

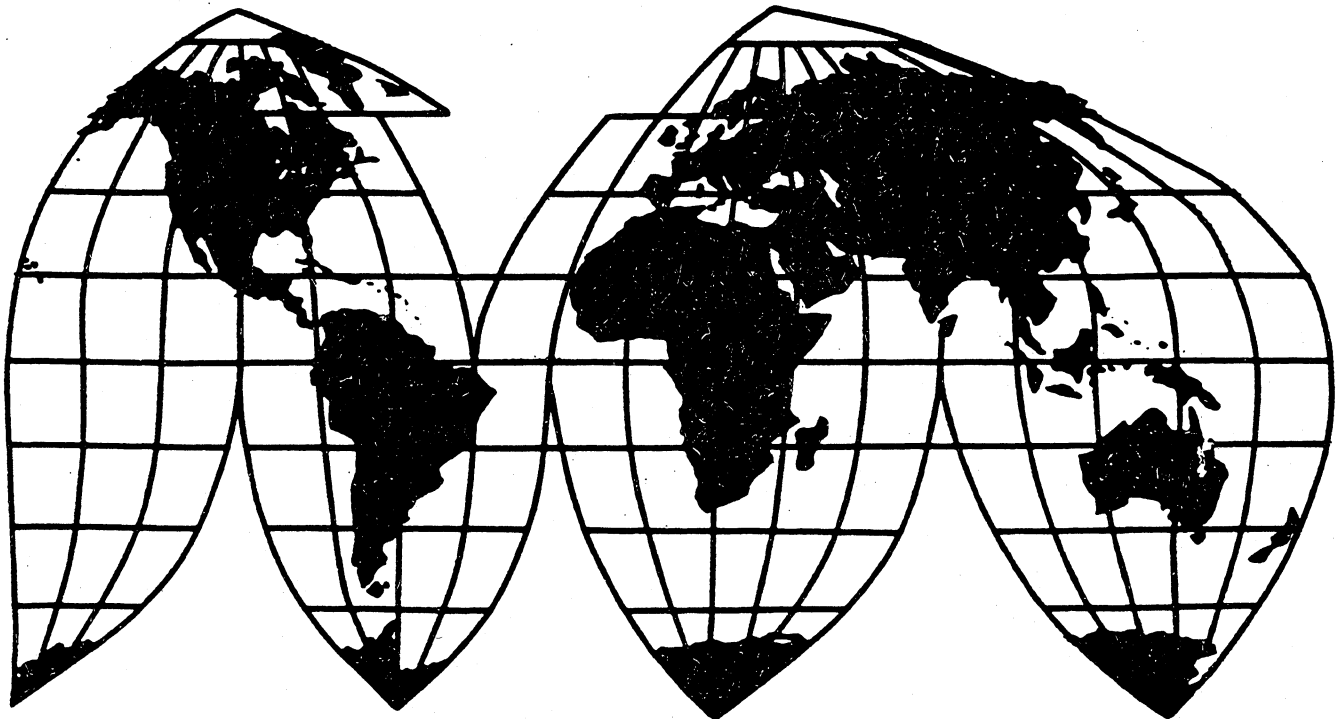
Silicon Carbide From The People's Republic of China

Investigation No. 731-TA-651 (Final)

Publication 2779

June 1994

U.S. International Trade Commission



Washington, DC 20436

U.S. International Trade Commission

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Note.--Information that would reveal confidential operations of individual concerns may not be published and therefore has been deleted from this report.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

PART I
DETERMINATION AND VIEWS OF THE COMMISSION

UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation No. 731-TA-651 (Final)

SILICON CARBIDE FROM THE PEOPLE'S REPUBLIC OF CHINA

Determination

On the basis of the record¹ 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 the People's Republic of China of silicon carbide,² provided for in subheadings 2849.20.10 and 2849.20.20 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).³

Background

The Commission instituted this investigation effective December 8, 1993, following a preliminary determination by the Department of Commerce that imports of silicon carbide from the People's Republic of China 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 26, 1994 (59 F.R. 3735). The hearing was held in Washington, DC, on May 2, 1994, and all persons who requested the opportunity were permitted to appear in person or by counsel.

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

² The imported merchandise covered by this investigation is silicon carbide, regardless of grade or form, containing by weight from 20 to 98 percent, inclusive, silicon carbide and with a grain size coarser than size 325 F (as set by the American National Standards Institute), and inclusive of split sizes. Silicon carbide covered by this investigation typically contains additional impurities: iron, aluminum, silica, silicon, and carbon, as well as calcium and magnesium.

³ Commissioner Lynn M. Bragg did not participate in the determination in this investigation.

VIEWS OF THE COMMISSION

Based on the record in this final investigation, we determine¹ that the industry in the United States producing silicon carbide is neither materially injured nor threatened with material injury² by reason of imports of silicon carbide from the People's Republic of China that have been found by the U.S. Department of Commerce ("Commerce") to be sold in the United States at less than fair value ("LTFV").³

I. LIKE PRODUCT

A. Background and Product Description

To determine whether an industry in the United States is materially injured or is threatened with material injury by reason of the subject imports, the Commission must first define the "like product" and the "industry." Section 771(4)(A) of the Tariff Act of 1930 (the "Act") defines the relevant 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. . . ."⁴ In turn, the Act 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 . . ."⁵

Commerce has identified the single class or kind of imported merchandise subject to this investigation as:

silicon carbide, regardless of grade or form, containing by weight from 20 to 98 percent, inclusive, silicon carbide and with a grain size coarser than size 325 F (as set by the American National Standards Institute), and inclusive of split sizes. Silicon carbide covered by this investigation typically contains additional impurities: iron, aluminum, silica, silicon, and carbon as well as calcium and magnesium.⁶

¹ Commissioner Bragg did not participate in the determination in this investigation.

² Commissioner Crawford determines that neither the industry producing crude silicon carbide nor the industry producing refined silicon carbide is materially injured or threatened with material injury by reason of the subject imports.

³ Whether the establishment of an industry in the United States is materially retarded is not an issue in this investigation. Since we reach a negative determination in this investigation, we need not make a critical circumstances determination under 19 U.S.C. § 1673d(b)(4)(A)(i). See Certain Helical Spring Lockwashers from the People's Republic of China, Inv. No. 731-TA-624 (Final), USITC Pub. 2684 at I-12 n.73 (Oct. 1993).

⁴ 19 U.S.C. § 1677(4)(A).

⁵ 19 U.S.C. § 1677(10). The Commission's like product determinations are factual, and the Commission applies the statutory standard of "like" or "most similar in characteristics and uses" on a case-by-case basis. See Torrington Co. v. United States, 747 F. Supp. 744, 749 n.3 (Ct. Int'l Trade 1990), aff'd, 938 F.2d 1278 (Fed. Cir. 1991). In defining the like product, the Commission generally considers a number of factors including (1) physical characteristics and uses, (2) interchangeability, (3) channels of distribution, (4) customer and producer perceptions, (5) common manufacturing facilities and production employees, and, where appropriate, (6) price. Calabrian Corp. v. United States, 794 F. Supp. 377, 382 n.4 (Ct. Int'l Trade 1992); Torrington, 747 F. Supp. at 749; Asociacion Colombiana de Exportadores de Flores v. United States, 693 F. Supp. 1165, 1168 n.4, 1180 n.7 (Ct. Int'l Trade 1988) ("Asocoflores"). No single factor is dispositive, and the Commission may consider other factors it deems relevant based upon the facts of a particular investigation. See S. Rep. No. 249, 96th Cong., 1st Sess. 90-91 (1979); Torrington, 747 F. Supp. at 748-49. Generally, the Commission requires "clear dividing lines among possible like products" and disregards minor variations among them. Torrington, 747 F. Supp. at 748-49.

⁶ 59 Fed. Reg. 22,585 (1994) (Appendix A to the Report).

Silicon carbide is a crystalline, solid industrial mineral having the chemical formula SiC.⁷ The primary uses of silicon carbide are in the manufacture of abrasives, in refractory applications, and in metallurgical or foundry applications.⁸

Silicon carbide is produced by reacting silica sand and carbon in an electron resistance furnace.⁹ The raw materials are placed around a graphite core and between electrodes through which an electric current is passed. The chemical reaction does not occur uniformly throughout the furnace, but occurs in an expanding cylinder around the graphite core. Thus, when the reaction is complete, the material closest to the center will be richest in silicon carbide.¹⁰ Once removed from the furnace, the silicon carbide is reduced in size using a hydraulic hammer and then fed to successive crushers. After initial crushing, the crude silicon carbide may be sold directly to the foundry industry or to briquetters who form it into briquettes that are resold for foundry applications.¹¹ Alternatively, silicon carbide may be further processed ("refined") for use in abrasive and refractory applications by grinding into grains, magnetically treating to remove iron impurities, and sizing by the use of screens to meet ANSI specifications.¹²

In this final investigation, we considered three like product issues: whether crude and refined silicon carbide are separate like products, whether metallurgical grade and crystalline grade silicon carbide are separate like products, and whether the like product includes silicon carbide briquettes.

B. Whether Crude and Refined Silicon Carbide Are Separate Like Products

In our preliminary determination, we concluded that crude and refined silicon carbide constitute a single like product.¹³ We found that crude silicon carbide is not dedicated for use as refined silicon carbide, since there is an independent market for crude, and that the value added by refining is "not insubstantial." We concluded, however, that the further processing involved in "refining" was "nothing more than a grinding process" insufficient to establish a separate like product, and that crude and refined silicon carbide share the same essential characteristics. Moreover, no party articulated, and we were unable to discern, a clear dividing line between crude and refined products. We stated that we would reconsider this issue in any final investigation.¹⁴

In this final investigation, petitioners again argue that crude and refined silicon carbide constitute a single like product consisting of a continuum of particle sizes.¹⁵ Respondents continue to argue that

⁷ Confidential Report ("CR") at I-5, Public Report ("PR") at II-5.

⁸ Refractory applications include use in incinerators, firebricks for kilns, and lining of furnaces for producing iron and steel. In metallurgical or foundry applications silicon carbide is used as a source of carbon and silicon, as a deoxidant, and as a source of heat in the production of iron and steel. In electric arc furnaces, silicon carbide is used in granular form, while foundries employing cupola furnaces use silicon carbide in the form of briquettes. CR at I-8-9, PR at II-7; Transcript of Commission Hearing (May 2, 1994) at 88-89 ("Tr. ").

⁹ In the United States, carbon is supplied by petroleum coke. In China, carbon may be supplied by either petroleum coke or anthracite coal. CR at I-9, PR at II-7; Tr. at 144, 205-206; Petitioners' Prehearing Brief, Exhibit 12 at 24, 27, 37, 39, and 40.

¹⁰ CR at I-9, PR at II-7. All furnaces produce all grades (i.e., purity levels) of silicon carbide. However, the percentage of a furnace run that consists of crystalline grade (i.e., at least 97% silicon carbide by weight) will be higher (around 50%) if petroleum coke is used than if coal is used (about 10% lower crystalline yield). See Petitioners' Prehearing Brief at Exhibits 10 and 11.

¹¹ CR at I-9, PR at II-7-II-8; Tr. at 33.

¹² CR at I-9-I-11, PR at II-7-II-8. All but one of the domestic silicon carbide producers perform only the last step in this process, the grinding and screening of crude silicon carbide to particular specifications. CR at I-20, PR at II-14. While we adopt the convention of referring to these producers as "refiners" of silicon carbide, we note that their activities do not constitute "refining" in the traditional sense, since they do not chemically transform or purify the silicon carbide, but merely change its size.

¹³ Commissioner Crawford found two like products, crude and refined silicon carbide, based on the existence of an independent market for crude silicon carbide. Silicon Carbide from the People's Republic of China, Inv. No. 731-TA-651 (Preliminary), USITC Pub. 2668 at 7 n.24 (Aug. 1993) ("Preliminary Determination").

¹⁴ Preliminary Determination at 6-8.

¹⁵ Petitioners' Prehearing Brief at 16-21.

crude and refined silicon carbide are separate like products.¹⁶ However, throughout this final investigation, respondents alternately espoused several different definitions of a dividing line between crude and refined.¹⁷

In addressing the question whether a product at an earlier stage of its production process is "like" a finished or further processed product, the Commission generally considers five factors. Those factors were recently refined in Stainless Steel Bar¹⁸ to include: (1) whether the upstream article is dedicated to the production of the downstream article or has independent uses; (2) whether there are perceived to be separate markets for the upstream and downstream articles; (3) differences in the physical characteristics and functions of the upstream and downstream articles; (4) differences in the costs or value of the vertically differentiated articles; and (5) significance and extent of the processes used to transform the upstream into the downstream articles.¹⁹ ²⁰ No single factor is determinative. Based on our analysis of these criteria, we reaffirm our preliminary conclusion that crude and refined silicon carbide constitute a single like product.

In this investigation, the upstream product, crude silicon carbide, is not dedicated to the production of the downstream article, refined silicon carbide. A substantial portion of the crude silicon carbide consumed in the United States in 1993 was sold directly to end users in the foundry industry or to fabricators of silicon carbide briquettes for resale to the foundry industry. The rest of domestic crude production was further processed into refined silicon carbide suitable for abrasive and refractory applications.²¹

With respect to whether there are perceived to be separate markets for crude and refined silicon carbide, the three petitioning companies, which account for well over half of domestic refined production, are integrated producers²² and these integrated producers testified that they perceive a single industry and market.²³ Briquetters are the purchasers most likely to perceive two markets, since only

¹⁶ They argue that petitioners have conceded that the value added by refiners is significant and that, in Antimony Trioxide from the People's Republic of China, Inv. No. 731-TA-517 (Preliminary), USITC Pub. 2395 (June 1991), the Commission declined to include crude antimony trioxide in the like product citing the high cost of further processing. Prehearing Brief on Behalf of Respondents Miller & Co., Seventh Grinding Wheel Factory Import and Export Company, the Import and Export Corporation of Inner Mongolia Autonomous Region, and the Qinghai Provincial Metals and Minerals Import and Export Corporation at 12-17 (the "Miller Respondents"); Transcript of Preliminary Staff Conference (July 12, 1993) at 23 ("Conf. Tr."). The other respondents take no express position on like product issues. Prehearing Brief on Behalf of Transtech, U.S.A., Xiamen Abrasive Company, Shaanxi Minmetals, and Hainan Feitian Electrotech Company, Ltd. (the "Transtech Respondents").

¹⁷ Various witnesses for respondents argued both that "the dividing line is the furnace," such that any processing done after silicon carbide is removed from the furnace results in a refined product, and that silicon carbide is still crude after three initial crushing steps. Tr. at 230, 231-32. See also Respondents' Postconference Brief at 8-9 (either the furnace of 3/4 inch and finer); Miller Respondents' Posthearing Brief at 5 (grit size of 6 mesh or finer is refined).

¹⁸ Stainless Steel Bar from Brazil, India, Italy, Japan, and Spain, Inv. Nos. 731-TA-678-682 (Preliminary), USITC Pub. 2734 at I-12 (Feb. 1994).

¹⁹ Id. At the hearing, the parties were invited to comment on the appropriateness of these criteria. Tr. at 70. Petitioners submitted comments in which they generally agreed that the revised criteria were appropriate but suggested several refinements to the criteria. Petitioners' Posthearing Brief, Response to Questions of Commissioner Nuzum at 7-16. Respondents applied the revised criteria but did not comment on their general appropriateness.

²⁰ Commissioner Crawford finds two like products, crude and refined silicon carbide. She bases her finding on these criteria, particularly the facts that about *** of domestic crude has uses independent of making refined and that there is significant value added in making the refined product. She does not join in the discussion in this subsection B.

²¹ Figure 3, CR at I-19, PR at II-15.

²² Two of the three have related furnaces in Canada. CR at I-20-I-23, PR at II-14-II-16; Table 2, CR at I-23, PR at II-17.

²³ Tr. at 25, 27-28, 33-34, 59, 63. The other five domestic producers are refiners without furnacing capacity.

petitioner Exolon-ESK Company ("Exolon") can supply them with U.S.-produced crude metallurgical grade product. Yet they disagree among themselves whether certain products are crude or refined.²⁴

The most important physical characteristic of both crude and refined silicon carbide is percent silicon carbide content by weight, which is not changed by the refining process. The difference between crude and refined silicon carbide is one of size and sizing control: crude tends to be in larger chunks within a more varied range of sizes (e.g., "one inch and finer" contains everything from chunks an inch across to dust), while refined tends to be in smaller, granular pieces or powders, within tighter size ranges.²⁵

With respect to functions, crude silicon carbide is generally sold for metallurgical applications, including direct sales to foundries and sales to briquetters that sell to foundries, while refined is generally sold to refractory and abrasive applications.²⁶ However, while the parties' industry and economic witnesses recognized a generalized distinction between "crude" and "refined," "processed," or "abrasive grain" silicon carbide based on these end uses,²⁷ the record demonstrates that such general distinctions are blurred in actual practice. Although crude silicon carbide cannot be substituted for refined in abrasive and refractory applications, refined products can be used in place of crude in several circumstances. For example, fine dust ("fines") may be screened out of the product either during initial crushing or during later refining stages. This product, which because it has been finely ground would be classified as refined, is actually used in place of or in conjunction with metallurgical crude in foundry applications.²⁸ In addition, some refined metallurgical grade product can be used either for low-end refractory or high-end foundry applications.²⁹

The value added for fabrication costs excluding SG&A expenses as a share of total costs for the producers of refined silicon carbide in 1993 ranged from *** percent to *** percent.³⁰

With respect to the nature and significance of the further processing performed, we have already noted that "refining" does not have its usual meaning in this industry. Despite the value it adds to the product, the refining process is merely a grinding and screening process. Although it does involve meeting ANSI and end user size specifications, the refining process does not change the chemical structure or composition of the product.³¹ While the U.S. integrated producer makes crude and refined silicon carbide in separate facilities, we do not give much weight to this fact, since at least some of the crushing and grinding equipment used in the crude and refined facilities is the same.³²

In light of all these factors, we conclude, as we did in the preliminary investigation, that the existence of an independent market for crude silicon carbide is not dispositive. Rather, based principally

²⁴ Compare Tr. at 160 (Exolon is sole domestic source of their silicon carbide inputs into briquettes) and 164-65 (only other domestic source is the Government stockpile), with CR at I-100, PR at II-55 (product 1 characterized as crude by one briquetter *** and refined by another ***).

²⁵ Crude metallurgical grade silicon carbide is identified not only by its size (i.e. one inch and finer or 3/4 inch and finer) but by the size range represented in a single product. Product meeting an "inch and finer" specification would contain a mix of particles declining in random distribution from an inch across to fine dust. If "one inch and finer" is a crude product, any mix with a maximum particle size larger than an inch would also be crude, no matter how small the other particles in the mix. By contrast, refined products not only contain particles that are considerably reduced in size, but also fall within much tighter size ranges than crude products. CR at I-6-I-7, PR at II-5-II-6; Tr. at 229-232; specification sheets for Exolon, Norton, Treibacher, Washington Mills, and 3M; Miller Respondents' Posthearing Brief, Exhibit 1 (Electro Abrasives' specification sheets).

²⁶ CR at I-8-I-9, PR at II-7; specification sheets for Exolon, Norton, Treibacher, Washington Mills, 3M, Electro Abrasives, and Detroit Abrasives.

²⁷ Tr. at 31, 33, 41, 59, 62, 66, 74-75, 83, 87, 105, 110-112, 147-48, 229-230.

²⁸ Tr. at 130.

²⁹ Tr. at 75; specification sheets for *** and ***.

³⁰ Memorandum INV-R-089 (May 26, 1994) at I-53 (attached to the Report as Appendix I). Including SG&A expenses, value added ranged from *** to *** percent.

³¹ CR at I-6 & n.9, I-9, PR at II-5; Petition at 6; Petitioners' Prehearing Brief at 8. Refiners may also magnetically treat the product to remove iron impurities, wash and/or dry it, and package it for sale. *Id.*; Tr. at 28, 33, 145, 147. Thus this investigation is unlike Antimony Trioxide, in which the refining process involved chemical purification of the product.

³² Tr. at 127-30.

on the relatively unsophisticated nature of the refining process,³³ the fact that crude and refined silicon carbide share the same physical characteristics, the use of the same or similar machinery to perform initial crushing and further refining, and the competition among crude and refined silicon carbide in certain metallurgical applications, we find that crude and refined silicon carbide are a single like product.

C. Whether Metallurgical and Crystalline Grades of Silicon Carbide Are Separate Like Products

In our preliminary determination, we rejected respondents' argument that crude and refined silicon carbide like products should be further subdivided into metallurgical and crystalline grades.³⁴ Based on a record of transactions involving silicon carbide with content by weight distributed throughout the 40 to 98 percent range, we found a continuum of degrees of purity. We also found that, while abrasive applications require the high purity crystalline grade, customers purchasing silicon carbide for foundry and (to some extent) refractory applications can purchase product with a wide range of purities and blend them to the desired purity level, making the grades interchangeable across a significant portion of end uses. We noted that both grades are necessarily produced in the same furnace at the same time. Both grades are also refined using the same technology, although separate production lines are used to preserve the purity of the crystalline grade. Finally, we found that prices increase incrementally as purity increases and grain size decreases.³⁵

In this final investigation, petitioners continue to argue that there is only one like product. Respondents contend that crystalline and metallurgical grades have different physical characteristics (percent silicon carbide content); that the former is used in abrasive and refractory applications while the latter is used in foundry applications; and that product intended for these different end uses travels in different channels of trade, is perceived differently by consumers, and is sold at different prices.³⁶

As we stated in our preliminary determination, the Commission generally does not find separate like products based on different grades of a chemical or mineral product.³⁷ In addition to the grounds we relied upon in our preliminary determination, the record in this final investigation provides additional evidence demonstrating the interchangeability of metallurgical and crystalline grades in foundry and refractory applications.³⁸ Moreover, crystalline refined products are not necessarily subject to more

³³ The Commission has generally been reluctant to make like product distinctions based solely on size. See, e.g., Sparklers from the PRC, Inv. No. 731-TA-464 (Final), USITC Pub. 2387 at 5-6 (June 1991); Ball Bearings, Mounted or Unmounted, and Parts Thereof from Argentina, Austria, Brazil, Canada, Hong Kong, Hungary, Mexico, the People's Republic of China, Poland, the Republic of Korea, Spain, Taiwan, Turkey and Yugoslavia, Inv. Nos. 701-TA-307 and 731-TA-498-511 (Preliminary), USITC Pub. 2374 at 11 (Apr. 1991); see also Citizens Watch Co. v. United States, 723 F. Supp. 383, 389 (Ct. Int'l Trade 1990).

³⁴ The Commission defined metallurgical grade as containing 85-90 percent or less SiC by weight and crystalline grade as containing 97-98 percent SiC. Preliminary Determination at 8-9.

³⁵ Preliminary Determination at 9-10.

³⁶ Miller Respondents' Prehearing Brief at 17-18.

³⁷ See, e.g., Saccharin from China and Korea, Inv. Nos. 731-TA-675-76 (Preliminary), USITC Pub. 2716 at I-6-I-7 & n.20 (Jan. 1994); Sebacic Acid from the People's Republic of China, Inv. No. 731-TA-653 (Preliminary), USITC Pub. 2676 at 8 & n.18 (Sept. 1993); Ferrosilicon from Russia and Venezuela, Inv. Nos. 303-TA-23, 731-TA-568 and 570 (Final), USITC Pub. 2650 at 6-7 & n.22 (June 1993) (low and high content ferrosilicon (defined by percent ferrosilicon by weight) a single like product); Silicon Metal from the People's Republic of China, Inv. No. 731-TA-472 (Final), USITC Pub. 2385 at 10 & n.29 (June 1991).

