretary for Import Administration.

[FR Doc. 93–5786 Filed 3–12–93; 8:45 am]

BILLING CODE 3510-DS-P

APPENDIX B

PARTICIPANTS AT THE COMMISSION'S HEARING

CALENDAR OF PUBLIC HEARING

Those listed below appeared as witnesses at the United States International Trade Commission's hearing:

Subject	:	DRY FILM PHOTORESIST FROM JAPAN
Inv. No.	:	731-TA-622 (Final)
Date and Time	:	March 11, 1993 - 9:30 a.m.

Sessions were held in connection with the investigation in the Main Hearing Room 101 of the United States International Trade Commission, 500 E St., S.W., Washington, D.C.

OPENING REMARKS

Petitioner (Mr. Greenwald)

Respondent (Mr. Schwarz)

In support of Imposition of Antidumping Duties:

Wilmer, Cutler & Pickering
Washington, D.C.
On behalf of

E.I. Du Pont de Nemours & Company, Inc.

Morton International

Hercules Incorporated

Stephen Quindlen, Business Manager, Primary Imaging, E.I. Du Pont de Nemours and Company

Elmer Hayes, Director of Primary Imaging, Morton International

Victor L. Sprenger, Business Director, Dry Film Photoresist, Hercules Incorporated

John D. Greenwald)
)--OF COUNSEL
Ronald I. Meltzer)

- more -

In Opposition to the Imposition of Antidumping Duties:

McDermott, Will & Emery
Washington, D.C.
On behalf of

Hitachi Chemical Co., Ltd.

Hitachi Chemical Co. America, Ltd.

Christian Glover, Manager, Photec
Market Development Department

Carl W. Schwarz)
)--**OF COUNSEL**
David J. Levine)

-end-

APPENDIX C

LEARONAL'S PUBLIC NEWS RELEASE AND FORM 10-Q STATEMENTS REGARDING ITS WITHDRAWAL FROM THE U.S. MARKET

LeaRonal

SPECIALTY CHEMICALS WORLDWIDE 272 BUFFALO AVENUE, FREEPORT, NY 11520 516-868-8800 FAX 516-868-8824

FAX: 202 205-3205

January 22, 1993

Mr. Larry Reavis
Office of Investigations
U.S. International Trade Commission
500 E Street SW
Washington, DC 20436

Dear Mr. Reavis:

Following up on your conversation with Mr. David Rosenthal this morning, enclosed is a copy of the news release issued by LeaRonal confirming and explaining our decision to withdraw from the domestic dry film photo resist market. The document is dated January 8, 1993.

Regardless of any decision which might be made by the International Trade Commission, this decision is irreversible. As explained in the release, there is no way that we could justify the expenditure of funds required to mount the proper defense of our case, although we believe that the plaintiffs' charges are totally without merit. Best regards.

Yours truly,

Richard Kessler
Executive Vice President

jkq

Enc.

cc: Mr. Ron Ostrow
Mr. David Rosenthal
Mr. Alan Holmer - Sidley & Austin

LeaRonal

272 Buffalo Avenue, Freeport, New York 11520 Tel. 516-868-8800 Fax 516-868-8824

News Release

FOR IMMEDIATE RELEASE

DUPONT, MORTON & HERCULES versus YOU; THE DRY FILM "ANTIDUMPING" GAME

FREEPORT, NEW YORK, JANUARY 8, 1993

A recent decision by the U.S. Commerce Department's International Trade Commission ("ITC") has resulted in a decision by LeaRonal, Inc. (NYSE) to withdraw from the U.S. dry film market. Consequently, printed circuit board fabricators in this country will be deprived of the opportunity to purchase a superior product, critical to their manufacturing, at a fair price from an American company, fabricated in an American factory, employing American labor and equipped with American-made machinery, simply because the intermediate product is imported from a Japanese supplier.

Forbes Magazine recently made the point, if you want to compete in this world, you make it better and cheaper. Those who do are in favor of free trade; those who don't, "Exploit the 1974 antidumping law to drive competition from the market, then raise prices." ("Dump It", *Forbes Magazine*, September 28, 1992, p. 64).

Enter DuPont, Morton & Hercules.