³⁸ See Tr. at 73-74 and Petitioners' Posthearing Brief, Response to Questions of Commissioner Nuzum at 19 and Exhibit 3 (purchases by briquetters of crystalline crude from the Government stockpile); Tr. at 138 and Petitioners' Posthearing Brief at 3 n.3 (General Motors buys "high" and "low" grade products and mixes them in foundry applications); Petitioners' Posthearing Brief, Exhibit 2 (*** sold small amount of ***); Petitioners' Posthearing Brief, Exhibit 5 at 1 (*** sales of crystalline to briquetters). The record also demonstrates that crystalline grade is commonly used in refractory applications. Petitioners' Prehearing Brief, Exhibit 2; Petitioners' Posthearing Brief, Exhibit 3 at 2; *** specification sheet for *** (97% plus SiC product sold for refractory applications).

(continued...)

processing than metallurgical refined products and cannot always be distinguished on the basis of grain size.³⁹

Thus, the evidence gathered in this final investigation showing, among other things, that crystalline and metallurgical grades actually are used interchangeably in two of the three major applications, reinforces our preliminary determination that crystalline and metallurgical grades of silicon carbide are not separate like products. Based on this evidence as well as for the reasons stated in our preliminary determination, we conclude that metallurgical and crystalline grades of silicon carbide constitute a single like product.

D. Whether the Like Product Includes Briquettes

In our preliminary determination, we rejected respondents' argument that the like product should include briquettes made with silicon carbide for use in the foundry industry. We concluded that briquettes are not silicon carbide, but rather a downstream product containing silicon carbide. We further concluded that the like product should not be expanded downstream to include briquettes.⁴⁰ In the final investigation, respondents continue to argue that briquettes are a form of refined silicon carbide, but did not proffer new evidence to support their argument.⁴¹ Petitioners supported our preliminary analysis.⁴²

Because the Commission did not receive any new evidence suggesting that briquettes should be included in the like product, we reaffirm our preliminary determination that briquettes are not like silicon carbide, for the reasons stated in our preliminary determination.^{43 44}

II. DOMESTIC INDUSTRY AND RELATED PARTIES

A. Domestic Industry⁴⁵

Only one domestic producer, Exolon, produces crude silicon carbide at a furnacing facility in the United States. The other U.S. producers engage only in the grinding and screening of crude silicon

³⁸ (...continued)

Abrasives manufacturers can only use the crystalline grade. Petitioners' Prehearing Brief at 29. However, complete interchangeability is not required to include various articles within a single like product. *See, e.g., Asocoflores*, 693 F. Supp. at 1168; *Fresh Garlic from China*, Inv. No. 731-TA-683 (Preliminary), USITC Pub. 2755 at I-8 & n.26 (Mar. 1994); *Class 150 Stainless Steel Threaded Pipe Fittings from Taiwan*, Inv. No. 731-TA-658 (Preliminary), USITC Pub. 2678 at 9 & n.22 (Sept. 1993) (one like product despite one-way interchangeability).

³⁹ Petitioners' Posthearing Brief, Exhibit 5 at 2.

⁴⁰ We reasoned that briquettes contain ingredients in addition to silicon carbide, are shaped as bricks rather than as a powder, are produced by entirely different producers through a different production process, are not interchangeable with refined silicon carbide, and sell at different prices from refined silicon carbide. Preliminary Determination at 10-11.

⁴¹ Respondents' Postconference Brief at 16-17; Miller Respondents' Prehearing Brief at 21-22.

⁴² Petitioners' Prehearing Brief at 31-32.

⁴³ The Commission has been reluctant to include downstream products when the downstream producers' economic interests with respect to the subject imports may be adverse to those of domestic producers of the like product. *Fresh Garlic from China*, Inv. No. 731-TA-683 (Preliminary), USITC Pub. 2755 at I-9 & n.37 (Mar. 1994); *Nitromethane from the People's Republic of China*, Inv. No. 731-TA-650 (Preliminary), USITC Pub. 2661 at 10 (July 1993); *Tungsten Ore Concentrates from the People's Republic of China*, Inv. No. 731-TA-497 (Preliminary), USITC Pub. 2367 at 10 (Mar. 1991).

⁴⁴ We also reaffirm our preliminary determination that the like product does not include silicon carbide containing less than 20 percent or more than 98 percent ("ultra pure") SiC or with a grain size finer than 325F ("micro grit") for the reasons stated in the preliminary determination. Neither party challenges this finding and no pertinent new evidence was received.

⁴⁵ Commissioner Crawford finds two domestic industries producing crude and refined silicon carbide. However, she joins in the discussion concerning Treibacher below.

carbide into refined silicon carbide.⁴⁶ Petitioners Treibacher Schleifmittel Corp. ("Treibacher") and Saint-Gobain/Norton Industrial Ceramics Corp. ("Norton") are integrated producers, but their related furnacing facilities are located in Canada.⁴⁷ Other U.S. refiners purchase their crude requirements from Exolon or import crude silicon carbide from Canada, the PRC, or various other countries.⁴⁸

In our preliminary determination, we concluded that producers that perform only refining activities in the United States engage in sufficient U.S. production-related activities to be considered part of the domestic industry⁴⁹ based on their substantial investment in U.S. production facilities,⁵⁰ the capital-intensive nature of those facilities, and the "not insubstantial" value added through refining.⁵¹ We also noted that the Commission has consistently included grinders of cement clinker in the domestic cement industry.⁵²

In this final investigation, no party challenges our preliminary finding that refiners are domestic producers nor has any new evidence been obtained that would support a different conclusion. We therefore reaffirm our preliminary finding that domestic refiners should be included in the domestic industry, for the reasons stated in our preliminary determination.

An additional issue arose in this final investigation with respect to petitioner Treibacher's imports of metallurgical silicon carbide from its Canadian furnace for sale to foundries in the United States. Before it is sold to U.S. foundries, the product is sent to Treibacher's U.S. facility, where it is screened, dried, and bagged.⁵³ The screening process merely removes fines from the product but does not otherwise control for size and the product does not undergo any grinding in the United States.⁵⁴ Treibacher nevertheless reported its sales of this product as U.S. shipments of refined silicon carbide.⁵⁵

In analyzing whether certain types of finishing operations constitute domestic production, the Commission applies the same methodology that it uses to determine whether a company is a domestic producer, focusing on the overall nature of its production-related activities in the United States.⁵⁶ As

⁴⁶ CR at I-20, PR at II-14-II-15.

⁴⁷ Treibacher's related furnace facility is located in Niagara Falls, Ontario, 3 miles from its U.S. facility in New York. Norton's U.S. refining facility is in Worcester, MA and the related furnace in Quebec. In both cases, the furnace and refining facility are owned by a common parent. CR at I-20-I-21, PR at II-15.

⁴⁸ A small amount of crystalline crude silicon carbide is sold annually from the U.S. Government stockpile. CR at I-16, PR at II-12.

⁴⁹ In considering whether a firm is a domestic producer, the Commission has looked to the overall nature of its production-related activities in the United States. Specifically, the Commission has examined six factors: (1) source and extent of the firm's capital investment; (2) technical expertise involved in U.S. production activities; (3) value added to the product in the United States; (4) employment levels; (5) quantity and type of parts sourced in the United States; and (6) any other costs and activities in the United States directly leading to production of the like product. No single factor is determinative, and the Commission may consider any other factors it deems relevant in light of the specific facts of any investigation. See, e.g., Certain Carbon Steel Butt-Weld Pipe Fittings from China and Thailand, Inv. Nos. 731-TA-520 and 521 (Final), USITC Pub. 2528 (June 1992).

⁵⁰ Total assets dedicated to the production of refined silicon carbide in the United States in 1993 were ***, compared with *** for Exolon's total assets engaged in the production of crude silicon carbide. Table 25, CR at I-64, PR at II-37.

⁵¹ Preliminary Determination at 12-13. Value added by refining ranges from *** to *** percent. Memorandum INV-R-089 at I-53. We noted that refiners import a sizeable percentage of their crude silicon carbide needs, but discounted the significance of this fact in light of Exolon's inability to satisfy domestic demand. Preliminary Determination at 12-13.

⁵² Preliminary Determination at 13 n.59.

⁵³ Tr. at 28; CR at I-20, PR at II-15.

⁵⁴ Treibacher confirmed that none of these imports underwent grinding or crushing in 1991 and 1992, and that only a small volume of these shipments underwent any grinding or crushing in 1993. Telephone note regarding conversations between Mr. Woodley Timberlake, Office of Investigations, and Mr. Chris Ciccareli, Director of Treibacher's Canadian operations and Ms. Sharon Sciarrino, Controller of Treibacher (May 24, 1994). All of the U.S. shipments of refined silicon carbide reported by Norton actually underwent grinding in the United States. Telephone note regarding conversation between Mr. Woodley Timberlake and Mr. John Crowe, Business Director of Norton (May 25, 1994).

⁵⁵ Memorandum INV-R-089.

⁵⁶ Class 150 Stainless Steel Threaded Pipe Fittings from Taiwan, Inv. No. 731-TA-658 (Preliminary), USITC Pub. 2678 at 13 (Sept. 1993); see also note 49, *supra*.

noted above, our conclusion that refining constitutes domestic production was based principally on the value added by refining and the significant capital investment in refining equipment. The value added by Treibacher in its screening, drying and bagging operation is approximately half that involved in refining.⁵⁷ Moreover, the screening, drying and bagging process does not make use of the grinding equipment or the precise sizing screens which constitute a large part of the relevant U.S. capital investment.⁵⁸ Accordingly, we conclude that Treibacher's U.S. sales of metallurgical refined product that is not ground in the United States are not sales of a domestic product. We have therefore reclassified these sales from U.S. producers' domestic shipments to domestic shipments of non-subject imports from Canada.⁵⁹

B. Related Parties

The related parties provision, 19 U.S.C. § 1677(4)(B), allows for the exclusion of certain domestic producers from the domestic industry for the purposes of an injury determination. Applying the provision involves two steps. First, the Commission must determine whether a domestic producer meets the definition of a related party. The statute defines a related party as a domestic producer who is either related to exporters or importers of the product under investigation, or is itself an importer of that product. If a producer is "related" under section 771(4)(B), the Commission then determines whether "appropriate circumstances" exist for excluding the producer in question from the definition of the domestic industry.⁶⁰ Exclusion of a related party is within the Commission's discretion based upon the facts presented in each investigation.⁶¹

Both *** and *** reported importing crude silicon carbide from the PRC during the period of investigation.⁶² These two producers are therefore related parties within the meaning of the statute.⁶³ None of the parties addressed whether appropriate circumstances exist to exclude *** or *** from the domestic industry.

*** primary interest would appear to lie in domestic production rather than importing.⁶⁴ Although *** financial performance is significantly better than that of the industry as a whole,⁶⁵ we find that this result is not by virtue of the company's limited imports from the PRC. *** imports were minimal both in absolute terms and relative to its total shipments, and its inclusion would not skew our data.⁶⁶ Its financial performance was comparable with or somewhat worse than that of the industry as

⁵⁷ Treibacher reported fabrication costs for refined silicon carbide as a share of total production costs of *** percent, Memorandum Inv-R-089 at I-53, while its value added in the screening, drying and bagging operation is approximately *** percent (derived from data supplied by Treibacher in response to the Commission's producer questionnaire).

⁵⁸ Petitioners concede that screening is not a complex process and that screens are not specialized equipment. Petitioners' Posthearing Brief, Exhibit 4 at 3 (Affidavit of John Crowe) ("a screen is a screen").

⁵⁹ The adjusted data are presented in Memorandum INV-R-089 (Appendix I to the Report).

⁶⁰ 19 U.S.C. § 1677(4)(B).

⁶¹ See Torrington Co. v. United States, 790 F. Supp. 1161, 1168 (Ct. Int'l Trade 1992), *aff'd*, Nos. 92-1383 and -1392 (Fed. Cir., Mar. 5, 1993). The rationale for the related parties provision is that domestic producers who are related parties may be shielded from any injury caused by subject imports. *Id.* at 1168; S. Rep. No. 249, 96th Cong. 1st Sess. at 83 (1979). Thus, including these parties would distort the analysis of the condition of the domestic industry. See, e.g., Sandvik AB v. United States, 721 F. Supp. at 1331-32 (related party appeared to benefit from dumped imports).

⁶² *** reported importing ***. Importers Questionnaire Response of *** at 10. *** reported importing *** in 1993. Importers Questionnaire Response of *** at 12.

⁶³ Under Commissioner Crawford's analysis, *** is not a related party, since it imported crude but produces only refined.

⁶⁴ *** claims that it imported silicon carbide in order to ***. CR at I-31; PR at II-21. Its motive appears also to have been, at least in part, to avoid losing customers to Chinese imports during periods when customer demand exceeded its supply ***. CR at I-82-I-83, PR at II-48-II-49; Tr. at 154. Such a motive supports the proposition that the company's principal interest lies in domestic production rather than importation.

⁶⁵ Memorandum INV-R-089, Tables 9a and 10a.

⁶⁶ Producers Questionnaire Response of *** at 20.

a whole.⁶⁷ We therefore do not find appropriate circumstances to exclude either producer from the domestic industry.⁶⁸

In addition, both Exolon and *** reported purchases of Chinese silicon carbide from unrelated domestic sources.⁶⁹ Absent evidence that either company controls a significant volume of imports through a "special relationship" with any producer or importer of Chinese silicon carbide,⁷⁰ we conclude that the companies in question are not related parties by reason of these particular purchases.

III. CONDITION OF THE DOMESTIC INDUSTRY⁷¹

In assessing whether the domestic industry is materially injured by reason of dumped imports, the Commission considers all relevant economic factors which have a bearing on the state of the industry in the United States. These include output, sales, inventories, capacity utilization, market share, employment, wages, productivity, profits, cash flow, return on investment, ability to raise capital, and research and development. 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."⁷² In evaluating the condition of the domestic industry, we look at the domestic industry as a whole.⁷³

A significant condition of competition distinctive to this industry is its division into crude and refined market segments, as well as metallurgical and crystalline subsegments.⁷⁴ Crude silicon carbide is an intermediate product that may be used either in foundry applications or in the production of refined silicon carbide. Refined silicon carbide is typically used for applications in the refractory and abrasives industries.⁷⁵

The vast majority of subject imports consists of metallurgical grade crude silicon carbide, the principal purchasers of which use it for foundry applications.⁷⁶ By contrast, a significant portion of domestic production is refined crystalline grade silicon carbide.⁷⁷ Metallurgical grade crude silicon

⁶⁷ Memorandum INV-R-089, Tables 9a and 10a.

⁶⁸ Commissioner Crawford concurs in the determination that "appropriate circumstances" do not exist to exclude these two producers from the domestic industry because she finds that their primary interest is production, not importation.

⁶⁹ Exolon reported purchasing ***. *** reported purchasing ***. CR at I-33 n.58; PR at II-22 n.57.

⁷⁰ See Fresh Garlic from China, Inv. No. 731-TA-683 (Preliminary), USITC Pub. 2755 at I-14 (Mar. 1994); Certain Carbon Steel Butt-Weld Pipe Fitting from China and Thailand, Inv. Nos. 731-TA-520 and 521 (Final), USITC Pub. 2528 at 11-12 (June 1992).

⁷¹ Commissioner Crawford joins in this general discussion, although she finds that the market segments are separate industries.

⁷² 19 U.S.C. § 1677(7)(C)(iii). Petitioners argue that the business cycle for silicon carbide is synchronized with those of downstream industries and industries producing other inputs for the same downstream industries, and that rising demand, prices and production in downstream iron and steel and abrasive industries and in other input industries like scrap metal and ferrosilicon "set a standard" for the performance the silicon carbide industry should be experiencing at the peak of its business cycle. Petitioners' Prehearing Brief at 35-38 and Economic Exhibit 1. We decline to make the proposed cross-sectoral comparisons. See Softwood Lumber from Canada, Inv. No. 701-TA-312 (First Remand), USITC Pub. 2689 at 11-12 (Oct. 1993).

⁷³ See, e.g., Welded Steel Pipe from Malaysia, Inv. No. 731-TA-644 (Preliminary), USITC Pub. 2620 at 19-20 and n.79 (Apr. 1993) ("The Commission may take into account the departures from an industry or the unique circumstances of individual companies, but ultimately must assess the condition of the industry as a whole, and not on a company-by-company basis."), citing Metallwerken Nederland B.V. v. United States, 728 F. Supp. 730, 735 (Ct. Int'l Trade 1989).

⁷⁴ For Chairman Newquist, the existence of "market segments" and "subsegments" is not an important condition of competition. In his view, such alleged segments bear more directly on the like product definition. Because he has found one like product, Chairman Newquist believes further discussion of the crude and refined segments and subsegments is irrelevant, except as necessary due to limitations in gathering of industry data.

⁷⁵ CR at I-8-I-9, PR at II-7.

⁷⁶ Figure 8, CR at I-75, PR at II-45; Tr. at 142, 150, 162-63, 173; Conf. Tr. at 84, 119-121.

⁷⁷ Figure 4, CR at I-27, PR at II-19. Refined metallurgical production is overstated in this figure. See Memorandum INV-R-089.

carbide cannot be used to produce crystalline grade refined silicon carbide⁷⁸ nor do the two products compete in any significant way in end-use markets.⁷⁹ Therefore, there is no apparent competition between the vast majority of imports and the portion of domestic production that is sold in the largest domestic market segment.

Another condition of competition in this industry is its dependence on imports of crude silicon carbide. Even operating at full capacity, Exolon, the only domestic producer of crude silicon carbide, would fall far short of meeting demand.⁸⁰ Aside from Exolon, the only domestic source of crude silicon carbide is the Defense National Stockpile Center, which is liquidating its 32,256 short ton strategic reserve of crude crystalline silicon carbide by small amounts every year.⁸¹ Imports of crude silicon carbide are therefore necessary to supply both foundry applications and domestic producers' refining operations. Over the period of investigation, non-subject imports from Canada accounted for by far the largest share of silicon carbide imports.⁸²

In order to avoid double counting or other aberrations caused by the use of crude silicon carbide in the production of refined silicon carbide, data on the condition of the domestic industry must be evaluated separately for the crude and refined segments, except in the case of financial data.⁸³ Nevertheless, our analysis is based on the condition of the silicon carbide industry as a whole.⁸⁴

Apparent U.S. consumption by quantity of crude silicon carbide, including that consumed in the production of refined silicon carbide, *** by over *** percent from 1990 to 1991, then *** from 1991 to 1993, for a net *** of *** percent.⁸⁵ Apparent U.S. consumption by value of crude silicon carbide *** over the period, *** from 1990 to 1991 then *** between 1991 and 1993 to *** its 1990 level.⁸⁶ Apparent U.S. consumption of refined silicon carbide by quantity declined by over 13 percent

⁷⁸ Conf. Tr. at 15 (refurnacing required).

⁷⁹ As we noted above, some crystalline grade byproduct in the form of fine dust either competes with or complements the use of metallurgical crude in foundry applications. However, abrasive or refractory grade refined silicon carbide (excluding byproducts) is generally too expensive to be used in place of metallurgical crude in foundry applications. Tr. at 148.

⁸⁰ CR at I-72, PR at II-43; compare Table 3, CR at I-26, PR at II-19, with Table 1, CR at I-17, PR at I-13. As we discuss *infra*, Exolon's crude silicon carbide production facility did operate at near full capacity throughout the period of investigation.

⁸¹ The stockpile's administrators are required by law to sell off their reserves in a manner that will not disrupt the market. In response to complaints from Exolon and other industry representatives, annual sales from the stockpile declined from 10,200 short tons in 1990 to 4,250 tons in fiscal 1993. Preliminary Report at Appendix F; CR at I-16, PR at II-12.

⁸² Table F-1 and Figure F-1, CR and PR at F-2 and F-6. Imports from the PRC exceeded imports from Canada in volume in 1993.

⁸³ CR at I-24, PR at II-17. Based on information obtained in the preliminary investigation, questionnaires initially defined crude as "one inch and coarser." Although the parties had an opportunity to comment on the crude/refined definitions before the questionnaires were mailed, and petitioners commented extensively on other parts of the questionnaires, no party comments on this issue were received at that time. Based on later comments by questionnaire recipients, staff instructed questionnaire recipients to correct the definition to "one inch and finer." Telephone note of conversations between Woodley Timberlake, Office of Investigations, and questionnaire recipients (March 1, 1994).

⁸⁴ We note that neither the statute nor the legislative history requires the Commission to adopt any particular analysis when the market consists of several segments. Copperweld Corp. v. United States, 682 F. Supp. 552, 566 (Ct. Int'l Trade 1988). Thus, the Commission has in the past evaluated a variety of segmented markets in light of the particular features of the industry. See, e.g., Calcium Aluminate Cement and Cement Clinker from France, Inv. No. 731-TA-645 (Final), USITC Pub. 2772 (May 1994) (one market with two end use segments); New Steel Rails from Japan, Luxembourg, and the United Kingdom, Inv. Nos. 731-TA-557-559 (Preliminary), USITC Pub. 2524 at 19 (June 1992) (one market consisting of multiple shape and grade segments); Mechanical Transfer Presses from Japan, Inv. No. 731-TA-429 (Final), USITC Pub. 2257 at 26 n.26 (Feb. 1990) (one market consisting of two segments).

⁸⁵ Table C-1, CR and PR at C-2. Apparent consumption of crude silicon carbide ***. Table 1, CR at I-17, PR at II-13.

⁸⁶ Table 1, CR at I-17, PR at II-13. By value, apparent consumption ***. Table 1, CR at I-17, PR at II-13.

between 1990 and 1991, recovering somewhat from 1991 to 1993 for a net decline of 4.8 percent.⁸⁷ By value, apparent U.S. consumption of refined silicon carbide fell from 1990 to 1992 then rose in 1993 to less than its 1990 level.⁸⁸

During the period of investigation, Exolon's production of crude silicon carbide ***, and the company operated at very high levels of capacity utilization.⁸⁹ U.S. production of refined silicon carbide declined from *** short tons in 1990 to *** tons in 1991 and *** tons in 1992, then rose to *** tons in 1993. Average-of-period capacity utilization for refined silicon carbide fell from *** percent in 1990 to *** percent in 1991 and *** percent in 1992, then rose to *** percent in 1993.⁹⁰ U.S. producers' capacity for the production of crude silicon carbide ***, while capacity for the production of refined silicon carbide rose from 106,750 short tons in 1990 to 107,220 tons in 1991 and 1992, then declined to 105,020 tons in 1993, for an overall decline of less than 2 percent.⁹¹

Exolon's U.S. shipments of crude silicon carbide, excluding product that was consumed internally, *** over the period of investigation, for an overall *** percent. Exports of crude silicon carbide *** in both volume and value over the period of investigation, but ***.⁹² U.S. shipments of refined silicon carbide, including internal transfers for further downstream processing, declined from *** short tons in 1990 to *** tons in 1991 and *** tons in 1992, then rose to *** tons in 1993. Exports of refined silicon carbide declined irregularly over the period of investigation.⁹³

Exolon's end-of-period inventories of crude silicon carbide fluctuated over the period of investigation, declining from 1990 to 1991, rising significantly from 1991 to 1992, and declining in 1993 to below their 1990 level. The ratio of Exolon's crude inventories to its total shipments followed the same pattern.⁹⁴ U.S. producers' inventories of refined silicon carbide declined from *** short tons in 1990 to *** short tons in 1991, rose to *** tons in 1992, and declined to *** tons in 1993. The ratio of refined inventories to domestic producers' U.S. shipments fluctuated between 17 and 22 percent.⁹⁵

The average number of production and related workers producing crude silicon carbide *** over the period of investigation. Hours worked by such workers ***, while total wages, total compensation, and hourly wages also ***. Productivity *** slightly.⁹⁶ The average number of production and related workers producing refined silicon carbide declined by 11 percent over the period, with comparable declines in most other employment indicators.⁹⁷ The significance of this data is limited, however, by the fact that employment in this capital-intensive industry is very low.⁹⁸

Domestic producers' net sales of silicon carbide declined from \$*** in 1990 to \$*** in 1991 and \$*** in 1992, then rose to \$*** in 1993. Nevertheless, the industry realized positive operating income in each period, and the operating income margin remained virtually constant at about 10 percent.⁹⁹

⁸⁷ Memorandum INV-R-089, Table C-2a. Apparent consumption of refined silicon carbide fell from 62,913 tons in 1990 to 54,577 tons in 1991, then rose to 54,976 in 1992 and 59,880 in 1993. *Id.*, Table 1a.

⁸⁸ *Id.*, Table C-2a. Apparent consumption of refined silicon carbide by value fell from \$53,907,000 in 1990 to \$49,159,000 in 1991 and \$48,158,000 in 1992, then rose to \$51,063,000 in 1993. *Id.*, Table 1a.

⁸⁹ Table 3, CR at I-26, PR at II-19; Table C-1, CR and PR at C-2.

⁹⁰ Memorandum INV-R-089, Table 3a.

⁹¹ Table 3, CR at I-26, PR at II-19; Table C-2, CR and PR at C-3; Memorandum INV-R-089, Tables 3a and C-2a.

⁹² Table 4, CR at I-29, PR at II-20. Exolon's domestic shipments ***. Exolon's company transfers declined over the period ***. *Id.*

⁹³ Memorandum INV-R-089, Table 4a.

⁹⁴ Table 6, CR at I-37, PR at II-24. Exolon's crude silicon carbide inventories were ***.

⁹⁵ Memorandum INV-R-089, Table 6a.

⁹⁶ Table 7, CR at I-41, PR at II-26.

⁹⁷ *Id.*

⁹⁸ Table 7, CR at I-41, PR at II-26. Total employment in the domestic production of silicon carbide in 1993 was *** for crude and 98 for refined.

⁹⁹ Memorandum INV-R-089, Table 9a. In fact, these data are understated since they do not include ***, which, if included, would cause the operating income margin to be higher in every year. Table 9, nn. 2-4, CR at I-46, PR at II-30.

Capital expenditures on all silicon carbide rose irregularly over the period of investigation. The value of total assets employed in Exolon's crude silicon carbide operations *** over the period, while the value of total assets employed in the production of refined silicon carbide rose moderately. Return on total assets for crude silicon carbide production *** over the period, while return on total assets for refined silicon carbide production declined significantly.¹⁰⁰ However, no producer reported any definite investment plans that were cancelled or postponed due to the effects of the subject imports.^{101 102}

IV. NO MATERIAL INJURY BY REASON OF THE SUBJECT IMPORTS¹⁰³

In determining whether a domestic industry is materially injured by reason of the imports that Commerce has determined are sold at LTFV, the statute directs the Commission to consider the volume of imports, their effect on prices for the like product, and their impact on domestic producers of the like product.¹⁰⁴ Although the Commission may consider causes of injury other than the LTFV imports, it is not to weigh causes.¹⁰⁵ For the reasons discussed below, we find that the domestic industry producing silicon carbide is not materially injured by reason of LTFV imports of silicon carbide from the People's Republic of China.

A. Volume of the Subject Imports

The volume of imports¹⁰⁶ of crude silicon carbide from the PRC by quantity declined by 32 percent from 17,310 short tons in 1990 to 11,794 tons in 1991, then doubled to 23,471 tons in 1992 and rose again to 53,007 tons in 1993, for an overall rise of over 200 percent. By value, subject imports of crude silicon carbide followed the same pattern.^{107 108}

¹⁰⁰ Tables 25 and 26, CR at I-64-I-65, PR at II-37.

¹⁰¹ CR and PR at Appendix D. Exolon's plans with respect to its crude silicon carbide production capacity are addressed infra.

¹⁰² Based on their analysis of these indicators, Chairman Newquist and Commissioner Rohr find that the domestic industry is not materially injured. They therefore do not reach the issue of whether material injury is by reason of the subject imports.

¹⁰³ Although she reaches the same conclusions, Commissioner Crawford does not join in the discussion in the following sections. See her Separate Views.

¹⁰⁴ 19 U.S.C. § 1677(7)(B)(i). The Commission also may consider "such other economic factors as are relevant to the determination." Id.

¹⁰⁵ See, e.g., Citrosuco Paulista, S.A. v. United States, 704 F. Supp. 1075, 1101 (Ct. Int'l Trade 1988). For each Commissioner's interpretation of the statutory requirement of material injury by reason of LTFV imports, see Stainless Steel Bar from Brazil, India, Italy, Japan, and Spain, Inv. Nos. 731-TA-678-682 (Preliminary), USITC Pub. 2734 at nn.119-121 (Feb. 1994).

¹⁰⁶ We disagree with petitioners' proposal that we use official statistics for crude imports and our questionnaire data for refined imports. We agree with petitioners that official statistics are unreliable, because there is evidence that some importers are reporting dutiable imports of refined products as crude, which is duty-free. CR at I-14, PR at II-11; Tr. at 60. The same incentive does not apply with respect to Commission questionnaires. The disparity in the amounts of crude and refined products reported in our data and official statistics may be accounted for by the fact that we adopted somewhat different definitions of crude and refined silicon carbide than are used in the HTS. Moreover, we do not believe it appropriate to use one set of data compiled according to one definition for crude and a different one for refined, which could result either in double counting or undercounting of imports. Finally, we note that throughout this investigation, petitioners, citing their like product argument, have declined to assist the Commission in assuring that crude and refined silicon carbide are properly defined for purposes of the data breakouts necessary to avoid double counting. Tr. at 74-75, 105, 125-26. Accordingly, we believe our questionnaire data are the best information available for purposes of our analysis in this investigation.

¹⁰⁷ Table 29, CR at I-74, PR at II-44.

¹⁰⁸ Vice Chairman Watson notes that competition in the domestic silicon carbide industry may be limited by the fact that the vast majority of the subject imports are of crude metallurgical silicon carbide, whereas greater than half of total U.S. shipments of silicon carbide are of refined silicon carbide.

The volume and value of imports of refined silicon carbide from the PRC rose steadily from a very low level but remained small at all times in absolute terms.¹⁰⁹ Subject refined imports were at all times a very small portion of total imports from the PRC.¹¹⁰ Moreover, a significant portion of these refined imports constituted byproducts in the form of fine powders or dusts used principally in foundry applications, rather than abrasive or refractory grade refined products.¹¹¹

The market share in terms of quantity held by the subject imports of crude silicon carbide rose slightly from a moderate presence from 1990 to 1991, rose significantly from 1991 to 1992, and rose again by a much smaller amount from 1992 to 1993. In terms of value, subject crude imports followed the same pattern, with the exception of a slight decline between 1991 and 1992.¹¹² As we noted above, however, Exolon lacks the production capacity to meet a substantial portion of domestic demand for crude silicon carbide and imports are therefore necessary in this market. In this instance, the 17 percentage point gain in market share by quantity by the subject crude imports over the period of investigation was entirely accounted for by a 17 percentage point decline in the market share of non-subject imports.¹¹³ Because Exolon was operating at near capacity with relatively constant production and shipments throughout the period, the fluctuations in its market share are attributable to consumption trends, not subject imports or non-subject imports.¹¹⁴

The market share by quantity of subject imports of refined silicon carbide rose consistently over the period, but started at well under *** percent and remained at a relatively low level. Their share by value was even lower.¹¹⁵

In sum, subject imports of crude silicon carbide, although large, have displaced non-subject imports without a discernable effect on the volume or market share of domestic production. Subject refined imports, although rising, hold a very small share of the market for all silicon carbide. Accordingly, we find neither the volume of the subject imports nor the increase in that volume to be significant.¹¹⁶

B. Price Effects of the Subject Imports

Among the products for which we sought pricing data, products 1, 2, 3, 5, and 8 would be crude products under our definition.¹¹⁷ Among these products, a significant number of sales of subject imports were reported only for product 1, a metallurgical grade product intended for foundry

¹⁰⁹ Memorandum INV-R-089, Table 29a. Refined imports by volume ***.

¹¹⁰ Figure 8, CR at I-75, PR at II-45.

¹¹¹ Table 31, CR at I-78, PR at II-46. We recognize that some byproducts can be used in some refractory applications. See specification sheets for *** and ***.

¹¹² Table 30, CR at I-77, PR at II-46.

¹¹³ Table 30, CR at I-77, PR at II-46. The principal source of non-subject imports is Canada. Table F-1, CR and PR at F-2. Petitioners concede that the increase in subject crude imports to date has been at the expense of exports from Norton and Treibacher's Canadian crude production operations. Tr. at 99.

¹¹⁴ Table C-1, CR and PR at C-2. Exolon's *** in market share was between 1990 and 1991, when U.S. consumption fell significantly; when consumption rose from 1991-1993, Exolon's market share ***.

¹¹⁵ Table 30, CR at I-77, PR at II-46. Moreover, as already noted, most of the subject imports of refined silicon carbide consisted of fines that primarily were sold to foundries. Table 31, CR at I-78, PR at II-46; see note 111, *supra*. The subject imports showed no market penetration in the refined metallurgical grade subsegment in 1992 or 1993, and very small market penetration in the refined crystalline grade subsegment in those years. Table 31, CR at I-78, PR at II-46. In short, there was little or no market penetration by the subject imports in those segments in which the domestic refiners of silicon carbide sell their production.

¹¹⁶ Petitioners effectively conceded the absence of any volume effect in this investigation, arguing that they maintained market share and competed on price. Tr. at 37, 41.

¹¹⁷ In order to obtain more precise price comparisons, rather than seeking data for products identified as crude or refined, we characterized products by particle size, percent silicon carbide content and intended end use. The parties were asked to comment on proposed products before questionnaires were finalized. Respondents did not comment. Petitioners' comments are reflected in the product descriptions adopted. See facsimile message dated Feb. 3, 1994, from Shirley Coffield, counsel to petitioners, to Clark Workman, Office of Economics.

applications.¹¹⁸ While spot sales of product 1 were characterized by declining domestic prices and underselling by the subject imports, contract prices were more stable.¹¹⁹ Over half of all sales by domestic producers are on a contract basis and contracts generally fix prices and sometimes quantities for up to one year.¹²⁰ Domestic prices for products 3 and 5 fluctuated with no clear trend.¹²¹ The few comparisons possible using purchasers' prices show a mix of underselling and overselling.¹²²

Among the products for which we sought pricing data, products 4, 6 and 7 would be refined products under our definition.¹²³ Despite underselling by subject imports in those quarters in which comparisons were possible and declining prices for spot sales of domestic product 4, contract prices remained steady between 1991 and 1992, the period in which the largest increase in subject imports occurred.¹²⁴ Domestic prices for contract sales of products 6 and 7, high silicon carbide content products respectively for refractory and abrasive applications, trended upward over the period. Although prices for spot sales of product 6 to end users showed a decline, spot sales of product 7 to end users fluctuated upward with no clear trend, and spot sales of product 7 to distributors fluctuated upward.¹²⁵ Overall, our data show no clear downward trend in prices demonstrating price depression in the refined market.

Petitioners argued that declines in unit values of domestic refined silicon carbide indicate price depression.¹²⁶ We note, however, that unit values will fluctuate depending upon the silicon carbide content by weight that a particular product contains as well as the degree of processing the product has undergone. Thus, we do not find unit values to be a more reliable indicator than actual prices for our analysis of price trends in this investigation.

Among confirmed instances of lost sales and revenues, the large majority in volume and value terms represented sales to briquetters. Many briquetters, while confirming that the subject imports are often priced lower than the domestic product, also stated that Exolon has periodically been unable to supply their crude silicon carbide needs.¹²⁷ Very few lost sales or lost revenues were confirmed for abrasive or refractory customers. This is consistent with the fact that such purchasers do not select suppliers solely on the basis of price, but rather tend to rank product quality and availability as more or equally important factors.¹²⁸ Several purchasers for non-foundry applications also reported difficulties obtaining adequate supplies of silicon carbide from domestic producers.¹²⁹

The evidence of record therefore does not support the conclusion that the prices of the subject imports have had a significant depressing or suppressing effect on the prices of the domestic product. Moreover, as will be discussed below, notwithstanding any underselling or price suppressing or depressing effects of the subject imports, subject imports have not had an adverse impact on the domestic industry's revenues.¹³⁰

¹¹⁸ CR at I-87, PR at II-51. This is consistent with our finding that the vast majority of all subject imports fall into this category.

¹¹⁹ Figures 9 and 10 and Tables 32 and 33, CR at I-89-I-92, PR at II-53.

¹²⁰ CR at I-84, PR at II-49.

¹²¹ CR at I-93, PR at II-52; Figure 12 and Table 35, CR at I-96-I-97, PR at II-53-II-54; Tables H-3 and H-4, CR at H-4-H-5, PR at H-2. No trends could be determined from the few reported sales of Chinese products 3 and 5, although they were generally priced lower than the domestic product.

¹²² CR at I-100-I-102, PR at II-55-II-56 (products 1, 2, 3, and 5). Only one purchase of product 8 was reported.

¹²³ CR at I-87, PR at II-51.

¹²⁴ Table 34, CR at I-95, PR at II-53; Table H-2, CR at H-3, PR at H-2.

¹²⁵ Table H-5, CR at H-6, PR at H-2.

¹²⁶ Petitioners' Prehearing Brief at 40-42.

¹²⁷ CR at I-82-I-83, I-85 & n.94, I-106; PR at II-48-II-49, II-50, II-59-II-60.

¹²⁸ CR at I-85, PR at II-50. A number of purchasers opined that the Chinese crystalline grade product is of inferior quality. CR at I-83-I-84, PR at II-49.

¹²⁹ CR at I-82-I-83, PR at II-47-II-48.

¹³⁰ In assessing the effect of imports on domestic prices, we have given no weight to allegations raised by respondents with respect to a pending price-fixing indictment involving certain domestic producers.

C. Impact of the Subject Imports on the Domestic Industry

Despite the increasing volume of the subject imports and the declining domestic prices for some products, the profitability of the domestic industry as a whole remained stable over the period of investigation.¹³¹ Although Exolon's crude silicon carbide operations faced the most direct competition with the bulk of the subject imports, Exolon's crude operation exhibited ***.¹³² We have considered petitioners' argument that Exolon's healthy performance to date is due to unsustainable cost-cutting measures.¹³³ We find, however, that although such cost declines played a significant role, other factors, such as increased trade sales, also made significant contributions to Exolon's improving financial performance.¹³⁴

We also have considered petitioners' contention that competition from low-priced Chinese imports has prevented Exolon from achieving the returns necessary to expand its crude silicon carbide production capacity as planned.¹³⁵ Exolon's president testified at our hearing, however, that the company has been unable to resolve environmental and technological problems associated with the waste gases that would be produced by a new transformer.¹³⁶ We also find that Exolon's return on assets in its crude operation *** over the same period in which their expansion plans were being postponed.¹³⁷ In addition, the record does not establish a sufficient causal link between domestic price declines and the subject imports. We therefore conclude that any inability on the part of Exolon to expand its crude silicon carbide production capacity was not by reason of the subject imports.

Given the small volume of refined imports, the domestic industry's large market share in the refined market segment, and the mixed or rising price trends for refined products, we similarly find insufficient evidence of any adverse impact on the refined segment of the market by reason of subject imports of refined silicon carbide.¹³⁸ We have considered petitioners' contention that rising imports of crude silicon carbide have had indirect adverse effects on the domestic industry by increasing competition among domestic producers and forcing prices down in the highest value-added segments of the market.¹³⁹ However, we have already found insufficient evidence that prices of refined products,

¹³¹ Memorandum INV-R-089, Table 9a.

¹³² Table 3, CR at I-26, PR at II-19; Table 4, CR at I-29, PR at II-20; Table 18, CR at I-57, PR at II-35.

¹³³ Petitioners' Prehearing Brief at 47-49; Tr. at 48-50.

¹³⁴ Table 18, CR at I-57, PR at II-35.

¹³⁵ CR and PR at Appendix D; Petitioners' Prehearing Brief at 51; Petitioners' Posthearing Brief, Response to Question of Ms. Aranoff at 1-2 and Exhibit 2.

¹³⁶ The witness testified that "[N]obody has the technology for the time being to reduce the sulfur dioxide emission" and that the company has been unable to obtain EPA approval for a proposed sale of waste gases to a methanol plant in which \$15 million had already been invested. Tr. at 121-22.

¹³⁷ Table 25, CR at I-64, PR at II-37.

¹³⁸ Although petitioners contend that domestic refined crystalline grade product can be used in foundry applications and therefore competes directly with Chinese crude imports, virtually all the examples provided of refined crystalline grade sales to briquetters were of dust or powder byproducts, not expensive abrasive or refractory grain products. Petitioners' Posthearing Brief, Exhibit 2 (invoices); letter dated May 10, 1994, from Shirley A. Coffield, Counsel to Petitioners, to the Secretary, submitting an invoice inadvertently omitted as an attachment to Exhibit 5 of Petitioners' Posthearing Brief.

¹³⁹ Petitioners' Prehearing Brief at 44; Tr. at 31, 42, 100, 102-03. In both the preliminary and final investigations, petitioners made frequent reference to losses suffered by Treibacher's and Norton's Canadian crude operations through competition with PRC imports in the U.S. market. Conf. Tr. at 27, 66-67; Tr. at 26-28, 31, 38-39; Petitioner's Postconference Brief at 34-35. In addition, petitioners contended that the displacement of Canadian crude imports to the United States by Chinese imports had an indirect adverse impact on Norton and Treibacher's U.S. refining operations. Tr. at 102-105. The statute provides that the impact of imports of the dumped merchandise must be considered "only in the context of production operations within the United States." 19 U.S.C. § 1677(7)(B)(i). Offshore production activities of a U.S. producer "are not to be considered in measuring the impact of imports on the domestic industry." S. Rep. No. 71, 100th Cong., 1st Sess. 115, 117 (1987). See also H.R. Rep. No. 100, Part 1, 100th Cong., 1st Sess. 128-29 (1987); General Motors Corp. v. United States, 827 F. Supp. 774, 780 (Ct. Int'l Trade 1993) (affirming the Commission's refusal to consider indirect effects on U.S. minivan producers arising from reduced U.S. sales by their Canadian affiliates).
(continued...)

particularly on contract sales, are depressed. Moreover, the industry as a whole has not suffered declining financial performance.

Accordingly, we conclude that the domestic industry is not materially injured by reason of the subject imports, nor is it presently vulnerable to such injury.

V. NO THREAT OF MATERIAL INJURY BY REASON OF THE SUBJECT IMPORTS

Section 771(7)(F) of the Tariff Act of 1930 directs the Commission to determine whether a U.S. industry 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." The Commission is not to make such a determination "on the basis of mere conjecture or supposition."¹⁴⁰

We have considered all the statutory factors that are relevant to this investigation.¹⁴¹ The presence or absence of any single factor is not dispositive.¹⁴²

We do not find that there is any increase in production capacity or unused capacity in the PRC likely to result in a significant increase in imports of silicon carbide to the United States. The Chinese industry's capacity utilization level was high throughout the period of investigation. During the same period, the Chinese industry's total production capacity declined.¹⁴³

Although there has been a rapid increase in United States market penetration of silicon carbide from the PRC, we do not find a real and imminent likelihood that import penetration will increase to an injurious level. The largest increase in the subject imports' U.S. market share during the period of investigation took place between 1991 and 1992, with a much smaller increase between 1992 and 1993.¹⁴⁴ Meanwhile, domestic demand in the PRC is consuming a large and growing share of Chinese production.^{145 146} Based on the Chinese capacity and domestic consumption data above, we find that a further surge to injurious levels is not likely to occur in the near future.

¹³⁹ (...continued)

Accordingly, we have considered the effect of LTFV imports from the PRC on the refining operations that Treibacher and Norton conduct in the United States only, not on their Canadian crude production.

¹⁴⁰ 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." Metallwerken Nederland B.V. v. U.S., 744 F.Supp. 281, 287 (Ct. Int'l Trade 1990), citing American Spring Wire Corp. v. United States, 590 F.Supp. 1273, 1280 (Ct. Int'l Trade 1984), aff'd sub nom. Armco, Inc. v. United States, 760 F.2d 249 (Fed. Cir. 1985).

¹⁴¹ 19 U.S.C. § 1677(7)(F)(i)(I)-(X). The relevant factors include: (1) any increase in production capacity or existing unused capacity in the exporting country likely to result in a significant increase in imports; (2) any rapid increase in United States market penetration and the likelihood that the penetration will increase to an injurious level; (3) 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; (4) any substantial increase in inventories of the merchandise in the United States; (5) the presence of underutilized capacity for producing the merchandise in the exporting country; (6) any other demonstrable adverse trends that indicate the probability that 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; and (7) the potential for product shifting if production facilities owned or controlled by the foreign manufacturers, which can be used to produce products subject to antidumping or countervailing duty investigations or orders, are also used to produce the merchandise under investigation. 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. 19 U.S.C. § 1677(7)(F)(iii)(I). Since this investigation does not involve a subsidy or an agricultural product, Factors I and IX are not applicable.

¹⁴² See, e.g., Rhone Poulenc, S.A. v. United States, 592 F. Supp. 1318, 1324 n.18 (Ct. Int'l Trade 1984).

¹⁴³ CR at I-71, PR at II-42.

¹⁴⁴ Table 29, CR at I-74, PR at II-44.

¹⁴⁵ CR at I-71, PR at II-42.

¹⁴⁶ Vice Chairman Watson finds that the increase in Chinese home market shipments is becoming increasingly relevant for his threat determination given that this segment represents the largest outlet for Chinese crude silicon carbide shipments and is larger than all export markets combined.

Nor do we find a real and imminent likelihood that Chinese imports will rapidly gain share in the U.S. market by selling large volumes of higher value-added crystalline grade silicon carbide.¹⁴⁷ The evidence with respect to the Chinese industry's technical ability to serve the U.S. abrasives and refractories producers' demand for high quality crystalline refined product is mixed.¹⁴⁸ Moreover, based on the extremely limited U.S. market penetration by these products to date and the fact that a large share of PRC imports of refined product consisted of byproducts,¹⁴⁹ we do not perceive a real and imminent threat that such imports will rise to injurious levels.¹⁵⁰

We do not find that imports will enter the United States at prices that will have a depressing or suppressing effect on domestic prices. We have found that imports are not currently having a depressing or suppressing effect on domestic prices. There is no indication that future imports would be any more likely to affect prices adversely in the near future than they have during the period of investigation.