Apparently feeling threatened by competition from a new dry film product which had captured a 3% toehold in the U.S. market, imported and fabricated by LeaRonal at its California facility, what did they do? Did they improve their product? improve their services? reduce their prices? No. Rather, in July 1992, dissatisfied with only 97% of the U.S. market, the "big three" ganged up on LeaRonal and its Japanese supplier, Tokyo Ohka Kogyo Co., Ltd. ("TOK"). Exploiting the modern version of the legal fraternity's rack and screw, they initiated an antidumping proceeding.

Whatever may have been the original theory of this law, as recently observed "In too many cases dumping charges are nothing more than protectionist devices" ("Hindering High Tech", *Forbes Magazine*, December 21, 1992, p. 26).

"America's anti-dumping laws are a national embarrassment," said James Bovard, a Washington-based policy analyst who took America's anti-dumping laws to task in a recent book, "The Fair Trade Fraud." "They are merely a way for American firms to achieve protectionism ... to disrupt foreign competition," he said.

LeaRonal's and TOK's experience confirms these observations. Indeed, the antidumping law makes it virtually impossible for a small company, such as LeaRonal, and an

equally small supplier such as TOK, to defend themselves when attacked by domestic giants.

> Why? The U.S. complainant can take as much time as he likes to prepare his complaint -- 18 months in this case. But the respondent foreign company is held to a rigid 45-day deadline, within which it must fill out an excruciatingly detailed questionnaire about its pricing policies. ("Dump It", *Forbes Magazine*, September 28, 1992, p. 64)

In the example cited by *Forbes*, one respondent had to devote "a dozen employees ... [to] compiling data for every one of ... 20,000 transactions with 1,000 different customers over the past six months. There are as many as 50 variables to be reported for every transaction." (*Id.*) This expense is in addition to the $500,000 in legal fees required to defend one of these proceedings (with a 3% chance of success).

Citing these practical hurdles, *Forbes* further observed:

> But that's not the worst of it.
>
> ◆ Each and every U.S. sale will be compared with the *average* price that prevailed in the exporting country over that period. If any sales are below the average, it will be deemed to have been "dumped." Above-average sales are ignored.
>
> ◆ Rather than compare the exporting company's U.S. prices with its home market prices, Commerce will likely end up using "constructed value" -- an intellectual monster from the same planet that sent to earth Soviet Central planning and feminist comparable worth. Under constructed value, an exporter can be convicted of dumping if it earned less than 8% profit on any sale. (*Id.*)

Is it any wonder that 97% of the complainants win?

In making its preliminary findings in the dry film antidumping proceeding (which opened the floodgates for the legal horror show to follow), the ITC ignored the fact that any injury to the dry film industry was caused by the economic recession, which had reduced the customer base, the printed circuit board industry. Technological advances in miniaturization and circuit board density further reduced the demand for dry film. Moreover, it ignored the fact that competition in the dry film business is based on many non-price factors, not the least of which is customer service. To the extent that the price is a factor, LeaRonal demonstrated to the ITC that predatory underselling often was initiated by DuPont, Morton & Hercules.

It didn't even matter that LeaRonal's dry film was being sold to about 30 domestic printed circuit board manufacturers. Most of them are long-term LeaRonal customers, whom neither DuPont, Morton nor Hercules would service.

At the Commerce Department, which determines whether imports are sold at

unfairly low prices, LeaRonal and TOK faced a similarly stacked deck. For example, its procedures would have resulted in:

- price comparisons made between a different, more expensive product sold in Japan to end-users and a less expensive product in the United States, without sufficient adjustments to avoid an apples to oranges comparison;
- inadequate treatment of currency fluctuations, which can dramatically influence dumping margins; and
- exclusion of fixed costs from the calculation of key costs of production, which drives up the adjusted Japanese comparison and the dumping margin.

With very few English-speaking personnel, TOK correctly refused to devote 300 to 400 working days in addition to $400/500,000 in legal fees, to defend a business activity grossing less than $5,000,000, and LeaRonal, much as it would have liked to demonstrate the concocted nature of the proceeding brought against them, couldn't fairly request that TOK do otherwise.