The record does not support a finding that importers' U.S. inventories will have an injurious effect on the U.S. industry. Although U.S. importers' inventories of subject imports have risen over the period, inventories of crude, which make up the vast majority of all inventories, have declined as a percent of both imports and of importers' U.S. shipments.¹⁵¹ Moreover, petitioners argued that any build-up in importers' inventories in 1993 was in anticipation of the suspension of liquidation in this investigation and therefore an aberration.¹⁵²

We do not find any potential for product-shifting within the meaning of 19 U.S.C. §1677(F)(i)(VIII). The record contains un rebutted testimony that Chinese facilities dedicated to the production of ferrosilicon, which is currently subject to a U.S. antidumping duty order,¹⁵³ cannot be converted to the production of silicon carbide.¹⁵⁴ Aluminum oxide, which is now produced in the same Chinese production facilities as silicon carbide,¹⁵⁵ is not subject to any antidumping order or investigation.

We find no actual or potential negative effects on existing development and production efforts of the domestic industry. As stated above, we do not find that Exolon's failure to expand its crude production capacity is by reason of the subject imports. Moreover, Exolon has offered evidence that it has recently launched new product development and marketing initiatives in the metallurgical crude

¹⁴⁷ Chairman Newquist does not separately consider "high value-added crystalline grade silicon carbide." As he indicated in note 74, *supra*, he finds market segment arguments irrelevant. In his view, the question posed by the statute is whether the subject imports do or do not threaten material injury to the domestic industry producing the like product. The assessment of the causal link between imports and the industry producing the like product requires analysis of the industry as a whole, not heightened scrutiny of particular segments of the industry or market.

¹⁴⁸ Respondents argue that Chinese crystalline refined product made from anthracite coal rather than petroleum coke is unsuitable for U.S. abrasive and refractory applications because its crystalline structure is too weak and its impurity content too high. Tr. at 18, 144. Several domestic purchasers concurred that the Chinese crystalline refined product that they tested was unsuitable for their purposes. CR at I-83-I-84, PR at II-49. However, some Chinese producers do use petroleum coke and petitioners contend that such product does meet the requirements of U.S. abrasives producers. Tr. at 239; Petitioners' Posthearing Brief, Exhibit 3 at para. 4 and Exhibit 5 at 2. *But see* Petitioners' Prehearing Brief, Exhibit 12 at 8 (***) and CR at I-11-I-12, PR at II-8-II-10 (Seventh Grinding Wheel factory uses petroleum coke).

¹⁴⁹ *See* note 111, *supra*.

¹⁵⁰ We note, however, that if, in fact, a rapid penetration of the U.S. market by subject imports of crystalline grade silicon carbide were to occur, that would present a different set of circumstances under our material injury and threat analysis. (For the reasons stated in note 147, Chairman Newquist does not concur in this footnote.)

¹⁵¹ Memorandum INV-R-089, Table 28a.

¹⁵² Petitioners' Prehearing Brief at 55.

¹⁵³ *See Ferrosilicon from the People's Republic of China*, Inv. No. 731-TA-567 (Final), USITC Pub. 2606 (Mar. 1993).

¹⁵⁴ Tr. at 182-83.

¹⁵⁵ Petitioners' Prehearing Brief at Exhibits 12-14.

segment of the market where it competes most directly with the subject imports.¹⁵⁶ Capital expenditures for both crude and refined silicon carbide operations have *** over the period of investigation.¹⁵⁷

There are no "other demonstrable adverse trends" that indicate that subject imports will be the cause of actual injury. In our preliminary determination, we noted that reported Chinese silicon carbide production exceeded total shipments in some years, resulting in an apparent build up of foreign inventories. However, this apparent build up occurred principally prior to 1992.¹⁵⁸ Since these inventories have not to date been exported to the United States in significant quantities, any finding that they would present a threat to the U.S. industry in the immediate future would be speculative. In addition, while there was some argument that the Chinese industry could substitute ferrosilicon for silicon carbide in domestic applications and export more silicon carbide in order to evade the antidumping order on ferrosilicon, the record contains no evidence that Chinese ferrosilicon and silicon carbide producers can or would cooperate in this fashion or that Chinese purchasers of silicon carbide would be willing or able to switch to ferrosilicon.¹⁵⁹

Finally, although the European Union issued an antidumping duty order against silicon carbide from the PRC in March of 1994,¹⁶⁰ we do not find that the order is likely to result in significant diversion of imports from Europe to the United States. Chinese exports to Europe *** between 1992 and 1993, while Chinese exports to the United States rose.¹⁶¹ Thus, most of potential shifting has already occurred without causing material injury to the domestic industry. The remaining amount shipped to Europe in 1993 was only about *** tons, which, if redistributed in accordance with 1993 shipment patterns minus Europe, would result in *** going to the United States.¹⁶²

We therefore find that the domestic industry producing silicon carbide is not threatened with material injury by reason of LTFV imports from the PRC.

CONCLUSION

For the reasons discussed, we determine that the domestic industry producing silicon carbide is neither materially injured nor threatened with material injury by reason of the subject imports.

¹⁵⁶ Tr. at 66; Petitioners' Posthearing Brief, Response to Question of Commissioner Bragg at 1-2 and Exhibit

16.

¹⁵⁷ Table 26, CR at I-65, PR at II-37.

¹⁵⁸ Preliminary Determination at 24; CR at I-71, PR at II-42. Despite our invitation to comment on this evidence, petitioners failed to address this issue in this final investigation.

¹⁵⁹ In the U.S. market, ferrosilicon is only a substitute for silicon carbide in certain foundry applications. CR at I-12-I-13 and I-80, PR at II-10-II-11 and II-47.

¹⁶⁰ Petitioners' Prehearing Brief, Exhibit 19.

¹⁶¹ CR at I-71, PR at II-42.

¹⁶² Id.

SEPARATE VIEWS OF COMMISSIONER CRAWFORD

SILICON CARBIDE FROM THE PEOPLE'S REPUBLIC OF CHINA INV. NO. 731-TA-651 (FINAL)

On the basis of information obtained in this final investigation, I concur in the determination that an industry in the United States is not materially injured or threatened with material injury by reason of imports of silicon carbide from the People's Republic of China ("China") found by the Department of Commerce to be sold at less-than-fair-value ("LTFV").

As noted above in the Views of the Commission, however, I do not concur in my colleagues' determination of one like product. Rather, I determine that there are two like products, crude silicon carbide and refined silicon carbide. Consequently, I find that there are two corresponding domestic industries. I determine that the domestic industry producing crude silicon carbide is not materially injured or threatened with material injury by reason of LTFV imports from China. Further, I determine that the domestic industry producing refined silicon carbide is not materially injured or threatened with material injury by reason of LTFV imports from China. My analysis follows.

I. ANALYTICAL FRAMEWORK

Evaluating the effects of LTFV imports on domestic prices and the domestic industry requires an understanding of the economic factors affecting the domestic market. It is necessary to understand how purchasers of the product react to an increase or decrease in the price of the product they purchase (i.e. the elasticity of demand). It is also necessary to understand how the imported and domestic products are differentiated from each other and how that affects purchasers' decisions to buy the products. When purchasers can choose between imports and domestic products, differences between those products will affect the price purchasers are willing to pay for each. The extent of those differences determines whether purchasers buy relatively more of the domestic product when the relative price of the imported product increases (i.e. the elasticity of substitution).

Similarly, when evaluating the impact of LTFV imports on the domestic industry, it is necessary to understand whether the industry could increase the volume of its production in response to an increase in the price of the domestic product (i.e. the elasticity of domestic supply). It is also necessary to understand other relevant economic factors, such as the composition of the industry and the availability of nonsubject imports, that affect domestic prices and output.

Having developed an understanding of the market and the domestic industry, I evaluate the effects of the dumping. To evaluate the effect of the dumping on domestic prices, I compare domestic prices that existed when the imports were dumped with what domestic prices would have been if the imports had been priced fairly. Similarly, to evaluate the impact on the domestic industry, I compare the state of the industry when the imports were dumped with what the state of the industry would have been if the imports had been priced fairly. In this regard, the impact on the domestic industry's prices and sales, and therefore revenues, is critical, because the impact on other industry indicators (e.g. employment, wages, etc.) is derived from the impact on revenues.

I then determine whether the price and sales effects of the dumping, either separately or together, demonstrate that the domestic industry would have been materially better off if the imports had been priced fairly. If this is affirmative, I find that the domestic industry is materially injured by reason of dumped imports.

II. BACKGROUND AND CONDITIONS OF COMPETITION

A. ELASTICITY OF DEMAND

The elasticity of demand measures how purchaser demand responds to product price changes. It reflects several factors, including the product's cost as a percentage of total cost of the finished product, and the availability of substitute products and of alternative finished goods.

I find that the elasticity of demand for crude silicon carbide is relatively low. Ferrosilicon is frequently an important substitute for crude silicon carbide in metallurgical applications and, in some cases, competes directly with crude silicon carbide on the basis of price. This substitution would indicate that demand is somewhat elastic. However, crude silicon carbide accounts for a very small portion of the total cost of the products in which it is used. For this reason, the elasticity of demand is relatively low.¹

I also find that the elasticity of demand for refined silicon carbide is relatively low. There are numerous potential substitutes for refined silicon carbide in abrasives and refractory applications, indicating that demand is somewhat elastic. However, refined silicon carbide accounts for a very small portion of the total costs of the products in which it is used. For this reason, the elasticity of demand for refined silicon carbide is relatively low.²

Based on the above analysis, I find that the demand elasticity for both crude and refined silicon carbide is relatively low. Consequently, purchasers are relatively insensitive to price increases. Therefore, I find that purchasers are unlikely to reduce their purchases significantly if prices increase.

B. ELASTICITY OF SUBSTITUTION

The elasticity of substitution measures how the quantity demanded of one product relative to another product responds to changes in the relative prices of these products. It depends upon the extent of product differentiation such as quality differences and upon differences in terms and conditions of sale. Products are close substitutes if product attributes and terms and conditions of sale are similar. If products are close substitutes, purchasers will tend to respond more readily to relative price changes.

In this investigation I find that the LTFV imports of crude and refined silicon carbide and the domestic products are moderate substitutes for each other. The moderate substitutability is due to the different product mixes of subject imports and the domestic product, and nonprice differences between the two.

Domestically produced and Chinese crude silicon carbide often compete for the same customers, particularly in the case of briquetters and metallurgical customers. However, a *** of domestic shipments contains a silicon content of 96 to 98 percent, while *** of the Chinese imports has this silicon content. The difference in product mix lowers the elasticity of substitution. Moreover, although a majority of producers considers the Chinese and domestic products to be comparable in quality and interchangeable in use, there is considerable evidence that the Chinese product is of inferior quality. In addition, the average lead time between a customer's order and the date of delivery tends to be significantly shorter for the domestic product than for the Chinese product, which further lowers the elasticity of substitution.³ For these reasons, I find that Chinese imports of crude silicon carbide and domestic crude silicon carbide are moderate substitutes for each other.

¹ EC-R-054 at 25 to 27.

² EC-R-054 at 25 to 27.

³ EC-R-054 at 20 to 24.

I also find that Chinese imports of refined silicon carbide and the domestic products are moderate substitutes. Subject imports of refined compete with domestic refined, although the competition is somewhat limited. While 100 percent of all shipments of U.S.-produced refined silicon carbide had a silicon carbide content of 96 to 98 percent in 1993, only 15 percent of the Chinese imports of refined silicon carbide had a silicon content level in this range, and a portion of these imports consists of byproducts that are not suitable for most abrasives or refractory applications. This difference in product mix lowers the elasticity of substitution. As with crude silicon carbide, there is evidence that Chinese refined is of inferior quality and that lead times for delivery are shorter in the case of domestic product.⁴ For these reasons, I find that Chinese imports of refined silicon carbide and domestic refined silicon carbide are moderate substitutes for each other.

C. ELASTICITY OF DOMESTIC SUPPLY

I find that the elasticity of domestic supply for crude silicon carbide is low; that is, the domestic industry would not have been able to increase its output of crude silicon carbide as a result of an increase in prices of subject imports. In 1993, capacity utilization for the sole domestic crude producer was *** percent. In addition, there are relatively small inventories of crude available for sale in the market, and no significant export markets exist from which sales could be diverted to meet increased demand in the United States. For these reasons, I find that the elasticity of supply is quite low; that is the domestic industry is not able to increase its output and sales of crude silicon carbide in response to price increases.

On the other hand, I find that the elasticity of domestic supply for refined silicon carbide is high. In 1993, the domestic industry producing refined silicon carbide was operating at a capacity utilization rate of *** percent. In addition, there are significant export markets for refined. For these reasons, I find that the elasticity of supply is quite high; that is, the domestic industry is able to increase its output and sales of refined silicon carbide in response to price increases.

D. CHARACTERISTICS OF THE U.S. MARKETS

The one producer of crude silicon carbide in the United States operated with a capacity utilization rate of *** percent in 1993 and thus was not able to supply the domestic demand for crude silicon carbide. However, nonsubject imports accounted for *** percent of the crude silicon carbide market in 1993.⁵ Therefore, a large volume of nonsubject crude silicon carbide imports was available as an alternative source of supply to purchasers of Chinese crude imports.

Eight firms produce refined silicon carbide in the United States, and their combined capacity utilization in 1993 was *** percent. Chinese imports of refined silicon carbide accounted for *** percent of the refined market in 1993, while nonsubject imports of refined accounted for *** percent of the market.⁶ Therefore, even though the domestic industry had available capacity, a large volume of nonsubject imports of refined silicon carbide was available as an alternative source of supply to purchasers of Chinese refined imports.

⁴ EC-R-054 at 20 to 24. See also Tr. at 18, 144 and CR at I-83 to I-84, PR at II-49.

⁵ INV-R-089 at I-18, Table 1a.

⁶ INV-R-089 at I-18, Table 1a.

III. NO MATERIAL INJURY OR THREAT OF MATERIAL INJURY TO THE DOMESTIC INDUSTRY PRODUCING CRUDE SILICON CARBIDE BY REASON OF LTFV IMPORTS

A. NO MATERIAL INJURY BY REASON OF SUBJECT IMPORTS

In determining whether a domestic industry is materially injured by reason of the LTFV imports, the statute directs the Commission 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 States⁷

In assessing the effect of LTFV imports, I compare the current condition of the domestic industry with the condition that would have existed had imports been fairly priced.⁸ Then, taking into account the condition of the industry, I determine whether any resulting change of circumstances constitutes material injury. For the reasons discussed below, I find that the domestic industry producing crude silicon carbide is not materially injured by reason of LTFV imports from China.

1. Volume of the Subject Imports

In 1993, the domestic industry's market share of crude silicon carbide by quantity was *** percent, the market share of subject imports from China was *** percent, and the market share of nonsubject imports was *** percent.⁹ Even though this market share is large, I do not find the volume of LTFV imports of crude silicon carbide to be significant in light of the effects.

2. Effect of Subject Imports on Domestic Prices

To analyze the effect of LTFV imports on domestic prices of the like products, I consider a number of factors relating to the industry and the nature of the products. These factors include the availability of substitute products in the market, the degree of substitutability between the LTFV imports and the domestic like product, and the presence of fairly traded imports. I find the LTFV imports had no significant price effects on the prices of domestic crude silicon carbide.

The dumping margin is so high that Chinese imports would have been priced out of the market had they been fairly traded. A monopoly domestic producer, operating at full capacity and with relatively inelastic demand, in some circumstances would have been able to increase its prices.

⁷ 19 U.S.C. § 1677(7)(B)(i). In making its determination, the Commission may consider "such other economic factors as are relevant to the determination." 19 U.S.C. § 1677(7)(B)(ii).

⁸ 19 U.S.C. § 1677(7)(C)(iii).

⁹ INV-R-089 at C-2, Table C-1a.

However, two circumstances here lead me to conclude that the domestic producer would not have been able to increase its prices significantly. First, ferrosilicon is an acknowledged substitute for crude silicon carbide in the metallurgical market. Second, there is substantial competition from nonsubject imports, which accounted for *** percent of market in 1993. Any attempt by the domestic producer to increase its prices would have been met and "beaten back" by competition from ferrosilicon and nonsubject imports. For these reasons, subject imports cannot be found to have had any significant adverse effect on domestic prices of crude silicon carbide.

3. Impact of Subject Imports on the Domestic Industry

In assessing the impact of LTFV imports of crude silicon carbide on the domestic industry, I consider, among other relevant factors, output, sales, inventories, capacity utilization, market share, employment, wages, productivity, profits, cash flow, return on investment, ability to raise capital and research and development.¹⁰ These factors either encompass or reflect the volume and price effects of the dumped imports, and so I must gauge the impact of the dumping through those effects.

I have assumed that no subject imports of crude silicon carbide would have been sold in the domestic market at fairly traded prices. As discussed above, domestic prices would not have increased even if subject imports had been priced out of the market. Therefore, any impact of subject imports on the domestic industry would have been on the volume of output and sales.

Because the sole domestic producer is operating at full capacity, it would not have been able to satisfy the demand increase resulting from the elimination of Chinese imports from the market. Therefore, the domestic producer would not have been able to increase its output and sales, and thereby its revenues.

Because the domestic producer would not have been able to increase its prices, output or sales, and thereby its revenues, significantly, I find that the domestic industry would not have been materially better off if Chinese imports had been priced fairly. Therefore, I determine that the domestic industry producing crude silicon carbide is not materially injured by reason of LTFV imports from China.

B. NO THREAT OF MATERIAL INJURY BY REASON OF SUBJECT IMPORTS

I have considered the enumerated statutory factors that the Commission is required to consider in its determination.¹¹ A determination that an industry "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."¹²

I am mindful of the statute's requirement that my determination must be based on evidence, not conjecture or supposition. Accordingly, I have distinguished between mere assertions, which constitute conjecture or supposition, and the positive evidence¹³ that I am required by law to evaluate in making my determination.

There has been no increase in Chinese production capacity or unused capacity for crude silicon carbide. In addition, Chinese capacity utilization was quite high in 1993.¹⁴ Thus, the

¹⁰ 19 U.S.C. § 1677(7)(C)(iii).

¹¹ 19 U.S.C. § 1677(F)(i).

¹² 19 U.S.C. § 1677(7)(F)(ii).

¹³ See American Spring Wire Corporation v. United States, 590 F., Supp. 1273 (1984).

¹⁴ CR at I-71, PR at II-42.

level of Chinese production capacity is not likely to result in a significant increase in exports of Chinese crude silicon carbide to the United States. Therefore, I find that the information relevant to production capacity and unused or underutilized capacity in China does not represent evidence that any threat of material injury is real or that actual injury is imminent.

The market share of subject imports increased rapidly during the period of investigation. However, the increase occurred in the early part of the period, from 1991 to 1992. While the market share of subject imports increased from *** percent in 1991 to *** percent in 1993, it increased by *** percentage points from 1992 to 1993.¹⁵ I do not find the more recent increase to be large enough to represent a likelihood that the market penetration will increase to an injurious level. In addition, the earlier large increase occurred too far in the past to constitute credible evidence that any threat of material injury is real or that actual injury is imminent. Indeed, the large increase from 1991 to 1992 was followed by a much smaller increase from 1992 to 1993. The latter, smaller increase resulted in the highest market share of subject imports during the period of investigation; nonetheless, the domestic industry is not materially injured by reason of this level of LTFV imports. For these reasons and my finding with respect to Chinese capacity, I find little, if any, likelihood that the market penetration will increase to injurious levels. Therefore, I find that the increase in market penetration does not constitute evidence that any threat of material injury is real or that actual injury is imminent.

The absolute level of inventories of Chinese crude silicon carbide in the United States increased substantially from 1992 to 1993. As a percentage of imports, however, these inventories were smaller than in two of the other three years during the period of investigation.¹⁶ In addition, it is likely that, as petitioners themselves asserted, the large increase was an aberration that resulted from the initiation of this investigation. For these reasons, I do not find that the existence of these inventories, by itself, constitutes sufficient evidence to justify an affirmative determination.

In my determination that there is no material injury by reason of subject imports, I demonstrated that subject imports have had no significant effect on domestic prices of crude silicon carbide. In light of the low elasticity of substitution between subject imports and the domestic product and competition from substitute products and nonsubject imports, I find no positive evidence that this will change in the immediate future. Therefore, I conclude that subject imports will not enter the United States at prices that will have a depressing or suppressing effect on domestic prices.

I find that there is no potential for product-shifting as provided in 19 U.S.C. § 1677(7)(F)(i)(VIII). The Chinese facilities in which silicon carbide is produced are also used to produce aluminum oxide. However, aluminum oxide from China is not subject to investigation or to an antidumping order. Therefore, as a matter of law, there is no potential for product-shifting.¹⁷

I find no evidence of any other demonstrable adverse trends that indicate the probability that subject imports will be the cause of actual injury.

Finally, although the European Union issued an antidumping duty order against Chinese silicon carbide in March 1994, I do not find that this order is likely to result in a significant diversion of Chinese exports from Europe to the United States. Chinese exports to Europe *** between 1992 and 1993, while Chinese exports to the United States rose. Thus, most of the

¹⁵ INV-R-089 at C-2, Table C-1a.

¹⁶ INV-R-089, Table 28a.

¹⁷ Petitioners assert that Chinese consumption of ferrosilicon, which is subject to an antidumping order, will increase in order to increase exports of silicon carbide to the United States. However, petitioners have provided no evidence that the Chinese ferrosilicon production facilities are owned or controlled by the Chinese manufacturers of silicon carbide, an element required by the statute.

potential diversion has already occurred, and the domestic industry nonetheless is not materially injured by reason of the level of LTFV imports. The remaining amount shipped to Europe in 1993 was only about *** tons, which, if redistributed in accordance with 1993 shipment patterns minus Europe, would result in *** exported to the United States. Therefore, I find that this level of potential diversion of Chinese imports from Europe to the United States does constitute evidence that any threat of material injury is real or that actual injury is imminent.

For the reasons stated above, I find that the domestic industry producing crude silicon carbide is not threatened with material injury by reason of LTFV imports from China.

IV. NO MATERIAL INJURY OR THREAT OF MATERIAL INJURY TO THE DOMESTIC INDUSTRY PRODUCING REFINED SILICON CARBIDE BY REASON OF LTFV IMPORTS

In my determination that the domestic industry producing refined silicon carbide is not materially injured by reason of subject imports from China, I have considered the required statutory factors and employed my analysis discussed above. My analysis follows.

A. NO MATERIAL INJURY BY REASON OF SUBJECT IMPORTS

1. Volume of Subject Imports

In 1993, by quantity the domestic industry's market share was *** percent, the market share of subject imports from China was *** percent, and the market share of nonsubject imports was *** percent.¹⁸ Based on these market shares, I find that the volume of LTFV imports of refined silicon carbide is not significant.

2. Effect of Subject Imports on Domestic Prices

To analyze the effect of subject imports on domestic prices of the like product, I consider a number of factors relating to the industry and the nature of the products. These factors include the availability of substitute products in the market, the degree of substitutability between the subject imports and the domestic like product, and the presence of fairly traded imports. For the reasons stated below, I find that the LTFV imports had no significant price effects on the prices of refined silicon carbide. The dumping margins are so high that no Chinese imports of refined silicon carbide would have been sold in the domestic market had they been offered at fairly traded prices. Domestic capacity utilization was *** in 1993, and therefore the domestic industry would have been able to supply the market share held by Chinese imports. There are eight producers that compete in the market, and therefore attempts by one producer to increase prices would have been met and "beaten back" by other producers. A further limitation on the ability of domestic producers to increase their prices is the availability of substantial quantities of nonsubject imports in the market. Nonsubject imports have a *** percent market share, which gives purchasers access to significant alternative sources of supply. As a result, I find that competition among the domestic producers themselves, and from nonsubject imports, would have minimized or prevented any price increase for the domestic like product even without the presence of subject imports. Hence, subject imports cannot be found to have had any adverse effect on domestic prices.

¹⁸ INV-R-089 at I-18, Table 1a.

3. Impact of Subject Imports on Domestic Industry

In assessing the impact of LTFV imports on the domestic industry, I consider, among other relevant factors, output, sales, inventories, capacity utilization, market share, employment, wages, productivity, profits, cash flow, return on investment, ability to raise capital and research and development.¹⁹ These factors either encompass or reflect the volume and price effects of the dumped imports, and so I must gauge the impact of the dumping through those effects.

As discussed above, I have assumed that no subject imports would have been sold in the domestic market at fairly traded prices. Because of competition in the U.S. market, domestic prices would not have increased had subject imports been priced out of the market. As a result, any impact of subject imports on the domestic industry would have been on the volume of the domestic industry's output and sales.

The domestic industry's capacity utilization rate was *** percent in 1993. Therefore, if subject imports had been priced out of the market, the domestic industry had more than sufficient available capacity to replace them. Nonsubject imports were also available to satisfy demand had subject imports not been in the market.

Subject imports and the domestic product are only moderate substitutes. Thus, given the availability of nonsubject imports, purchasers would not necessarily have purchased significantly more of the domestic product had Chinese imports been fairly traded. As a result, it is unlikely that the domestic industry would have been able to capture the market share held by Chinese imports. Even if the domestic industry had captured the entire displaced China market share, it would have increased its market share by *** percent. This increase in market share is sufficiently small that the domestic industry's output and revenues would not have increased significantly.

Consequently, I conclude that the domestic industry would not have been materially better off if subject imports had been fairly priced. Therefore, I determine that the domestic industry producing refined silicon carbide is not materially injured by reason of LTFV imports from China.

B. NO THREAT OF MATERIAL INJURY BY REASON OF SUBJECT IMPORTS

I have considered the enumerated statutory factors that the Commission is required to consider in its determination.²⁰ A determination that an industry "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."²¹

I am mindful of the statute's requirement that my determination must be based on evidence, not conjecture or supposition. Accordingly, I have distinguished between mere assertions, which constitute conjecture or supposition, and the positive evidence²² that I am required by law to evaluate in making my determination.

There are no reliable separate data available for Chinese production capacity, production and capacity utilization of refined silicon carbide. Rather than make an assumption of whether available Chinese capacity to produce refined silicon carbide exists, I have used the information in the record for Chinese crude silicon carbide in my analysis. For the same reasons discussed above, I find that the information relevant to production capacity and unused or underutilized

¹⁹ 19 U.S.C. § 1677(7)(C)(iii).

²⁰ 19 U.S.C. § 1677(F)(i).

²¹ 19 U.S.C. § 1677(7)(F)(ii).

²² See American Spring Wire Corporation v. United States, 590 F., Supp. 1273 (1984).

capacity in China does not represent evidence that any threat of material injury is real or that actual injury is imminent. In addition, Chinese crude silicon carbide accounts for the vast majority, *** percent, of total Chinese imports of all silicon carbide, even though the unit value of refined is substantially higher than crude. As a result, I conclude that the Chinese exporters' economic interests, and production capabilities, lie almost exclusively in producing crude silicon carbide. Absent positive evidence that the Chinese producers' economic interests are changing, I find that Chinese capacity to produce refined silicon carbide is not likely to result in a significant increase in exports to the United States.

The market share of subject imports nearly doubled from 1992 to 1993.²³ However, this large increase is the function of a small base, and therefore is not a "rapid increase" in market penetration. In addition, because subject imports and the domestic product are only moderate substitutes and there is substantial competition from nonsubject imports, I find little, if any, likelihood that the market penetration will increase to injurious levels. Therefore, I find that the increase in market penetration does not constitute evidence that any threat of material injury is real or that actual injury is imminent.

In my determination that there is no material injury by reason of subject imports, I demonstrated that subject imports have had no significant effect on domestic prices of refined silicon carbide. In light of the low elasticity of substitution between subject imports and the domestic product and competition from nonsubject imports, I find no positive evidence that this will change in the immediate future. Therefore, I conclude that subject imports will not enter the United States at prices that will have a depressing or suppressing effect on domestic prices.

Inventories of Chinese refined silicon carbide in the United States increased from *** short tons in 1992 to *** short tons in 1993. This increase is substantial in absolute terms. However, these inventories accounted for only *** percent of apparent consumption of refined silicon carbide in 1993, which I find too small to represent evidence of any threat of material injury is real or that actual injury is imminent.

As with my determination with respect to crude silicon carbide, I find that there is no potential for product-shifting as provided in 19 U.S.C. § 1677(7)(F)(i)(VIII). The Chinese facilities in which silicon carbide is produced are also used to produce aluminum oxide. However, aluminum oxide from China is not subject to investigation or to an antidumping order. Therefore, as a matter of law, there is no potential for product-shifting.²⁴

I find no evidence of any other demonstrable adverse trends that indicate the probability that subject imports will be the cause of actual injury.

Finally, although the European Union issued an antidumping duty order against Chinese silicon carbide in March 1994, I do not find that this order is likely to result in a significant diversion of Chinese exports of refined from Europe to the United States. There is no positive evidence in the record to suggest that there was a large amount of Chinese refined exported to the European Union during the period of investigation. In addition, there is no positive evidence to suggest that any such exports would now be diverted to the United States. Therefore, I find that there is no positive evidence that the European Union antidumping duty order is evidence that any threat of material injury is real or that actual injury is imminent.

For the reasons stated above, I find that the domestic industry producing refined silicon carbide is not threatened with material injury by reason of LTFV imports from China.

²³ INV-R-089 Table C-2a.

²⁴ Petitioners assert that Chinese consumption of ferrosilicon, which is subject to an antidumping order, will increase in order to increase exports of silicon carbide to the United States. However, petitioners have provided no evidence that the Chinese ferrosilicon production facilities are owned or controlled by the Chinese manufacturers of silicon carbide, an element required by the statute.

V. CONCLUSION

On the basis of the record, I determine that a domestic industry is not materially injured or threatened with material injury by reason of LTFV imports from China.

PART II
INFORMATION OBTAINED IN THE INVESTIGATION

INTRODUCTION

Following a preliminary determination by the U.S. Department of Commerce (Commerce) that silicon carbide¹ from the People's Republic of China (China) is being, or is likely to be, sold in the United States at less than fair value (LTFV), the U.S. International Trade Commission (Commission), effective December 8, 1993, instituted investigation No. 731-TA-651 (Final) under section 735(b) of the Tariff Act of 1930 (the Act) (19 U.S.C. § 1673d(b)) to determine whether an industry in the United States is materially injured or threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of imports of such merchandise. Notice of the institution of the Commission's investigation, and of the 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 26, 1994 (59 F.R. 3735).² The hearing was held in Washington, DC, on May 2, 1994.³ A summary of data collected in the investigation is presented in appendix C. As noted on page II-15 of this report, Treibacher produces crude silicon carbide in its Canadian facility and then transports that product to its U.S. facility. Questions have been raised concerning whether its metallurgical grade product should appropriately be classified as an import from Canada or a U.S.-produced product. Statistical data in the body of the report consider that material to be U.S. produced; data presented in appendix I consider it to be an import from Canada.

Commerce published its final LTFV determination in the *Federal Register* on May 2, 1994. The applicable statute directs that the Commission make its final injury determination within 45 days after the final determination by Commerce.

BACKGROUND

This investigation results from a petition filed by the Ad Hoc Silicon Carbide Coalition (hereinafter "petitioners") on June 21, 1993,⁴ alleging that an industry in the United States is materially injured and threatened with material injury by reason of LTFV imports of silicon carbide from China. In response to that petition, the Commission instituted investigation No. 731-TA-651 (Preliminary) under section 733 of the Act (19 U.S.C. § 1673b(a)) and, in August 1993, determined that there was a reasonable indication of such material injury or threat thereof.

On March 1, 1994, an amendment to the petition was filed alleging critical circumstances.⁵ As discussed below, Commerce made an affirmative critical circumstances determination for those Chinese exporters that were not given company-specific LTFV margins.

¹ As defined by Commerce, the product covered by this investigation is silicon carbide (SiC), regardless of grade or form, containing by weight from 20 to 98 percent, inclusive, silicon carbide and with a grain size coarser than size 325 F (as set by the American National Standards Institute), and inclusive of split sizes. Silicon carbide covered by this investigation typically contains additional impurities: iron, aluminum, silica, silicon, and carbon, as well as calcium and magnesium. Silicon carbide is provided for in subheadings 2849.20.10 and 2849.20.20 of the Harmonized Tariff Schedule of the United States (HTS).

² Copies of cited *Federal Register* notices are presented in app. A.

³ A list of witnesses who appeared at the hearing is presented in app. B.

⁴ The coalition members include Exolon-ESK Co. (Exolon), Tonawanda, NY; Treibacher Schleifmittel Corp. (Treibacher) (formerly General Abrasives Treibacher, Inc.), Niagara Falls, NY; and Saint-Gobain/Norton Industrial Ceramics Corp. (Saint-Gobain), Worcester, MA.

⁵ As set forth under subpart 1673(b)(e) of the Act, a petitioner may allege critical circumstances by amending the original petition more than 20 days before the date Commerce is due to make its final determination.

NATURE AND EXTENT OF SALES AT LTFV

On May 2, 1994, Commerce published in the *Federal Register* its final determination that silicon carbide from China is being, or is likely to be, sold in the United States at LTFV. The company-specific weighted-average LTFV dumping margins found by Commerce, as well as its findings of critical circumstances, are as shown in the following tabulation:

<u>Chinese exporter</u>	<u>Final weighted- average LTFV margin (Percent)</u>	<u>Critical circumstances</u>
7th Grinding Wheel Factory Import and Export Corporation (7th Grinding Wheel)	99.52	No
The Import and Export Trading Corporation of Inner Mongolia Autonomous Region (IMI/E)	27.41	No
The Qinghai Metals and Minerals Import and Export Corporation (Qinghai)	7.50	No
All other exporters	406.00 ^{1 2}	Yes

¹ Based on "best information available" (BIA), which, in this case, equals the highest margin alleged in the amended petition.

² Included in this category of exporters are respondents Hainan Feitian Electrotech Company, Ltd. (Hainan), Shaanxi Minmetals (Shaanxi), and Xiamen Abrasive Company (Xiamen), three exporters which were given separate dumping rates in the preliminary investigation but, because of their failure to adequately respond to Commerce's request for information in the final investigation, were assigned the higher rate based on BIA.

In determining separate LTFV dumping margins for specific Chinese producers/exporters, Commerce made fair value price comparisons, comparing the United States price (USP) of Chinese-produced silicon carbide to the foreign market value (FMV). USP was based on the purchase price of sales made directly to unrelated parties prior to importation into the United States, that is, FOB foreign port prices. Because Commerce determined that the silicon carbide industry in China is not a market-oriented industry, Chinese producers of silicon carbide were considered nonmarket economy producers. As such, Commerce used surrogate values in calculating FMV. India was used as the preferred surrogate for purposes of calculating the factors of production. Because new publicly available data on Indian electricity prices for industrial use were made available after its preliminary determination, Commerce used such data in its final determination in lieu of such data for Pakistan.

CRITICAL CIRCUMSTANCES

According to section 735(b)(4) of the Act, if Commerce makes a final affirmative critical circumstances determination, then any final injury determination by the Commission shall also include a finding as to whether the material injury is by reason of massive imports of the merchandise which is the subject of investigation over a relatively short period. In its notice of May 2, 1994, Commerce also published its final determination of critical circumstances, determining that critical circumstances do not exist for respondents 7th Grinding Wheel, IMI/E, and Qinghai and that critical circumstances do exist for Hainan, Shaanxi, Xiamen, and for all other exporters of the subject merchandise. See the

section of the report entitled "U.S. imports" for a further discussion of "massive imports over a relatively short period."

THE PRODUCT

Description and Uses

Silicon carbide is a crystalline solid whose color (nearly clear, pale yellow or green, or black) is determined by its impurities. Silicon carbide is a chemical with the formula, SiC, i.e., the ratio of the number of atoms of silicon to those of carbon is one. Silicon carbide contains impurities including silica, silicon, carbon, iron, and aluminum. Many of the commercial applications of silicon carbide relate to its high melting point, its hardness (it is harder than alumina but less hard than diamond), and its chemical inertness. As a refractory material, silicon carbide is very resistant to thermal shock because of its high thermal conductivity and its low thermal expansion.

Although there are some minerals that contain silicon carbide, in general, silicon carbide can be produced far more economically through manufacturing by the reaction of silica sand and petroleum coke, two widely available and economical feedstocks.

There are two principal grades of silicon carbide. However, the industry is not always in precise agreement about the meaning of these terms, especially when it comes to establishing a precise level at which one grade is separated from another. Crystalline grade silicon carbide generally contains well over 90 percent silicon carbide, and metallurgical grade about 85-90 percent or less.⁶ In addition to the two widely used commercial grades described above (i.e., crystalline and metallurgical), there are a number of high-tech/specialty types of silicon carbide that are outside the scope of the petition (and Commerce's investigation), including high-purity silicon carbide and very fine or microsized silicon carbide less than 325 mesh (less than 45 microns in size).⁷

The terms "refined" and "crude" are also used in the industry. A principal point of contention between the parties in this investigation is the degree of differentiation between crude and refined forms of the product. In general, however, in contrast to many other chemical products, the distinction between crude and refined silicon carbide is principally related to size and to sizing control and not to purity.^{8 9} For this section, crude silicon carbide is defined as silicon carbide that has not been ground,

⁶ According to petitioners, crystalline grade silicon carbide "typically describes products containing 97 to 98 percent silicon carbide" whereas metallurgical grade silicon carbide "typically describes products containing 70 to 92 percent silicon carbide." To make the metallurgical material, "material containing 93 to 96 percent silicon carbide is generally combined with other, lower content material" (petition, p. 6).

⁷ High-purity or green silicon carbide, which has a silicon carbide content of 99.5 percent or higher, is used in the manufacture of precision quality abrasives such as grinding wheels for automobile manufacture and the production of heavy machinery. High-purity silicon carbide is used when precise shaping is required. It may also be used in the manufacture of composites and ceramics. Microsized silicon carbide is used in manufacturing polishing and sintering compounds.

⁸ Conference transcript (preliminary), p. 70.

⁹ According to petitioners, silicon carbide in lumps that are 1 inch or less in any dimension is referred to as crude, even though some processing has taken place, i.e., the separation of lumps about 1 inch or finer from coarser lumps. "In its crude form, silicon carbide consists of lumps that are generally one inch and finer in size." Refining involves a more precise sizing and screening operation of smaller dimensions. "When refined, the silicon carbide is separated into predetermined sizes established by the American National Standard Institute ("ANSI")" (petition, p. 6).

pulverized, or otherwise refined or processed after furnacing, and normally is crushed at the furnacing site into lump sizes of not greater than 2.54 centimeters (1 inch) before it is shipped or sold.¹⁰ Crude silicon carbide generally passes through a series of crushers after furnacing to achieve lump sizes of not greater than 1 inch. The series of crushers (backhoe, head crusher, and jaw crusher) results in the transformation of the product into an essentially granular form.¹¹ Refined silicon carbide is defined as that which has been ground, pulverized, or otherwise refined or processed after furnacing and initial crushing.^{12 13}

According to data provided by Exolon, further processing beyond the initial separation after furnacing adds *** to *** percent to the value.¹⁴ However, according to petitioners, there is a continuum of different-sized material. Costs increase as the grain size is progressively reduced.¹⁵ Respondents Miller & Co., et al, place the value added due to refining at between \$0.30 and \$5 or \$6 (per pound), depending on the reduction of sizes that are involved.¹⁶

A related point of contention is the degree of difference between the initial crushing steps of the furnaced silicon carbide product and the final steps in the comminution of the refined silicon carbide. The petitioners contend that these reduction processes "are essentially the same," although they agree that "[d]ifferent types of machines are used along the continuum of processing as the size of the material gets smaller and smaller."¹⁷ In contrast, respondents Miller & Co., et al, stress that the initial and final comminution steps are different because "[t]he machines are different and the facilities are different."¹⁸

¹⁰ In crushing crude silicon carbide in the furnacing facility, Treibacher reduces the particle size to 1 inch and finer, Saint-Gobain reduces the silicon carbide to particle size of 3/4 inch and finer, and Exolon reduces the particle size to 3/8 inch and finer (see discussion in "Manufacturing process").

¹¹ Based on staff field interview with officials of Treibacher, Mar. 3, 1994.

¹² In developing the definitions used in the questionnaire, the staff relied on information provided by both government and industry sources. Parties to the investigation were also provided the opportunity to make general comments on the questionnaires before their actual mailing.

¹³ As noted above, there is no unique definition for crude and refined silicon carbide. According to respondents Miller & Co., et al, (posthearing brief, Ober, Kaler, Grimes & Shriver, exhibit 2), "An all-inclusive definition of refined silicon carbide would be (1) any of the following grit sizes - 8 through 240 grit (2) any size material that was defined by having a coarse mesh size and a fine mesh size, such as 25mm x 1mm or 60 mesh x 180 mesh."

Another definition of crude silicon carbide and refined silicon carbide was provided by Gene Lunghofer of EPL Ceramics Materials. Mr. Lunghofer worked for General Abrasives during 1977-88, and he is currently a consultant on silicon carbide and fused and ceramic materials. Mr. Lunghofer indicated in a submission to the Commission's staff dated May 13, 1994, that in addition to meeting content and purity requirements "it is the belief of my collective staff" that for a crude silicon carbide "at least Fifty (50) wt% of representative sample must be plus (+) [greater than] 3/8." Conversely, the definition of grain (size) silicon carbide is "If Fifty (50) wt% or more of the representative sample is (-) [less than] 3/8". According to Mr. Lunghofer, a not uncommon and an apparently more inclusive definition of crude is "having a size of -25 mm." Mr. Lunghofer states that silicon carbide from China that was listed under lumps of -100mm, -50mm, and -25mm is consistent with the definition of crude, and distinct from these crude grades is silicon carbide from China referred to in terms of grit sizes.

¹⁴ Petitioners' posthearing brief, response to Commissioner Nuzum's questions, pp. 5 and 6.

¹⁵ Ibid.

¹⁶ Posthearing brief, Ober, Kaler, Grimes & Shriver, p. 19.

¹⁷ Petitioners' posthearing brief, response to Commissioner Nuzum's questions, pp. 5-7.

¹⁸ Posthearing brief, Ober, Kaler, Grimes & Shriver, p. 19.

Silicon carbide has three large-volume uses and many other lower volume uses. The large-volume uses are in metallurgical or foundry applications, in abrasives, and in refractory applications. In metallurgical applications, principally ferrous metallurgy, silicon carbide acts as a source of carbon and silicon, as a deoxidant, and as a source of heat. In cupola furnaces, in the production of cast iron, silicon carbide is added to the furnace typically in the form of a briquette, whereas in induction furnaces silicon carbide is typically added as a grain. In general, the purity specification for silicon carbide in metallurgical applications is less stringent than in other applications. Silicon carbide competes with ferrosilicon in metallurgical applications, as discussed further in the section entitled "Substitutability."

Before use in both abrasive and refractory applications, crude silicon carbide is ground into grains and is magnetically treated to remove iron impurities resulting from the use of grinding wheels. It is then carefully sized by screening. For abrasive applications, which generally use only the crystalline grades of silicon carbide, obtaining the appropriate grain size is of critical importance because grains that are too large will scratch the surface, whereas grains that are too small will fail to act as an abrasive. As an abrasive, silicon carbide products are used to grind very hard and/or very soft materials, especially low-tensile-strength materials. Appropriate materials on which silicon carbide abrasives can be used include rubber, plastics, cast iron, marble, porcelain, and nonferrous alloys of aluminum, copper, and brass. Silicon carbide is used in both bonded abrasives, including grinding wheels, and in coated abrasives such as sandpaper. The types of applications of silicon carbide in abrasives include blasting abrasives, wiresawing abrasives, antislip abrasives, and polishing abrasives.

In refractory applications, both metallurgical and crystalline grades of silicon carbide are used; crystalline grade silicon carbide is generally used in abrasive applications. Silicon carbide may be used by itself or in conjunction with other refractories. Silicon carbide as a refractory is used in incinerators, in firebricks for kilns, and in the lining of furnaces producing iron or steel. A characteristic of silicon carbide used in some refractories is that a range of grain sizes may be required, i.e., the grain sizes are said to be split. In general, refined silicon carbide can be used in place of crude silicon carbide or crystalline grade can be used in place of metallurgical grade, but not vice versa.

Silicon carbide is also used in electronics for semiconductors, in nuclear applications, in high-temperature applications, in coatings, and in composites.

Manufacturing Process

Crude silicon carbide is produced in an energy-intensive process by reacting silica sand and carbon (usually petroleum coke in the United States; either petroleum coke or anthracite coal in China) in an electron resistance furnace. The chemical reaction in this process is represented by the formula $\text{SiO}_2 + 3\text{C} = \text{SiC} + 2\text{CO}$. The silica sand and petroleum coke are placed around a graphite core and between electrodes. An electric current is passed through the electrodes and the graphite core and the intervening silica sand-coke mix. When the temperature reaches about 2,000 degrees celsius, silica sand and carbon react to form silicon carbide. This reaction does not occur uniformly throughout the furnace but occurs in an expanding cylinder around the graphite core. When the reaction has reached the outer walls of the furnace, the furnace is shut down and the reacted material is removed.

The material near the graphite core that is richest in silicon carbide content, the crystalline grade, is separated from the material that is less rich in silicon carbide, the metallurgical grade. Material that has not reacted sufficiently is generally considered a by-product. It may be recycled or it may be shipped after initial crushing to a briquetter where material containing about 40 percent silicon carbide is usable. The crude metallurgical and crystalline material is reduced in size using an instrument such as a hydraulic hammer and this material is then fed to a crusher. Most of the silicon carbide to be used

in abrasive and refractory applications is then ground into grains, magnetically treated to remove iron impurities, and carefully sized by the use of screens, as noted above. Alternatively, the crude silicon carbide can be sold after initial crushing directly for metallurgical applications. Figure 1 presents a graphic description of the production process.