The bottom line? Increased prices of dry film, increased prices of printed circuit boards, increased prices of various electronic devices, lowered U.S. international competitiveness, and LeaRonal will be forced to lay off a significant number of its West Coast employees.

"Anti-dumping laws are throwing thousands of Americans out of work," said Bryan Johnson, a policy analyst for the Heritage Foundation, a conservative Washington-based political and economic-policy think tank. "And they are not doing what they were originally intended to do."

Indeed, because of a recent antidumping decision, IBM, which planned to open a laptop-computer plant in Raleigh, N.C., has decided to continue making those computers in Japan. Apple Computer which planned to open a plant in Fountain, Colorado, abandoned those plans in favor of opening a plant in Cork, Ireland. Toshiba shut its laptop production facility in Irvine, California and moved production back to Japan. (*Chicago Tribune*, September 14, 1992)

So the next time you hear the cries from the managed trade artists in Washington complaining about "dumping" and "unfair trade," look again. What you may see behind all the smoke and mirrors is an uncompetitive industry attempting to foist increased costs on U.S. consumers to feather its own nest -- to the detriment of U.S. economic interests.

NOTES TO CONSOLIDATED CONDENSED FINANCIAL STATEMENTS
(Unaudited)
(Continued)

Note E - Other Matters

In July 1992, an antidumping petition was filed with the U.S. International Trade Commission and U.S. Department of Commerce ("Commerce"), charging that imports of dry film photoresist from Japan are being sold in the United States at less than "fair value," and are causing or threatening injury to the U.S. industry making a like product. As a result, Commerce is conducting an investigation, with their final determination presently scheduled for March 1993.

The Company is an importer of record of master rolls of unslit dry film photoresist from Japan through its supplier, Tokyo Ohka Kogyo Co., Ltd. ("TOK"), which the Company processes in its facilities in California. LeaRonal then offers the finished product for sale to its customers in the U.S. printed circuit industry.

In November 1992, TOK decided to withdraw its dry film products from the U.S. market in light of the ongoing Commerce investigation and the costs related thereto, and based on a review of the projected profitability of these products in the very competitive U.S. market. As a result of this decision, the Company has included in cost of sales for the three months and nine months ended November 30, 1992 a provision of $500,000 related to the planned discontinuance of dry film manufacturing and sales in the U.S. The Company's U.S. dry film photoresist product line accounted for less than 4% of consolidated net sales and less than 1% of net income for all periods prexented. The withdrawal of this product line is expected to be completed by February 28, 1993.

FORM 10-Q

LeaRonal, Inc. and Subsidiaries

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Nine months ended November 30, 1992 and November 30, 1991

Net sales consists of sales of proprietary and patented specialty, electronic, and imaging chemicals, referred to as "process sales," the precious metal content of its electroplating processes, and sales of other products. Process sales for the 1992 period were $51,634,000 compared with $43,753,000 for the 1991 period, an increase of 18%. The increased process sales in the 1992 period occurred primarily in the electronics and printed circuit industries. Approximately 70% of the $7,881,000 increase in process sales was attributable to the Company's foreign operations, including $1,300,000 due to favorable foreign currency exchange rates.

Gross profits increased $3,648,000 or 15% in the 1992 period due to the increase in process sales. The Company's process sales product mix continues to shift to increased sales of high dollar volume, lower margin products for the printed circuit industry. The overall gross margin percentage increased in the 1992 period, as precious metal content sales are a smaller percentage of total sales. In November 1992, the Company recorded in cost of sales a provision of $500,000 related to the planned discontinuance of dry film photoresist manufacturing and sales in the U.S. The Company's U.S. dry film photoresist product line accounted for less than 4% of consolidated net sales and less than 1% of net income for all periods presented. See Note E to the financial statements.

Selling, general, and administrative expenses increased approximately $2,039,000 or 13% in the 1992 period over the 1991 period, principally as a result of expansion of operations in Southeast Asia, Germany, and the United States.

Other income includes royalty income, earnings of unconsolidated affiliates, foreign currency gains and losses, and investment income. In the 1991 period, the Company recorded a $500,000 provision to reflect its share of the loss reported by its unconsolidated Italian affiliate, compared with a small profit in the 1992 period. During the 1992 period, the Company had net foreign currency losses of $247,000, principally related to Japanese yen denominated purchases of its Italian subsidiary, compared to net foreign currency gains of $237,000 in the 1991 period principally related to U.S. dollar denominated sales by its Swiss subsidiary. The Company is considering hedging future similar purchases and sales by these subsidiaries. However, to the extent such purchases or sales are not hedged, the Company may incur future currency gains or losses should the value of the Japanese yen or U.S. dollar change in comparison to the value of the Italian lira or Swiss franc, respectively.

FORM 10-Q

LeaRonal, Inc. and Subsidiaries

PART II - OTHER INFORMATION

Item 5. OTHER INFORMATION

As previously disclosed, in July 1992 an antidumping petition was filed by E. I. du Pont de Nemours & Co., Morton International, Inc., and Hercules, Inc. with the U.S. International Trade Commission ("Trade Commission") and U.S. Department of Commerce ("Commerce"). The petition charges that imports of dry film photoresist from Japan are (i) being sold in the United States at less than "fair value," and (ii) are causing or threatening injury to the U.S. industry making a like product. The petitioners have a 97% share of the U.S. dry film photoresist market, the remaining 3% being attributable to imports. Accordingly, Commerce initiated an investigation and requested the Tokyo Ohka Kogyo Co., Ltd. ("TOK"), LeaRonal's Japanese supplier of dry film photoresist, complete an antidumping questionnaire.

With limited English-speaking personnel and being a relatively small company, TOK decided against committing 300 to 400 working days, in addition to $400,000 to $500,000 in legal fees, to defend a business activity with annual gross sales of less than $5,000,000. In so deciding, TOK understood that failure to respond to the questionnaire could likely result in the imposition of substantial duties, rendering TOK's product uncompetitive in the U.S. dry film photoresist market. After review of the future prognosis for sales of these products to the U.S. printed circuit industry, it was decided to withdraw from the U.S. market at this time. Consistent with this decision, LeaRonal implemented plans to discontinue dry film manufacturing and sales in the U.S. on or prior to February 28, 1993.

The discontinuance of this product line in the U.S. is not expected to have a significant effect on LeaRonal's financial condition and future operations, as at no time since its introduction did this product line contribute in excess of 1% of the Company's net income.

APPENDIX D

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

able D-1
ry film photoresist: Summary data concerning the U.S. market, 1990-92

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

	Reported data			Period changes		
tem	1990	1991	1992	1990-92	1990-91	1991-92
.S. consumption quantity:						
Amount						
Producers' share 1/						
Importers' share: 1/						
Japan						
.S. consumption value:						
Amount						
Producers' share 1/						
Importers' share: 1/	*	*	*	*	*	*
Japan						
S. importers' imports from--						
Japan:						
U.S. shipments quantity						
U.S. shipments value						
Unit value						
Ending inventory qty						
S. producers'--						
Average capacity quantity	1,228,000	1,167,000	1,194,000	-2.8	-5.0	+2.3
Production quantity	847,629	772,276	848,418	+0.1	-8.9	+9.9
Capacity utilization 1/	69.0	66.2	71.1	+2.0	-2.8	+4.9
U.S. shipments:						
Quantity	496,560	468,258	501,468	+1.0	-5.7	+7.1
Value	128,218	116,403	122,504	-4.5	-9.2	+5.2
Unit value	$0.26	$0.25	$0.24	-5.4	-3.7	-1.7
Export shipments:						
Quantity	315,818	322,363	334,797	+6.0	+2.1	+3.9
Exports/shipments 1/	38.9	40.8	40.0	+1.2	+1.9	-0.7
Value	53,099	53,915	54,869	+3.3	+1.5	+1.8
Unit value	$0.17	$0.17	$0.16	-2.5	-0.5	-2.0
Ending inventory quantity	51,589	36,925	51,616	+0.1	-28.4	+39.8
Inventory/shipments 1/	6.4	4.7	6.2	-0.2	-1.7	+1.5
Production workers	371	332	302	-18.6	-10.5	-9.0
Hours worked (1,000s)	793	725	669	-15.6	-8.6	-7.7
Total comp. ($1,000)	14,810	14,655	14,487	-2.2	-1.0	-1.1
Hourly total compensation	$18.68	$20.21	$21.65	+15.9	+8.2	+7.1
Productivity (sq.ft./hour)	1,068.9	1,065.2	1,268.2	+18.6	-0.3	+19.1
Unit labor costs	$0.02	$0.02	$0.02	-2.3	+8.6	-10.0
Net sales value						
COGS/sales 1/						
Operating income (loss)	*	*	*	*	*	*
Op. income (loss)/sales 1/						
COGS/unit						