In processing crude silicon carbide from the furnace, Saint-Gobain uses a backhoe to separate the grades. The silicon carbide is then crushed in a rotary impact hammermill, in which rapidly circulating metal plates break down the larger pieces of crude material to 3/4 inch or finer.¹⁹ The material is then shipped to Worcester, MA, where it is passed through jaw crushers to produce a product 1/4 inch or finer. Adjustable cylindrical roll crushers in conjunction with screening are used to produce a product down to 325 mesh. Treibacher uses a similar process except that the initial crushing in Treibacher's Canadian furnace facility reduces the silicon carbide to 1 inch and finer, after which the material is shipped to Treibacher's U.S. facility, where smaller jaw crushers reduce the product to 3/8 inch or finer, which is suitable for most refractory applications. For abrasive applications, roll crushers, hammermills, and ball mills reduce the silicon carbide to the desired size and shape. At Exolon's Hennepin, IL, facility the separated silicon carbide is reduced in size to 3/8 inch or finer, using a jaw crusher and then a cone crusher. In Tonawanda, NY, the material is then further reduced in size and shape using cone and mantle crushers, roll crushers, and "attrition mills".²⁰ Roll crushers are suited to produce light-density sharp material to be used in sandpaper. Ball mills remove the sharp edges from the particles, or in terms of the industry, they produce "blockier" particles suitable for grinding wheels. Hammer mills can produce either shape.²¹

The Issue of the Quality of the Chinese Product

The suitability of the Chinese product for abrasive and other higher-end uses is another point of contention between the parties in this investigation. Respondents indicate that the Chinese are not capable of supplying the high-end abrasives market in the United States because of quality problems. These alleged quality problems result from the Chinese reliance on anthracite coal rather than higher-quality petroleum coke as a raw material and the lack of, or lack of access to, sufficient electricity in China. Respondents contend that purity of raw materials and furnace time are key to producing a high-quality crystalline grade product for the abrasives market. Because the use of coal rather than petroleum coke results in a less pure product, and because of the shorter Chinese furnace cycles (24 hours compared with 7 to 10 days for the U.S. producer), the respondents assert that they are not capable of producing crystalline grade silicon carbide having the necessary crystalline structure and hardness that is required in the abrasives market.²² Respondents indicate, however, that 7th Grinding Wheel Factory and at least six other factories (one of which stopped production) use petroleum coke.²³ However,

¹⁹ According to A.F. Taggart, Crushing, Handbook of Material Dressing, a first step in the beneficiation of solid materials is the successive reduction of the mineral, a process called comminution. Crushing entails the successive reduction stages down to 1/4 inch or finer. Reduction significantly below 1/4 inch (6 mm) is called grinding. Crushing can be further subdivided into coarse crushing, reducing the feed to 4 to 6 inches or coarser; intermediate crushing, reducing a 6 to 8 inch feed to 1/2 or 3/8 inch; and fine crushing, reducing the feed to 1/4 inch (6mm) or finer. The first crushing stage is called primary crushing; the second crushing stage is called secondary crushing, and so on. (This information was extracted from Taggart by Gene Lunghofer of EPL Ceramics Material, in a submission provided to the Commission on May 13, 1994).

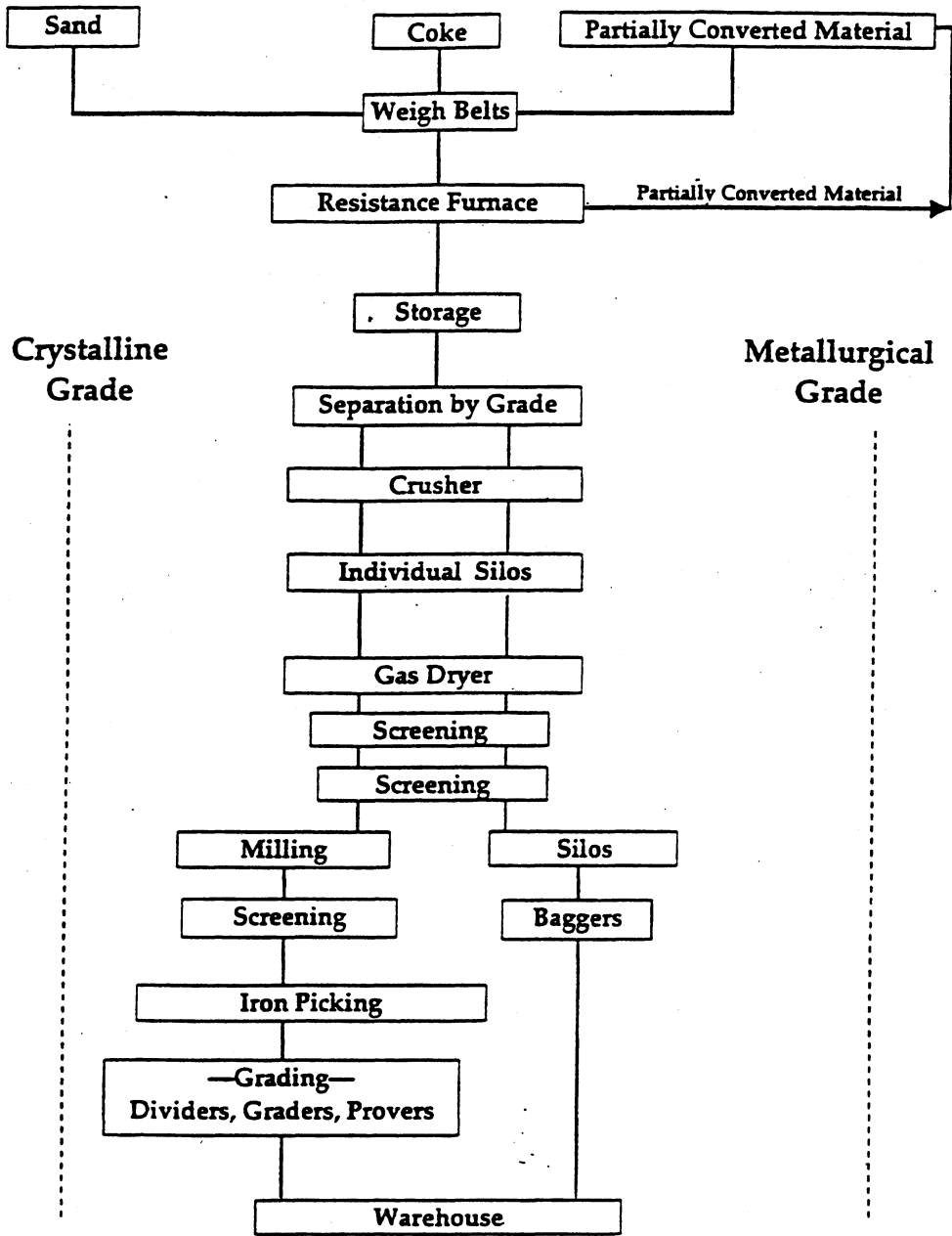
²⁰ Petitioners' posthearing brief, response to Commissioner Nuzum's questions, pp. 17-19.

²¹ Ibid.

²² Posthearing brief, Ober, Kaler, Grimes & Shriver, response to Commissioner's Nuzum's questions, exhibits 1 and 2.

²³ Ibid., exhibit 2.

Figure 1
Silicon carbide manufacturing process flow



Source: Counsel for petitioners .

even when high-quality petroleum coke of low ash content was employed, one importer, Transtech, indicated that it was not successful in selling this material in the U.S. market because of the transportation costs incurred. Over the 8-year period that Transtech imported silicon carbide from China, according to this submission, the firm was unable to penetrate the domestic abrasive market. The Chinese crystalline material, however, is deemed suitable by Transtech for use in metallurgical or refractory applications.²⁴ A letter from James Kintzel, Plant Manager of Electro Abrasives Corp., dated February 3, 1994, indicated that the Chinese material was not suitable for abrasive use because of unsatisfactory physical properties such as low test numbers for bulk density and toughness and unsatisfactory magnetics readings.²⁵ However, according to an affidavit dated May 6, 1994, by John Crowe of Saint-Gobain, based on a sample of Chinese crystalline crude, that material was deemed suitable for abrasive applications.²⁶ According to a submission by Gene Lunghofer of EPL Ceramic Materials, dated May 13, 1994, the Chinese are capable of exporting at least some high-quality silicon carbide to the United States. According to Mr. Lunghofer, the Chinese have offered green silicon carbide, the high-purity form of silicon carbide, in the United States.

According to data provided by importers during 1990-93, almost all of the silicon carbide imported by the United States from China was crude or metallurgical grade and only *** percent of the silicon carbide imported from China was reported to be refined. However, the percentage of silicon carbide from China imported by the United States that was reported to be refined increased from *** percent (*** short tons) of total U.S. imports of silicon carbide from China in 1990 to *** percent (*** short tons) of such imports in 1993.

Substitutability

Ferrosilicon is substitutable with silicon carbide in many metallurgical applications, especially in foundries. However, ferrosilicon is not generally substitutable with silicon carbide in silicon carbide's other major end uses, i.e., abrasive and refractory applications.

Ferrosilicon competes with metallurgical-grade silicon carbide in foundry applications, believed to be the largest metallurgical end use for silicon carbide. Like silicon carbide, ferrosilicon is a source of silicon for casting of gray and ductile iron. The silicon serves as a source of heat, as a deoxidant, and as a mild inoculant to improve the even distribution of graphite in the casting. Ferrosilicon does not, however, contain carbon, which is also required in some applications such as in cupola furnaces. When ferrosilicon is substituted for silicon carbide in an application requiring carbon, the carbon must be obtained from another source, typically metallurgical coke in cupola furnaces or graphite or calcined petroleum coke in induction furnaces.

The key considerations in the choice of use of silicon carbide versus ferrosilicon in foundry applications are relative pricing and technical desirability. Some producers prefer to use a mixture of silicon carbide and ferrosilicon in cupola applications because such a mixture, purportedly, contributes to chemical uniformity. However, in response to price changes, the share of the less expensive component to be used in the furnace may be increased.²⁷

²⁴ Ibid.

²⁵ Ibid, exhibit 4.

²⁶ Petitioners' posthearing brief, exhibit #3, p. 2.

²⁷ As an example, ***, which had been a significant user of silicon carbide, switched to ferrosilicon in *** in response to higher prices for silicon carbide. In ***, responding to falling silicon carbide prices, the company switched back to using silicon carbide. (Based on a conversation on Mar. 23, 1994, with *** an importer and a supplier of silicon carbide to ***).

Some silicon carbide is also used in steel manufacture in the basic oxygen furnace. In general, however, ferrosilicon is preferred because many steel producers, especially in the production of low-carbon steel, find it difficult to cope with the substantial amount of carbon that is added to the metallurgical blend when silicon carbide is dispensed.²⁸

U.S. Tariff Treatment

U.S. imports of crude silicon carbide from countries entitled to the column 1-general (most-favored-nation) duty rate, including China, enter free of duty under subheading 2849.20.10²⁹ of the HTS. The column 1-general duty rate under HTS subheading 2849.20.20 for U.S. imports of granular, ground, pulverized, or refined silicon carbide is 0.7 cent per kilogram. The column 2 rate of duty for crude silicon carbide is also free; that for refined silicon carbide is 2.2 cents per kilogram and is applicable to imports from those countries specified in general note 3(b) to the HTS.³⁰

THE U.S. MARKET

Channels of Distribution

Based on information supplied in the Commission's questionnaires, U.S.-produced silicon carbide and that imported from China flow through similar channels of distribution, which for the most part consist of sales directly from the producer or importer to the end-user customer. Only a minor portion of the sales of either producers or importers are to distributors.

Figure 2 shows U.S. producers' 1993 sales of crude and refined silicon carbide by customer type. As shown in the figure, end-user customers comprised *** percent of U.S. producers' (meaning

²⁸ According to table 3 in the silicon preprint in the U.S. Bureau of Mines, Minerals Yearbook, 1992, reported silicon carbide consumption used in the production of cast irons, not for abrasive or refractory uses, amounted to 30,072 metric tons, gross weight. Reported ferrosilicon consumption for cast irons production was about four-and-a-half times reported silicon carbide consumption, in terms of gross weight, amounting to 133,223 metric tons. Reported ferrosilicon consumption for steel production amounted to 190,761 metric tons in 1992. In contrast to the significant use of silicon carbide in cast irons production, reported consumption of silicon carbide for steel production was marginal, amounting to only 96 metric tons in 1992.

²⁹ This subheading includes the subject silicon carbide as well as other nonsubject specialty silicon carbides discussed above.

³⁰ According to Joe DeMaria, national import specialist (retired), U.S. Customs Service, imports of silicon carbide briquettes would not be classified under HTS heading 2849 but instead would be classified under HTS heading 3823, "prepared binders for foundry molds or cores; chemical products and preparations of the chemical or allied industries (including those consisting of mixtures of natural products), not elsewhere specified or included; residual products of the chemical or allied industries, not elsewhere specified or included." Mr. DeMaria also opined, based on Customs rulings for other products, that imports of granular silicon carbide with an SiC content of less than 65 percent, by weight, would not be classified with other silicon carbide in HTS heading 2849. Customs, however, has not issued a ruling nor been asked to make a ruling on the matter. Customs has also never issued a ruling, nor been asked to do so, on the difference between crude and refined silicon carbide (telephone interviews, July 21 and 22, 1993). Nevertheless, an importer confirmed that its imports of silicon carbide with an SiC content of 40 percent, by weight, were classified in HTS heading 2849.20.10 along with its higher SiC content imports (telephone interview with ***, July 21, 1993).

Figure 2

Silicon carbide: Producers' U.S. shipments, by forms and by customer types, 1993

* * * * *

Exolon, since it is the sole domestic producer of crude silicon carbide) sales of crude silicon carbide and 91 percent of U.S. producers' sales of the refined product. All of the U.S. sales of imported Chinese crude and refined silicon carbide were to end-user customers. As shown in the tabulation that follows, *** percent of Exolon's U.S. shipments and 32 percent of the U.S. shipments of U.S. importers of Chinese crude silicon carbide to distributor and end-user customers in 1993 involved product containing from 20 to 50 percent silicon carbide, by weight. The bulk of U.S. importers' shipments of refined silicon carbide were concentrated in product containing from 76 to 95 percent silicon carbide, whereas 100 percent of U.S. producers' U.S. shipments was silicon carbide containing 96 to 98 percent silicon carbide, by weight.

	<u>Percent of U.S. shipments containing--</u>			
	<u>20-50%</u>	<u>51-75%</u>	<u>76-95%</u>	<u>96-98%</u>
	<u>SiC</u>	<u>SiC</u>	<u>SiC</u>	<u>SiC</u>
Crude:				
U.S. producers ¹	***	***	***	***
U.S. importers	31.5	15.7	52.8	-
Refined:				
U.S. producers ²	-	-	-	100.0
U.S. importers	-	-	85.3	14.6

¹ Based on data reported by Exolon.

² Based on data reported by Detroit Abrasives, Exolon, Treibacher, Saint-Gobain, and Washington Mills.

Federal Government Sales of Strategic Reserves

The Defense National Stockpile Center (DNSC), a defense-related program, stockpiles strategic commodities, including silicon carbide, in order to sustain military, industrial, and essential civilian needs. The DNSC has not purchased silicon carbide since 1956 and anticipates no further purchases given that the existing stockpile of material has been determined to be in excess of the government's requirement. The country of origin of DNSC's purchases of silicon carbide is almost exclusively Canada. Such purchases consist almost entirely of crude crystalline grade product containing from 96.88 to 97.63 percent silicon carbide by weight. Periodically, the DNSC sells silicon carbide from its reserves. The amount to be sold is set by the Market Impact Committee, which requires that sales not have an impact on the market. In fiscal year 1993, the DNSC sold from stockpile 4,250 short tons of silicon carbide. At the end of the fiscal year ending September 30, 1993, 32,256 short tons of silicon carbide were held in inventory by the DNSC.

Apparent U.S. Consumption

Data on apparent consumption of silicon carbide are presented in table 1. The quantity and value of apparent consumption of crude silicon carbide *** by *** percent and *** percent, respectively, from 1990 to 1991, *** by *** percent and *** percent, respectively, from 1991 to 1992, and *** by *** percent and *** percent, respectively, from 1992 to 1993. Over the 4-year period 1990-93, the

Table 1
Silicon carbide: U.S. shipments of domestic product, U.S. shipments of imports, by sources, and apparent U.S. consumption, by forms, 1990-93

Item	1990	1991	1992	1993
	Quantity (short tons)			
Crude silicon carbide:				
Producers' U.S. shipments	***	***	***	***
Importers' U.S. shipments:				
China	10,896	9,920	27,378	36,667
Other sources	85,440	61,152	56,285	65,196
Total	96,336	71,072	83,663	101,863
Apparent consumption	***	***	***	***
Refined silicon carbide:				
Producers' U.S. shipments	60,105	50,789	48,824	54,367
Importers' U.S. shipments:				
China	***	***	***	***
Other sources	***	***	***	***
Total	2,808	3,788	6,152	5,513
Apparent consumption	62,913	54,577	54,976	59,880
	Value (1,000 dollars)			
Crude silicon carbide:				
Producers' U.S. shipments	***	***	***	***
Importers' U.S. shipments:				
China	5,152	3,139	7,888	9,454
Other sources	48,012	35,535	33,728	36,602
Total	53,164	38,674	41,616	46,056
Apparent consumption	***	***	***	***
Refined silicon carbide:				
Producers' U.S. shipments	50,705	45,280	42,436	44,827
Importers' U.S. shipments:				
China	***	***	***	***
Other sources	***	***	***	***
Total	3,202	3,879	5,722	6,236
Apparent consumption	53,907	49,159	48,158	51,063
	Share of the quantity of U.S. consumption (percent)			
Crude silicon carbide:				
Producers' U.S. shipments	***	***	***	***
Importers' U.S. shipments:				
China	***	***	***	***
Other sources	***	***	***	***
Total	***	***	***	***
Refined silicon carbide:				
Producers' U.S. shipments	95.5	93.1	88.8	90.8
Importers' U.S. shipments:				
China	***	***	***	***
Other sources	***	***	***	***
Total	4.5	6.9	11.2	9.2

Table continued on next page.

Table 1—Continued

Silicon carbide: U.S. shipments of domestic product, U.S. shipments of imports, by sources, and apparent U.S. consumption, by forms, 1990-93

Item	1990	1991	1992	1993
	Share of the value of U.S. consumption (percent)			
Crude silicon carbide:				
Producers' U.S. shipments	***	***	***	***
Importers' U.S. shipments:				
China	***	***	***	***
Other sources	***	***	***	***
Total	***	***	***	***
Refined silicon carbide:				
Producers' U.S. shipments	94.1	92.1	88.1	87.8
Importers' U.S. shipments:				
China	***	***	***	***
Other sources	***	***	***	***
Total	5.9	7.9	11.9	12.2

Note.—Because of rounding, shares may not add to the totals shown.

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

quantity of apparent consumption *** from *** short tons to *** short tons, while the value *** from \$*** to \$***. The quantity and value of apparent consumption of refined silicon carbide fell and rose somewhat similarly from 1990 to 1993, decreasing by 13 percent by quantity and 9 percent by value from 1990 to 1991, decreasing in quantity and value by 1 and 2 percent, respectively, from 1991 to 1992, and increasing by 10 percent in quantity and by 6 percent in value from 1992 to 1993.

Apparent consumption (by quantity) of silicon carbide by forms and grades is shown in figure 3. As shown, the largest portion of apparent consumption of silicon carbide between 1990 and 1993 consisted of crude metallurgical grade product, followed by crude crystalline grade product, which mostly was used as feedstock for producing refined crystalline grade silicon carbide. The apparent consumption quantity of all forms/grades of silicon carbide dipped from 1990 to 1991 and rose steadily from 1991 to 1993.

U.S. Producers

In addition to the three firms that comprise the petitioning coalition (Exolon, Treibacher,³¹ and Saint-Gobain), five other firms produce or refine silicon carbide in the United States. Exolon is the only firm that produces crude silicon carbide in the United States. Exolon makes refined silicon carbide from its own production of crude, while the other firms process refined silicon carbide from purchased crude

³¹ Formerly General Abrasives Treibacher, Inc. Name change effective Nov. 1, 1993.

Figure 3

Refined silicon carbide: Apparent consumption, by forms and by grades, 1990-93

* * * * *

(domestic and imported). Producers' and importers' questionnaires were sent to the eight known producers/processors of silicon carbide and responses were received from all eight.

Exolon is an integrated producer of silicon carbide, producing crude silicon carbide at its production facility in Hennepin, IL, and refined silicon carbide at its facility in Tonawanda, NY. Until October 1990, Exolon also produced crude silicon carbide through a Canadian subsidiary, The Exolon-ESK Co. of Canada, Ltd. The Canadian operation was shut down due to ***.³² Exolon is partly owned by Wacker Chemical Corp., U.S.A. and has affiliated firms in Germany, the Netherlands, and Norway that also produce and/or refine silicon carbide.³³

Treibacher is a wholly-owned subsidiary of American Treibacher Corp. of Niagara Falls, NY, which in turn is wholly-owned by Treibacher Chemische Werke, A.G. of Austria. Treibacher also is an integrated producer of silicon carbide. However, its furnacing operations for crude silicon carbide are outside the United States, in Niagara Falls, Ontario, Canada.³⁴ From the Canadian plant, Treibacher trucks its crude silicon carbide 3 miles across the border to its production facility in Niagara Falls, NY, where the crude metallurgical grade product is screened, dried, and bagged for shipment to the U.S. metallurgical market.³⁵ Crude crystalline grade silicon carbide is trucked into the United States for further processing in preparation for sales to the refractory and abrasive markets.³⁶ Other products produced by Treibacher at its U.S. facility include aluminum oxide, silicon carbide microgrits, and emery. As a share of Treibacher's overall reporting establishment net sales in its most recent fiscal year, these three products accounted for *** percent, *** percent, and *** percent, respectively, of net sales.

Saint-Gobain ***. Saint-Gobain produces refined crystalline grade silicon carbide and refined specialty silicon carbide.³⁷ Norton Advanced Ceramics Canada, a wholly owned subsidiary of Saint-Gobain, produces crude silicon carbide in Quebec, Canada.³⁸ Crude material from Quebec is transferred to Saint-Gobain's U.S. refining facility in Worcester, MA.

The Carborundum Co. *** and produces only refined crystalline grade silicon carbide. ***. Although Carborundum ***. During 1990-92, Carborundum ***; it uses the remainder of its refined production internally in the production of refractory products. When asked in the Commission's questionnaire to indicate its support or opposition to the petition, Carborundum stated "****."

Detroit Abrasives Co., Chelsea, MI, produces only refined crystalline grade silicon carbide. Its primary manufactured product is aluminum oxide, which in its most recent fiscal year accounted for about *** percent of its total net sales. Mr. Richard Wallace, president of the firm, indicated ***.

³² Exolon's producer questionnaire response, p. 7B.

³³ ***.

³⁴ Control of the Canadian furnacing operations is exercised from Treibacher's Niagara Falls, NY, corporate offices.

³⁵ Hearing transcript, p. 28.

³⁶ Ibid., pp. 28 and 29.

³⁷ ***.

³⁸ Saint-Gobain indicated in its questionnaire response ***. (Saint-Gobain's producer questionnaire, p. 7.)

Electro Abrasives Corp., Buffalo, NY, produces only refined crystalline grade silicon carbide, fused aluminum oxide, and other miscellaneous products. In response to the question of whether it supported or opposed the petition, Allan Ramming, president, stated:

"***" ³⁹

Electro Abrasives ***.

Washington Mills Electro Minerals Corp. (Washington Mills), Niagara Falls, NY, produces refined silicon carbide ***. It also ***. Washington Mills also ***. Nearly *** percent of Washington Mills' 1993 U.S. shipments were of crystalline grade silicon carbide. Washington Mills ***. In indicating its support or opposition to the petition, Donald Dillman, vice president and chief financial officer, stated:

"***" ⁴⁰

Minnesota Mining and Manufacturing Co. (3M) produces refined crystalline grade silicon carbide at its plant in St. Paul, MN, using crude purchased from ***. All of 3M's production is used internally either in the United States or in its Canadian operations in the production of abrasive products. 3M ***.

The names of producers, plant locations, grades produced, and shares of reported 1993 U.S. production of refined silicon carbide are presented in table 2.