1/ 'Reported data' are in percent and 'period changes' are in percentage-point.

e.--Period changes are derived from the unrounded data. Period changes involving ative period data are positive if the amount of the negativity decreases and ative if the amount of the negativity increases. Unit values and other ratios are culated using data of firms supplying both numerator and denominator information.

rce: Compiled from data submitted in response to questionnaires of the U.S. ernational 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

U.S. PURCHASERS' AVERAGE UNIT VALUES AND QUANTITIES OF PURCHASES FROM U.S. PRODUCERS, U.S. DISTRIBUTORS, AND JAPANESE SUPPLIERS, BY PRODUCT CATEGORIES

Table F-1
Dry film photoresist: U.S. purchasers' average unit values and quantities of purchases from U.S. producers, U.S. distributors, and Japanese suppliers, by product type and by quarters, January 1990-December 1992

(Values in dollars per square foot; quantities in 1,000 square feet)

Period	United States						Japan		
	Producers			Distributors			All Suppliers		
	Average unit value	Quantity	Number of firms reporting	Average unit value	Quantity	Number of firms reporting	Average unit value	Quantity	Number of firms reporting
	Under 3 million square feet -- product 1								
1990:									
Jan.-Mar...	0.26	1,393	7						
Apr.-June..	0.27	1,148	7						
July-Sept..	0.26	1,779	8						
Oct.-Dec...	0.26	1,408	8						
1991:									
Jan.-Mar...	0.27	1,353	8						
Apr.-June..	0.26	1,942	11	*	*	*	*	*	*
July-Sept..	0.26	2,087	11						
Oct.-Dec...	0.26	2,317	10						
1992:									
Jan.-Mar...	0.25	2,279	9						
Apr.-June..	0.25	2,030	9						
July-Sept..	0.30	2,607	11						
Oct.-Dec...	0.30	2,965	10						
	Under 3 million square feet -- product 2								
1990:									
Jan.-Mar...	0.27	3,189	21	0.33	686	9	0.28	975	5
Apr.-June..	0.27	3,226	20	0.33	913	10	0.28	1,035	4
July-Sept..	0.28	2,989	20	0.35	858	10	0.27	1,070	5
Oct.-Dec...	0.28	5,239	24	0.32	870	10	0.27	1,335	6
1991:									
Jan.-Mar...	0.28	3,060	23	0.32	1,001	9	0.28	1,472	6
Apr.-June..	0.28	3,222	24	0.33	752	10	0.27	1,071	6
July-Sept..	0.29	2,961	24	0.33	802	9	0.26	996	8
Oct.-Dec...	0.28	4,251	23	0.33	1,125	10	0.27	1,085	9
1992:									
Jan.-Mar...	0.27	3,269	22	0.34	895	9	0.27	979	9
Apr.-June..	0.26	3,822	20	0.33	742	9	0.28	1,377	10
July-Sept..	0.26	5,297	23	0.33	607	8	0.28	1,253	9
Oct.-Dec...	0.25	5,868	23	0.33	614	7	0.28	1,198	9

Table continued on next page.