U.S. Importers

The Commission mailed importers' questionnaires to the 8 U.S. producers and 26 U.S. importers⁴¹ of silicon carbide identified by either petitioners or the Customs Net Importer File as importers of silicon carbide.⁴² Nineteen firms, including three U.S. producers, returned completed or nearly completed importers' questionnaires. The staff believes these firms accounted for the bulk of all U.S. imports of crude and refined silicon carbide from China and all other sources.

CONSIDERATION OF THE QUESTION OF MATERIAL INJURY TO AN INDUSTRY IN THE UNITED STATES

The questionnaires used in this investigation sought to collect information on U.S. producers' operations involving silicon carbide by forms (i.e., crude and refined) and by grades (i.e., metallurgical and crystalline). The questionnaires defined crude silicon carbide as silicon carbide that "has not been ground, pulverized, or otherwise refined or processed after furnacing, and normally is initially crushed into lump sizes of 25.4 millimeters (1 inch) or coarser." Refined silicon carbide was defined as silicon carbide that "has been ground, pulverized, or otherwise refined or processed after furnacing and initial crushing." Except for size distinctions, these two definitions for crude and refined silicon carbide are in accordance with the product descriptions of crude and refined silicon carbide as described in the HTS. Because Exolon, the only domestic producer of crude silicon carbide, crushes the material to less than 1 inch at its Hennepin plant, it reported information on its silicon carbide operations as entirely

³⁹ Silicon Carbide from the People's Republic of China (investigation No. 731-TA-651 (Preliminary)), producers' questionnaire response, p. 6.

⁴⁰ Washington Mills' producer questionnaire response, p. 6.

⁴¹ Petitioners identified another company, TS & JL International, which they believe imports silicon carbide from China; however, neither they nor the staff were able to locate a telephone number or address for the company.

⁴² Importers' questionnaires were also sent to 18 firms which the Customs Net Importer File identified as importers of more than \$100,000 of silicon carbide from countries other than China.

Table 2

Silicon carbide: U.S. producers, locations of production facilities, and shares of production of refined silicon carbide in 1993

Firm	Location	Grade(s) produced	Share of 1993 U.S. production ¹ (Percent)
Petitioning coalition:			
Exolon	Tonawanda, NY	*** ²	***
Treibacher	Niagara Falls, NY	***	***
Saint-Gobain	Worcester, MA	***	***
			<u>62.0</u>
Other producers:			
Carborundum	Keasbey, NJ	***	***
Detroit Abrasives	Chelsea, MI	***	***
Electro Abrasives	Buffalo, NY	***	***
3M	St. Paul, MN	***	***
Washington Mills	Niagara Falls, NY	***	***
			<u>38.0</u>

¹ All grades of refined silicon carbide. Due to rounding, percentages do not add to 100.0.

² ***.

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

operations concerning refined silicon carbide. However, based on information developed in the investigation, Exolon is known to furnace crude silicon carbide at its Hennepin plant and further process or refine the same at its plant in Tonawanda. Information supplied by Exolon in response to a question in the Commission's producers' questionnaire tends to support the notion that Exolon does indeed produce two distinct forms of silicon carbide, crude and refined. In responding to the question in the questionnaire asking whether or not it produces all grades and all forms of silicon carbide on the same machinery and equipment, Exolon responded:

"***."

Exolon followed up its initial submission with separate questionnaire information on the operations of its two production locations in Hennepin, IL, and Tonawanda, NY. Therefore, the information presented in this section for crude silicon carbide is based on the data supplied by Exolon on its Hennepin operations and the information on refined silicon carbide is based on Exolon's Tonawanda operations.

Unless otherwise indicated, data in this section pertaining to U.S. producers' operations on crude silicon carbide are for Exolon only and data for U.S. producers' operations on refined silicon carbide are for Carborundum, Detroit Abrasives, Electro Abrasives, Exolon, Saint-Gobain, Treibacher, Washington Mills, and 3M. Given that crude silicon carbide is an intermediate material used in the production of refined silicon carbide and other products, data on consumption, production, capacity, and capacity utilization generally are presented separately for crude silicon carbide and refined silicon carbide to avoid double counting or other aberrations.

U.S. Production, Capacity, and Capacity Utilization

Table 3 shows U.S. producers' production capacity and production of crude and refined silicon carbide. Exolon's production of crude silicon carbide *** from *** short tons in 1990 to *** short tons in 1993. Its capacity utilization over the same period averaged nearly *** percent. Because of high energy costs charged to furnacing operations, Exolon argues that to operate at less than full capacity would result in significant efficiency losses.⁴³ The company last increased its U.S. furnace capacity in 1990, the year it closed its Canadian furnacing operations. Based on information presented at the Commission's hearing, Exolon has considered expanding its furnace capacity by adding two additional transformers but has decided that, given the current pricing structure in the market, allegedly driven by dumped Chinese imports, the considerable investment in such an expansion would be unwise.⁴⁴ Certain environmental considerations also constrained the company's expansion considerations.⁴⁵

U.S. production of refined silicon carbide fell by more than 16 percent from 1990 to 1991, then increased by 1 percent and 6 percent, respectively, from 1991 to 1992 and from 1992 to 1993. The overall change in production from 1990 to 1993 was a decrease of 6,960 short tons.⁴⁶ U.S. producers' average-of-period refined silicon carbide production capacity fluctuated insignificantly from 1990 to 1993, resulting in a slight decrease. U.S. producers' capacity utilization ranged from 62 percent in 1990 to 52 percent in 1991 and 1992. No U.S. producer reported experiencing any plant closures due to equipment failures or material shortages during the period for which information was requested.⁴⁷

All eight firms that supplied questionnaire information produced refined crystalline grade silicon carbide during the period for which information was requested. Three of the firms, ***, reported production of refined metallurgical grade silicon carbide. Exolon ***.⁴⁸ Figure 4 presents U.S. production of crude and refined silicon carbide by the two grades, metallurgical and crystalline. As shown in the figure, U.S. production of refined crystalline grade silicon carbide, which accounted for the largest segment of total U.S. production, fell from slightly more than 57,000 short tons in 1990 to 48,000 short tons in 1991 and 1992 and rose to nearly 49,000 short tons in 1993. Refined metallurgical grade silicon carbide accounted for the lowest tonnage of U.S. producers' output of silicon carbide during 1990-93. Such production tonnage did rise, however, by nearly 19 percent from 1990 to 1993.

U.S. Producers' Shipments

Except for ***, Exolon's domestic shipments of crude silicon carbide, excluding product that was consumed internally in producing refined silicon carbide, *** from 1990 to 1993, *** from *** short tons, valued at \$***, in 1990 to *** short tons, valued at \$***, in 1993 (table 4). The average unit value of such shipments fluctuated between \$*** per short ton in 1991 and 1993 and \$*** per short ton in 1992. Exolon's exports of crude silicon carbide *** in 1990 to *** short tons (valued at \$***) in 1993. The average unit value of Exolon's export shipments in 1993 was \$*** per short ton, which was *** percent *** than the average unit value of its domestic shipments of crude silicon carbide.

⁴³ Petitioners' posthearing brief, "Commissioners' Questions," (Commissioner Rohr), p. 1. See also hearing transcript, p. 80.

⁴⁴ Hearing transcript, p. 81.

⁴⁵ Ibid., pp. 44 and 45.

⁴⁶ During 1990-93, Exolon consumed roughly *** of its crude silicon carbide output in producing refined silicon carbide. Exolon's refining operations, which also use imported crude as a raw material input, operated at between *** and *** percent of capacity during 1990-93.

⁴⁷ Exolon reported ***. Treibacher reported ***.

⁴⁸ Because the production of crude silicon carbide yields both metallurgical and crystalline grade product, Exolon, the only U.S. producer of crude material, also produces crude metallurgical grade product. Approximately *** percent of Exolon's 1993 production and *** percent of its shipments of the crude product were metallurgical grade.

Table 3
Silicon carbide: U.S. capacity, production, and capacity utilization, by forms, 1990-93

Item	1990	1991	1992	1993
Average-of-period capacity (short tons)				
Crude silicon carbide ¹	***	***	***	***
Refined silicon carbide ^{2, 3}	106,750	107,220	107,220	105,020
Production (short tons)				
Crude silicon carbide	***	***	***	***
Refined silicon carbide	66,128	55,394	55,753	59,168
Capacity utilization (percent)				
Crude silicon carbide	***	***	***	***
Refined silicon carbide	61.9	51.7	52.0	56.3

¹ Exolon reported capacity on the basis of operating *** hours per week, *** weeks per year.
² In the Commission's preliminary investigation, U.S. producers reported refined silicon carbide capacity totalling 117,145 short tons in 1990 and 117,615 short tons in 1991 and 1992. The difference between the two sets of capacity data is accounted for in part by the fact that ***.
³ Bases of reported capacities are as follows: Exolon, *** hours per week, *** weeks per year; Detroit Abrasives, *** hours per week, *** weeks per year; Electro Abrasives, *** hours per week, *** weeks per year; Treibacher, *** hours per week, *** weeks per year; 3M, *** hours per week, *** weeks per year; Saint-Gobain, *** hours per week, *** weeks per year; and Washington Mills, *** hours per week, *** weeks per year. Carborundum ***.

Note.—Capacity utilization is calculated using data of firms providing both capacity and production information.

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

Figure 4
Silicon carbide: U.S. production, by forms and by grades, 1990-93

* * * * *

Table 4

Silicon carbide: Shipments by U.S. producers, by forms and by types, 1990-93

Item	1990	1991	1992	1993
	Quantity (short tons)			
Crude silicon carbide: ¹				
Company transfers	***	***	***	***
Domestic shipments	***	***	***	***
Subtotal	***	***	***	***
Exports	***	***	***	***
Total	***	***	***	***
Refined silicon carbide:				
Company transfers	14,326	11,590	11,087	12,603
Domestic shipments	45,779	39,199	37,737	41,764
Subtotal	60,105	50,789	48,824	54,367
Exports	6,488	5,373	5,779	5,373
Total	66,593	56,162	54,603	59,740
	Value (1,000 dollars)			
Crude silicon carbide: ¹				
Company transfers	***	***	***	***
Domestic shipments	***	***	***	***
Subtotal	***	***	***	***
Exports	***	***	***	***
Total	***	***	***	***
Refined silicon carbide:				
Company transfers	11,552	10,398	9,801	11,002
Domestic shipments	39,153	34,882	32,635	33,825
Subtotal	50,705	45,280	42,436	44,827
Exports	6,308	5,398	5,684	4,753
Total	57,013	50,678	48,120	49,580
	Unit value (per short ton)			
Crude silicon carbide: ¹				
Company transfers	\$***	\$***	\$***	\$***
Domestic shipments	***	***	***	***
Average	***	***	***	***
Exports	(2)	***	***	***
Average	***	***	***	***
Refined silicon carbide:				
Company transfers	\$1,138	\$1,208	\$1,204	\$1,129
Domestic shipments	855	890	865	810
Average	907	947	925	870
Exports	972	1,005	984	885
Average	913	953	932	872

¹ Data are for Exolon only.² ***.

Note.--Unit values are calculated using data of firms supplying both quantity and value information.

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

The quantity and value of U.S. producers' U.S. shipments (including company transfers) of refined silicon carbide fell unevenly from 1990 to 1993, falling from 60,105 short tons, valued at \$50.7 million, in 1990 to 54,367 short tons, valued at \$44.8 million, in 1993. The per-short-ton unit value of such shipments fluctuated over the same period, showing an overall decrease of 4 percent. However, because it is a higher value-added product, prices for refined silicon carbide are generally quoted on a per-pound basis rather than on a per-short-ton basis.⁴⁹ The quantity and value of U.S. producers' export shipments of refined silicon carbide, mostly to Canada, declined irregularly from 1990 to 1993, falling from 6,488 short tons, valued at \$6.3 million, in 1990 to 5,373 short tons, valued at \$4.8 million, in 1993. The average unit value of U.S. producers' exports rose by 3 percent from 1990 to 1991, fell by 2 percent from 1991 to 1992, and declined by 10 percent from 1992 to 1993.

U.S. producers' U.S. shipment quantities of refined silicon carbide by grades are shown in figure 5. U.S. producers' shipments of crystalline grade refined silicon carbide greatly exceeded U.S. producers' shipments of refined metallurgical grade silicon carbide. The trend lines for both grades, however, were closely parallel, that is declining from 1990 to 1991, flattening out somewhat from 1991 to 1992, and then turning upward from 1992 to 1993.

Figure 5
Refined silicon carbide: Producers' U.S. shipment quantities, by grades, 1990-93

* * * * *

U.S. Producers' Nonimport Purchases and Imports

Because Exolon is the only U.S. producer with furnacing capability, all other producers/refiners must purchase silicon carbide from Exolon, the sole domestic producer of the crude product, or other U.S. sources/importers, or import silicon carbide directly from foreign sources. Exolon has also purchased from other sources in instances of production interruptions or some other unforeseen event. Based on information supplied in the Commission's questionnaires, all eight producers purchased crude and/or refined silicon carbide.

Exolon reported purchasing ***.⁵⁰ U.S. producers were asked in the questionnaire to indicate the reason for purchasing silicon carbide. In its response, Exolon stated:

*** "

Treibacher purchased ***.⁵¹ Treibacher also purchased ***.⁵² Most of Treibacher's crude material, however, is imported from its Canadian unit. Treibacher ***.

Saint-Gobain imports crude silicon carbide from related companies in Canada and Norway. The company also purchases ***.⁵³ Saint-Gobain ***. In response to the question in the Commission's questionnaire, Saint-Gobain stated:

*** "

⁴⁹ Posthearing brief of Ober, Kaler, Grimes & Shriver, p. 19.

⁵⁰ Exolon reported ***. However, because Exolon is the only U.S. producer of crude, these "purchases" are ***.

⁵¹ Producers' questionnaire response, p. 18.

⁵² Ibid. p. 19.

⁵³ Producers' questionnaire response, p. 19.

Carborundum purchases ***.

Detroit Abrasives purchases ***.

Electro Abrasives purchased ***. In its questionnaire response, the company stated ***.⁵⁴ Electro Abrasives added that "****".⁵⁵

3M purchases ***.

Washington Mills purchases ***.⁵⁶

Based on responses to the Commission's questionnaires, U.S. producers' nonimport purchases of foreign-produced refined silicon carbide were rather insignificant over the period for which information was requested. There were no reported purchases by U.S. producers of Chinese-produced refined silicon carbide. Reported purchases of such product produced in countries other than China ranged from a low of *** short tons in 1992 to a high of *** short tons in 1990. U.S. producers' purchases from domestic sources (including other producers) rose from 2,738 short tons in 1990 to 3,765 short tons in 1991, fell to 2,031 short tons in 1992, and then increased to 4,401 short tons in 1993. On the other hand, U.S. producers' nonimport purchases of foreign-produced crude silicon carbide increased steadily from 1990 to 1993, rising from 1,200 short tons in 1990 to 7,235 short tons in 1993 (figure 6). Chinese-produced product accounted for *** percent of the 1993 total.⁵⁷ U.S. producers' purchases of crude from other U.S. producers and domestic sources declined by 20 percent from 1990 to 1993, falling from 11,974 short tons in 1990 to 9,623 short tons in 1993.

Figure 6

Crude silicon carbide: U.S. producers' nonimport purchases, 1990-93

* * * * *

U.S. producers' imports of silicon carbide during the period for which information was requested consisted mostly of crude silicon carbide, the bulk of which originated in countries other than China. Saint-Gobain and Treibacher import crude silicon carbide from affiliated furnacing operations in Canada. Saint-Gobain also ***.

Data on U.S. producers' imports of silicon carbide are shown in table 5. U.S. producers' imports of crude silicon carbide from sources other than China accounted for the bulk of total crude imports in 1990 and 1993 and accounted for all of the imports in 1991 and 1992. Such imports fell irregularly from 82,375 short tons, valued at \$45.3 million, in 1990 to 53,114 short tons, valued at \$29.8 million, in 1993. The average unit value of such imports generally increased over the period, rising from \$550 per short ton in 1990 to \$562 per short ton in 1993. U.S. producers' imports of crude silicon carbide from China, which consisted entirely of petitioners' imports, fell from *** short tons, valued at \$***, in 1990 to *** in 1991 and 1992, and then increased to *** short tons, valued at \$***, in 1993.

⁵⁴ Producers' questionnaire response, p. 18.

⁵⁵ Ibid.

⁵⁶ Producers' questionnaire response, p. 18.

⁵⁷ There were no reported purchases by U.S. producers of Chinese-produced silicon carbide in 1990 and 1991 from U.S. importers. Two producers, ****, accounted for all of the reported purchases of the Chinese-produced product in 1992 and 1993. ****'s purchases totaled *** short tons in 1992 and *** short tons in 1993; ****'s purchases totaled *** short tons in 1992 and *** short tons in 1993.

Table 5
Silicon carbide: U.S. producers' imports, by forms and by sources, 1990-93

Item	1990	1991	1992	1993
<u>Quantity (short tons)</u>				
Crude silicon carbide:				
China	***	0	0	***
Other sources	82,375	56,027	57,123	53,114
Total	***	56,027	57,123	***
Refined silicon carbide:				
China	0	0	0	0
Other sources	***	***	***	***
Total	***	***	***	***
<u>Value (1,000 dollars)</u>				
Crude silicon carbide:				
China	***	0	0	***
Other sources	45,338	31,725	32,915	29,849
Total	***	31,725	32,915	***
Refined silicon carbide:				
China	0	0	0	0
Other sources	***	***	***	***
Total	***	***	***	***
<u>Unit value (per short ton)</u>				
Crude silicon carbide:				
China	\$***	(1)	(1)	\$***
Other sources	550	\$566	\$576	562
Average	***	566	576	***
Refined silicon carbide:				
China	(1)	(1)	(1)	(1)
Other sources	***	***	***	***
Average	***	***	***	***

¹ Not applicable.

Note.--Unit values are calculated using data of firms supplying both quantity and value information.

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

U.S. producers' imports of refined silicon carbide, comprised of petitioners' imports from countries other than China, ***, albeit unevenly, from 1990 to 1993, *** from *** short tons, valued at \$*** in 1990, to *** short tons, valued at \$***, in 1993.

U.S. Producers' Inventories

The volume of end-of-period inventories of crude silicon carbide held by Exolon *** percent from 1990 to 1991, *** by *** percent from 1991 to 1992, and *** by *** percent from 1992 to 1993 (table 6). The ratio of Exolon's yearend inventories of crude silicon carbide to production and the ratio of its inventories to U.S. shipments fluctuated between *** and *** percent during 1990-93. U.S. producers' inventories of refined silicon carbide followed a somewhat similar pattern, that is, declining

Table 6

Silicon carbide: End-of-period inventories of U.S. producers, by forms, 1990-93

Item	1990	1991	1992	1993
	<u>Quantity (short tons)</u>			
Crude silicon carbide	***	***	***	***
Refined silicon carbide	9,737	8,969	9,778	8,936
	<u>Ratio to production (percent)</u>			
Crude silicon carbide	***	***	***	***]
Refined silicon carbide	14.7	16.3	17.6	15.3
	<u>Ratio to U.S. shipments (percent)</u>			
Crude silicon carbide	***	***	***	***
Refined silicon carbide	16.2	17.7	20.0	16.6
	<u>Ratio to total shipments (percent)</u>			
Crude silicon carbide	***	***	***	***
Refined silicon carbide	14.6	16.0	17.9	15.1

Note.--Ratios are calculated using data of firms supplying both numerator and denominator information.

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

from yearend 1990 to yearend 1991, rising from 1991 to 1992, and then declining again from 1992 to 1993. These up-and-down fluctuations notwithstanding, the volume of U.S. producers' 1993 yearend inventories was down 8 percent from the volume held at yearend 1990. The ratio of U.S. producers' inventories of refined silicon carbide to production fluctuated between 15 percent and 18 percent from 1990 to 1993, whereas the ratio of such inventories to U.S. shipments ranged between 16 and 20 percent over the same period.

The bulk of the imports of silicon carbide from China consist of crude metallurgical grade silicon carbide,⁵⁸ which competes with the U.S.-produced product in the foundry and refractory markets. Because every furnace run yields both metallurgical and crystalline grades of silicon carbide, typically at a ratio of something less than 1:1, petitioners contend that in order to move the metallurgical grade product, they must either lower their prices or allow their inventories of this product to build up. An alternative would be to refurnace, which is not cost advantageous. U.S. producers' inventories of crude and refined metallurgical grade silicon carbide are shown in figure 7. As shown in the figure, U.S. producers' inventories of refined metallurgical grade silicon carbide declined steadily from 1990 to 1993, falling by nearly half. Inventories of crude metallurgical grade silicon carbide, on the other hand, fell sharply from 1990 to 1991, rose sharply back to near the 1990 level in 1992, and then dropped to the lowest point of the 4-year period in 1993.

⁵⁸ Hearing transcript, pp. 11 and 15.

Figure 7

Metallurgical grade silicon carbide: U.S. producers' end-of-period inventories, by forms, 1990-93

* * * * *

Employment and Wages

Because Exolon produces crude and refined silicon carbide at different locations (Hennepin, IL, and Tonawanda, NY, respectively), different production and related workers (PRWs) are used to produce these forms of silicon carbide. Although Exolon also produces aluminum oxide in Tonawanda, PRWs are dedicated to either the production of silicon carbide or aluminum oxide. Its PRWs are represented by ***.

The PRWs at Washington Mills are represented by ***. These workers ***.

The PRWs at Treibacher are represented by ***. Treibacher produces ***.

PRWs at 3M produce *** and are represented by ***.

In its questionnaire, the Commission requested U.S. producers to provide detailed information concerning reductions in the number of PRWs producing silicon carbide during January 1990-December 1993 if such reductions involved at least 5 percent of the workforce, or 50 workers. *** reported such reductions. The reductions in the number of workers and the reasons therefore as reported by each firm are shown in the following tabulation.

<u>Firm</u>	<u>Date of reduction</u>	<u>Number of workers</u>	<u>Duration</u>	<u>Reason(s)</u>
	*	*	*	*

U.S. producers' employment data are shown in table 7. The number of PRWs employed by Exolon in the production of crude silicon carbide *** during the period covered by the Commission's questionnaires, ranging from *** to ***. Hours worked by such workers *** from 1990 to 1991, *** in 1992 by *** percent, *** to *** hours, and *** by *** percent to *** hours in 1993. Wages and total compensation paid by Exolon to its PRWs producing the crude product *** from 1990 to 1992, by *** percent, but *** by *** percent from 1992 to 1993, reflecting ***. Hourly wages and hourly total compensation paid to those workers showed similar trends, both of which *** by *** percent from 1990 to 1992 and *** by about *** percent from 1992 to 1993. Productivity of Exolon's PRWs producing crude silicon carbide *** from 1990 to 1991, *** to *** short tons per 1,000 worker hours in 1992, and *** to *** short tons per 1,000 worker hours in 1993.

During 1990-93, the number of PRWs producing refined silicon carbide and the number of hours worked by such workers declined by 11 percent and 18 percent, respectively. Wages and total compensation paid to those same workers fell over the period by 11 percent and 13 percent, respectively. Productivity of PRWs producing the refined product dropped sharply from 270 short tons per 1,000 worker hours in 1990 to 241 short tons per 1,000 worker hours in 1991. Output per worker hour improved somewhat in 1992 and jumped sharply in 1993, rising to 297 short tons per 1,000 worker hours. U.S. producers' unit labor costs for PRWs producing refined silicon carbide increased by 13 percent from 1990 to 1991, increased by 6 percent from 1991 to 1992, but then declined by 18 percent from 1992 to 1993.