Table F-1--Continued
Dry film photoresist: U.S. purchasers' average unit values and quantities of purchases from U.S. producers, U.S. distributors, and Japanese suppliers, by product type and by quarters, January 1990-December 1992

(Values in dollars per square foot; quantities in 1,000 square feet)

Period	United States						Japan		
	Producers			Distributors			All Suppliers		
	Average unit value	Quantity	Number of firms reporting	Average unit value	Quantity	Number of firms reporting	Average unit value	Quantity	Number of firms reporting
	Under 3 million square feet -- product 3								
1990:									
Jan.-Mar...	0.33	1,519	14						
Apr.-June..	0.32	1,950	15						
July-Sept..	0.32	2,197	15						
Oct.-Dec...	0.31	2,691	16						
1991:									
Jan.-Mar...	0.31	2,573	18						
Apr.-June..	0.31	2,496	19	*	*	*	*	*	*
July-Sept..	0.32	1,615	18						
Oct.-Dec...	0.31	1,594	18						
1992:									
Jan.-Mar...	0.31	1,953	16						
Apr.-June..	0.31	2,087	16						
July-Sept..	0.30	2,401	16						
Oct.-Dec...	0.30	2,799	17						
	All purchases -- product 1								
1990:									
Jan.-Mar...	0.23	6,609	13						
Apr.-June..	0.23	7,566	14						
July-Sept..	0.23	7,891	16						
Oct.-Dec...	0.23	6,659	16						
1991:									
Jan.-Mar...	0.22	9,845	18						
Apr.-June..	0.22	11,495	22	*	*	*	*	*	*
July-Sept..	0.22	11,864	22						
Oct.-Dec...	0.22	12,116	21						
1992:									
Jan.-Mar...	0.22	12,559	22						
Apr.-June..	0.21	13,023	22						
July-Sept..	0.23	12,604	24						
Oct.-Dec...	0.24	13,144	24						

Table continued on next page.

Table F-1--Continued
Dry film photoresist: U.S. purchasers' average unit values and quantities of purchases from U.S. producers, U.S. distributors, and Japanese suppliers, by product type and by quarters, January 1990-December 1992

(Values in dollars per square foot; quantities in 1,000 square feet)

Period	United States						Japan		
	Producers			Distributors			All Suppliers		
	Average unit value	Quantity	Number of firms reporting	Average unit value	Quantity	Number of firms reporting	Average unit value	Quantity	Number of firms reporting
	All Purchases -- product 2								
1990:									
Jan.-Mar...	0.25	15,462	41	0.33	746	10	0.28	975	5
Apr.-June..	0.25	14,398	39	0.33	977	11	0.28	1,035	4
July-Sept..	0.25	14,639	40	0.35	918	11	0.27	1,070	5
Oct.-Dec...	0.26	16,217	43	0.32	934	11	0.27	1,335	6
1991:									
Jan.-Mar...	0.25	14,352	44	0.32	1,061	10	0.28	1,472	6
Apr.-June..	0.25	14,559	47	0.33	816	11	0.27	1,071	6
July-Sept..	0.25	15,445	47	0.33	862	10	0.26	996	8
Oct.-Dec...	0.25	17,083	48	0.33	1,189	11	0.26	1,137	10
1992:									
Jan.-Mar...	0.25	15,339	46	0.33	955	10	0.25	1,457	10
Apr.-June..	0.25	14,564	42	0.33	806	10	0.28	1,439	11
July-Sept..	0.25	16,779	45	0.33	667	9	0.28	1,253	9
Oct.-Dec...	0.25	17,890	46	0.33	678	9	0.28	1,198	9
	All Purchases -- product 3								
1990:									
Jan.-Mar...	0.27	11,353	30						
Apr.-June..	0.33	11,103	31						
July-Sept..	0.27	11,839	31						
Oct.-Dec...	0.27	12,279	32						
1991:									
Jan.-Mar...	0.27	12,648	36						
Apr.-June..	0.27	12,453	36	*	*	*	*	*	*
July-Sept..	0.27	12,821	37						
Oct.-Dec...	0.27	12,758	38						
1992:									
Jan.-Mar...	0.26	14,268	38						
Apr.-June..	0.27	13,360	37						
July-Sept..	0.26	16,362	36						
Oct.-Dec...	0.27	17,499	39						

[1] ***. Reported value data are not directly comparable to data reported elsewhere.

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

APPENDIX G

LOST SALES AND REVENUES ALLEGATIONS

* * * * * * *

U.S. International Trade Commission
Washington, DC 20436

Official Business
Penalty for Private Use, $300