Table 7

Average number of production and related workers (PRWs) in U.S. establishments wherein silicon carbide is produced, hours worked,¹ wages and total compensation paid to such employees, and hourly wages, productivity, and unit production costs,² by products, 1990-93³

Item	1990	1991	1992	1993
Number of PRWs				
All products	657	602	613	624
Crude silicon carbide	***	***	***	***
Refined silicon carbide	110	106	104	98
Hours worked by PRWs (1,000 hours)				
All products	1,590	1,435	1,446	1,459
Crude silicon carbide	***	***	***	***
Refined silicon carbide	221	204	205	182
Wages paid to PRWs (1,000 dollars)				
All products	19,846	19,139	20,502	20,163
Crude silicon carbide	***	***	***	***
Refined silicon carbide	3,861	3,639	3,780	3,417
Total compensation paid to PRWs (1,000 dollars)				
All products	25,178	24,640	27,003	25,979
Crude silicon carbide	***	***	***	***
Refined silicon carbide	5,087	4,825	5,110	4,439
Hourly wages paid to PRWs				
All products	\$12.23	\$13.05	\$13.85	\$13.47
Crude silicon carbide	***	***	***	***
Refined silicon carbide	15.69	15.85	16.16	15.97
Hourly total compensation paid to PRWs				
All products	\$15.59	\$16.89	\$18.35	\$17.46
Crude silicon carbide	***	***	***	***
Refined silicon carbide	21.24	21.66	22.64	21.58
Productivity (short tons per 1,000 hours)				
Crude silicon carbide	***	***	***	***
Refined silicon carbide	269.8	241.1	245.1	297.1

Table continued on next page.

Table 7--Continued

Average number of production and related workers (PRWs) in U.S. establishments wherein silicon carbide is produced, hours worked,¹ wages and total compensation paid to such employees, and hourly wages, productivity, and unit production costs,² by products, 1990-93³

Item	1990	1991	1992	1993
	Unit labor costs (per short ton)			
Crude silicon carbide	\$***	\$***	\$***	\$***
Refined silicon carbide	77	87	92	75

¹ Includes hours worked plus hours of paid leave time.

² On the basis of total compensation paid.

³ Firms providing employment data accounted for 100 percent of reported total U.S. shipments (based on quantity) of crude and refined silicon carbide in 1993.

Note.--Ratios are calculated using data of firms supplying both numerator and denominator information.

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

Financial Experience of U.S. Producers

Eight producers of refined silicon carbide, Carborundum, Detroit Abrasives, Electro Abrasives, Exolon, 3M, Treibacher, Saint-Gobain, and Washington Mills, supplied financial data⁵⁹ on overall establishment operations and operations on refined silicon carbide. These producers represented all U.S. production of refined silicon carbide in 1993. Exolon, the only U.S. crude producer, also provided financial data on crude silicon carbide.

Exolon's company transfers of crude silicon carbide were valued at the average net trade sales value (rather than cost) when recorded as a sale of crude silicon carbide. The purpose is to present the estimated profitability of crude silicon carbide based on the total actual shipments and total actual related costs, and the only adjustments are to value the transferred quantities at market. This, in effect, is a projection of the profitability of all shipments at the intermediate product level, including transfers. The income-and-loss data for trade sales only of crude silicon carbide are also presented. These data show the profitability from sales at the intermediate level exclusive of any revenue or cost from transferred product. The cost of crude silicon carbide is used to determine the profitability of refined silicon carbide. For Exolon, Saint-Gobain, and Treibacher, this cost is their cost⁶⁰ of production of crude; for other refiners that purchase crude from Exolon or other crude manufacturers, the cost of the crude is purchase price. The industry financial data for consolidated crude and refined silicon carbide were computed by eliminating operations for crude crystalline trade sales and company transfers of Exolon.⁶¹

⁵⁹ *** of the companies have fiscal years ending Dec. 31. ***'s yearend is Dec. 23. *** was able to provide financial data for refined silicon carbide on a calendar-year basis. However, ***.

⁶⁰ Exolon produces crude silicon carbide at its Hennepin, IL, facility, whereas Saint-Gobain and Treibacher have production facilities for crude silicon carbide in Canada.

⁶¹ Exolon's trade sales *** of crude crystalline silicon carbide were to the refined crystalline silicon carbide producers ***. None of Exolon's metallurgical production was sold to the other reporting producers.

Data for Exolon, accounting for 100 percent of 1993 crude silicon carbide trade sales and company transfers, and approximately *** percent of 1993 refined silicon carbide trade sales, were verified by the Commission's staff. As a result of the verification, Exolon changed the originally reported data for production, shipments, employment, overall establishment financial operations, financial operations on metallurgical and crystalline grades of silicon carbide, cost of production, asset valuation, research and development expenses, capital expenditures, and spot sales prices to U.S. end users.

Data for Treibacher, accounting for approximately *** percent of 1993 refined silicon carbide trade sales, were also verified by the Commission's staff. As a result of the verification, Treibacher changed the originally reported data for inventories, production, shipments, overall establishment financial operations, financial operations on metallurgical and crystalline grades of silicon carbide, asset valuation, research and development expenses, capital expenditures, and contract sales prices to U.S. end users.

Overall Establishment Operations

Income-and-loss data on the overall establishment operations of the U.S. producers are shown in table 8. Silicon carbide accounted for approximately 37 percent of the overall establishment operations in 1993.⁶²

Operations on Silicon Carbide

Income-and-loss data for U.S. producers' operations on silicon carbide are shown in table 9. These data represent the combined operations of the companies producing crude and refined silicon carbide, with elimination of the operations for the transfers of crude silicon carbide by Exolon and elimination of the operations for the sales by Exolon of crude silicon carbide to the other producers. Exolon reported sales of byproducts other than crystalline and metallurgical grades of silicon carbide. The effect of inclusion of the byproducts as sales is presented in the footnotes to the table.

The net sales value decreased from \$73.2 million in 1990 to \$67.7 million in 1991 and \$63.9 million in 1992, and then increased to \$67.7 million in 1993. The operating income margin decreased each year, from 10.6 percent in 1990, to 9.3 percent in 1991, 8.3 percent in 1992, and 7.8 percent in 1993. As shown in table 10, *** realized operating income in all periods. *** incurred an operating loss in *** of the four periods, and *** incurred an operating loss in *** of the periods.

Operations on Trade-Only Sales of Silicon Carbide

The silicon carbide trade-only operations of the U.S. producers are shown in table 11. The net sales value decreased from \$55.4 million in 1990 to \$52.3 million in 1991 and to \$50.2 million in 1992, and then increased to \$51.7 million in 1993. The operating income margin decreased each year, from 12.7 percent in 1990 to 11.4 percent in 1991, 9.7 percent in 1992, and 7.5 percent in 1993.

Operations on Refined Silicon Carbide

Income-and-loss data for U.S. producers of refined silicon carbide are shown in table 12. As indicated in table 13, the per-short-ton average transfer value is higher than the average trade net sales value because Carborundum, 3M, and Saint-Gobain⁶³ reported higher estimated market values for their company transfers than the average combined trade sales values.⁶⁴ Trade sales value, the average of combined trade sales and company transfers, and cost of goods sold all followed the same trend,

⁶² *** of the producers also produce aluminum oxide. Aluminum oxide accounted for approximately *** percent of the combined overall establishment net sales in 1993.

⁶³ ***.

⁶⁴ ***.

Table 8

Income-and-loss experience of U.S. producers on the overall operations of their establishments wherein silicon carbide is produced, fiscal years 1990-93¹

Item	1990	1991	1992	1993
	Value (1,000 dollars)			
Net sales:				
Trade sales	162,605	157,375	162,646	166,383
Company transfers	26,555	14,999	14,041	18,120
Total	189,160	172,374	176,687	184,503
Cost of goods sold	152,710	145,316	150,754	158,611
Gross profit	36,450	27,058	25,933	25,892
Selling, general, and administrative expenses	19,510	18,786	16,671	21,185
Operating income	16,940	8,272	9,262	4,707
Interest expense	***	***	***	***
Other expense, net	***	***	***	***
Net income or (loss) before income taxes	***	***	***	***
Depreciation and amortization	***	***	***	***
Cash flow ²	***	***	***	***
	Ratio to net sales (percent)			
Cost of goods sold	80.7	84.3	85.3	86.0
Gross profit	19.3	15.7	14.7	14.0
Selling, general, and administrative expenses	10.3	10.9	9.4	11.5
Operating income	9.0	4.8	5.2	2.6
Net income or (loss) before income taxes	***	***	***	***
	Number of firms reporting			
Operating losses	0	2	2	1
Net losses	1	3	3	2
Data	8	8	8	8

¹ The producers are Carborundum, Detroit Abrasives, Electro Abrasives, Exolon, 3M, Treibacher, Saint-Gobain, and Washington Mills.

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 9
Income-and-loss experience of U.S. producers on their operations producing silicon carbide, fiscal years 1990-93¹

Item	1990	1991	1992	1993
<u>Quantity (short tons)</u>				
Trade sales	71,349	68,282	65,820	73,206
Company transfers	15,633	12,412	11,916	12,998
Total	86,982	80,694	77,736	86,204
<u>Value (1,000 dollars)</u>				
Net sales:				
Trade sales ²	55,357	52,257	50,232	51,657
Company transfers	17,793	15,456	13,709	16,009
Total	73,150	67,713	63,941	67,666
Cost of goods sold	59,811	55,810	53,572	56,847
Gross profit	13,339	11,903	10,369	10,819
Selling, general, and administrative expenses	5,586	5,574	5,033	5,546
Operating income ³	7,753	6,329	5,336	5,273
<u>Ratio to net sales (percent)</u>				
Cost of goods sold	81.8	82.4	83.8	84.0
Gross profit	18.2	17.6	16.2	16.0
Selling, general, and administrative expenses	7.6	8.2	7.9	8.2
Operating income ⁴	10.6	9.3	8.3	7.8
<u>Number of firms reporting</u>				
Operating losses	2	3	3	3
Data	8	8	8	8

¹ The producers are Carborundum, Detroit Abrasives, Electro Abrasives, Exolon, 3M, Treibacher, Saint-Gobain, and Washington Mills.

² ***

³ ***

⁴ ***

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

Table 10
Income-and-loss experience of U.S. producers on their operations producing silicon carbide, by firms, fiscal years 1990-93

* * * * *

Table 11
Income-and-loss experience of U.S. producers on their trade-only operations producing silicon carbide, fiscal years 1990-93¹

Item	1990	1991	1992	1993
	Quantity (short tons)			
Net sales	71,349	68,282	65,820	73,206
	Value (1,000 dollars)			
Net sales	55,357	52,257	50,232	51,657
Cost of goods sold	44,717	42,764	41,919	43,699
Gross profit	10,640	9,493	8,313	7,958
Selling, general, and administrative expenses	3,594	3,515	3,429	4,061
Operating income	7,046	5,978	4,884	3,897
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	80.8	81.8	83.5	84.6
Gross profit	19.2	18.2	16.5	15.4
Selling, general, and administrative expenses	6.5	6.7	6.8	7.9
Operating income	12.7	11.4	9.7	7.5
Net income before income taxes	***	***	***	***
	Number of firms reporting			
Operating losses	***	***	***	***
Net losses	***	***	***	***
Data	***	***	***	***

¹ The producers are ***.

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 12

Income-and-loss experience of U.S. producers on their operations producing refined silicon carbide, fiscal years 1990-93¹

Item	1990	1991	1992	1993
<u>Quantity (short tons)</u>				
Trade sales	***	***	***	***
Company transfers	***	***	***	***
Total	***	***	***	***
<u>Value (1,000 dollars)</u>				
Net sales:				
Trade sales	***	***	***	***
Company transfers	***	***	***	***
Total	***	***	***	***
Cost of goods sold	***	***	***	***
Gross profit	***	***	***	***
Selling, general, and administrative expenses	***	***	***	***
Operating income	***	***	***	***
<u>Ratio to net sales (percent)</u>				
Cost of goods sold	***	***	***	***
Gross profit	***	***	***	***
Selling, general, and administrative expenses	***	***	***	***
Operating income	***	***	***	***
<u>Number of firms reporting</u>				
Operating losses	2	3	3	3
Data	8	8	8	8

¹The producers are Carborundum, Detroit Abrasives, Electro Abrasives, Exolon, 3M, Treibacher, Saint-Gobain, and Washington Mills.

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

Table 13

Income-and-loss experience (on a per-short-ton basis)¹ of U.S. producers on their operations producing refined silicon carbide, fiscal years 1990-93²

(Per short ton)				
Item	1990	1991	1992	1993
Net sales:				
Trade sales	\$***	\$***	\$***	\$***
Company transfers	***	***	***	***
Average	***	***	***	***
Cost of goods sold	***	***	***	***
Gross profit	***	***	***	***
Selling, general, and administrative expenses	***	***	***	***
Operating income	***	***	***	***

¹ The per-short-ton analysis is subject to the effects of the mix of metallurgical and crystalline grades of refined silicon carbide as well as the mix within the grades.

² The producers are Carborundum, Detroit Abrasives, Electro Abrasives, Exolon, 3M, Treibacher, Saint-Gobain, and Washington Mills.

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

increasing in 1991 compared to 1990 and decreasing in 1992 and 1993. However, the gross profit and operating income decreased each year on a per-short-ton basis, in part because the increase in cost of goods sold exceeded the increase in average net sales value in 1991, and the decrease in cost of goods sold was not sufficient to offset the greater decrease in net sales value in 1992 and 1993.⁶⁵ Selected refined silicon carbide data are presented in table 14 for each producer separately. Exolon is an integrated producer of refined silicon carbide, ***. Carborundum, Detroit Abrasives, Electro Abrasives, 3M, and Washington Mills reported that they purchase crude silicon carbide for further processing. Treibacher⁶⁶ purchases ***. Saint-Gobain purchases ***.⁶⁸

Table 14

Income-and-loss experience of U.S. producers on their operations producing refined silicon carbide, by firms, fiscal years 1990-93

* * * * *

The value added for fabrication costs and selling, general, and administrative (SG&A) expenses as a percent of total cost for the producers of refined silicon carbide are shown in the following tabulation for 1993. The data presented are in dollars per short ton, except as noted.

* * * * *

⁶⁵ ***.

⁶⁶ Telephone interview, ***.

⁶⁷ ***.

⁶⁸ ***.

The value added by fabrication costs as a share of total cost ranged from *** percent for Treibacher to *** percent for 3M. The value added by fabrication costs and SG&A expenses as a share of total cost ranged from *** percent for Treibacher to *** percent for Carborundum.

Operations on Trade-Only Sales of Refined Silicon Carbide

The refined silicon carbide trade-only operations of the U.S. producers are shown in table 15. The net sales value decreased from \$*** in 1990 to \$*** in 1993. The companies realized combined operating income in each period; however the operating income margin decreased each year from *** percent in 1990 to *** percent in 1991, *** percent in 1992, and *** percent in 1993.

Table 15
Income-and-loss experience of U.S. producers on their trade-only operations producing refined silicon carbide, fiscal years 1990-93

* * * * *

Operations on Refined Crystalline Grade Silicon Carbide

The firms provided data on their operations producing crystalline grade refined silicon carbide. Summary financial data are presented in table 16.

Table 16
Income-and-loss experience of U.S. producers on their operations producing refined crystalline grade silicon carbide, by firms, fiscal years 1990-93

* * * * *

Operations on Refined Metallurgical Grade Silicon Carbide

Three of the reporting companies provided data on their operations on metallurgical grade refined silicon carbide. Summary financial data are presented in table 17.

Table 17
Income-and-loss experience of U.S. producers on their operations producing refined metallurgical grade silicon carbide, by firms, fiscal years 1990-93

* * * * *

Operations on Crude Silicon Carbide

Exolon's crude silicon carbide operations are shown in table 18.

Table 18
Income-and-loss experience of Exolon on its operations producing crude silicon carbide, fiscal years 1990-93

* * * * *

Operations on Trade-Only Sales of Crude Silicon Carbide

The crude silicon carbide trade-only operations of Exolon are shown in table 19.

Table 19
Income-and-loss experience of Exolon on its trade-only operations producing crude silicon carbide, fiscal years 1990-93

* * * * *

Operations on Crystalline Grade Crude Silicon Carbide

Exolon's crystalline grade crude silicon carbide operations are shown in table 20. As shown by table 21, net sales value per-short-ton fluctuated between \$*** and \$*** throughout the 4-year period while the cost of goods sold ranged from \$*** to \$***, resulting in an operating income margin ranging from *** percent in 1990 to *** percent in 1993.

Table 20
Income-and-loss experience of Exolon on its operations producing crystalline grade crude silicon carbide, fiscal years 1990-93

* * * * *

Table 21
Income-and-loss experience (on a per-short-ton basis) of Exolon on its operations producing crude crystalline grade silicon carbide, fiscal years 1990-93

* * * * *

Operations on Metallurgical Grade Crude Silicon Carbide

Exolon's crude⁶⁹ metallurgical grade silicon carbide operations are shown in table 22. As shown by table 23, net sales value per-short-ton fluctuated between \$*** and \$*** throughout the 4-year period while the cost of goods sold ranged from \$*** to \$***, resulting in an operating income margin ranging from *** percent in 1992 to *** percent in 1993.

⁶⁹ ***.

Table 22

Income-and-loss experience of Exolon on its operations producing crude metallurgical grade silicon carbide, fiscal years 1990-93

* * * * *

Table 23

Income-and-loss experience (on a per-short-ton basis) of Exolon on its operations producing crude metallurgical grade silicon carbide, fiscal years 1990-93

* * * * *

Production Costs of Crude Silicon Carbide

The costs of production of crude silicon carbide for Exolon, the only U.S. producer, are shown in table 24.

Table 24

Costs of production of Exolon for crude silicon carbide, fiscal years 1990-93

* * * * *

Investment in Productive Facilities and Return on Assets

Data on investment in productive facilities and return on assets are shown in table 25.

Capital Expenditures

The capital expenditures of the U.S. silicon carbide producers are shown in table 26. Capital expenditures for refined silicon carbide fluctuated throughout the period, whereas capital expenditures for crude silicon carbide increased each year after 1991.

Research and Development Expenses

The research and development expenditures of the responding producers are shown in table 27. Research and development decreased in each comparative period for refined silicon carbide.

Capital and Investment

The Commission requested the U.S. producers to describe any actual or potential negative effects of imports of silicon carbide from China on their growth, development and production efforts, investment, and ability to raise capital (including efforts to develop a derivative or improved version of its product). Comments from the companies are presented in appendix D.

Table 25

Value of assets and return on assets of U.S. producers' operations on silicon carbide, fiscal years 1990-93¹

Item	1990	1991	1992	1993
	Value (1,000 dollars)			
All products:				
Fixed assets:				
Original cost	56,606	61,202	67,934	73,926
Book value	29,339	31,095	33,852	35,467
Total assets ²	151,021	158,008	182,600	163,097
Crude silicon carbide:				
Fixed assets:				
Original cost	***	***	***	***
Book value	***	***	***	***
Total assets ³	***	***	***	***
Refined silicon carbide:				
Fixed assets:				
Original cost	***	***	***	***
Book value	***	***	***	***
Total assets ³	***	***	***	***
	Return on total assets (percent) ⁴			
All products:				
Operating return ⁵	7.1	2.9	4.1	0.2
Crude silicon carbide:				
Operating return ⁵	***	***	***	***
Refined silicon carbide:				
Operating return ⁵	***	***	***	***

¹ The producers are ***. *** did not provide total assets or fixed assets on refined silicon carbide. *** did not provide data on its investment in productive facilities for 1990.

² Defined as book value of fixed assets plus current and noncurrent assets.

³ Total establishment assets are apportioned, by firm, to product groups on the basis of the ratios of the respective book values of fixed assets.

⁴ Computed using data from only those firms supplying both asset and income-and-loss information and, as such, may not be derivable from data presented.

⁵ Defined as operating income or loss divided by asset value.

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

Table 26

Capital expenditures by U.S. producers of silicon carbide, by products, fiscal years 1990-93¹

* * * * *

Table 27
 Research and development expenses of U.S. producers of silicon carbide, by products, fiscal years 1990-93¹

(1,000 dollars)				
Item	1990	1991	1992	1993
All products	937	903	812	729
Crude silicon carbide	***	***	***	***
Refined silicon carbide	***	***	***	***

¹ The producers are ***. *** responded that research and development is minor and is not tracked separately in its accounting system.

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

CONSIDERATION OF THE QUESTION OF THREAT OF MATERIAL INJURY

Section 771(7)(F)(i) of the 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 factors⁷¹--

- (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,

⁷¹ 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."

(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,

(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.⁷²

Subsidies (item (I)) and agricultural products (item (IX)) are not issues in this investigation; 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 Imports of the Subject Merchandise 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 the section entitled "Consideration of the Question of Material Injury to an Industry in the United States." Available information on U.S. inventories of the subject products (item (V)); foreign producers' operations, including the potential for "product-shifting" (items (II), (VI), and (VIII) above); any other threat indicators, if applicable (item (VII) above); and any dumping in third-country markets, follows.

U.S. Importers' Inventories

Data on U.S. importers' inventories of crude and refined silicon carbide from China and from other sources are presented in table 28. As shown in the table, the volume of inventories of Chinese-produced crude silicon carbide held by U.S. importers at yearend 1993 was three times greater than the volume of such inventories held by U.S. importers at yearend 1990. The volume of such inventories

⁷² 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."

Table 28

Silicon carbide: End-of-period inventories of U.S. importers, by forms and by sources, 1990-93

Item	1990	1991	1992	1993
	Quantity (short tons)			
Crude silicon carbide:				
China ¹	***	9,062	***	21,563
Other sources	2,998	2,864	7,658	3,315
Total	***	11,926	***	24,878
Refined silicon carbide:				
China ²	***	***	***	***
Other sources	***	***	***	***
Total	***	***	***	***
	Ratio to imports (percent)			
Crude silicon carbide:				
China	***	76.8	***	40.8
Other sources	4.0	5.0	12.7	5.7
Average	***	17.5	***	22.7
Refined silicon carbide:				
China	***	***	***	***
Other sources	***	***	***	***
Average	***	***	***	***
	Ratio to U.S. shipments of imports (percent)			
Crude silicon carbide:				
China	***	77.6	***	50.5
Other sources	***	***	***	***
Average	***	***	***	***
Refined silicon carbide:				
China	***	***	***	***
Other sources	***	***	***	***
Average	***	***	***	***
	Ratio to total shipments of imports (percent)			
Crude silicon carbide:				
China	***	77.6	***	50.5
Other sources	4.0	4.2	14.1	5.3
Average	***	15.2	***	22.3
Refined silicon carbide:				
China	***	***	***	***
Other sources	***	***	***	***
Average	***	***	***	***

See footnotes to table 28 at top of next page.

Footnotes to table 28

¹ Crude metallurgical grade silicon carbide comprised 100 percent of the total in 1990-92 and 86 percent in 1993.

² Refined metallurgical grade silicon carbide comprised 100 percent of the total in 1991 and 1992 and 63 percent of the total in 1993.

Note.--Ratios are calculated using data of firms supplying both numerator and denominator information.

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

fluctuated significantly from period to period, increasing by *** percent from 1990 to 1991, falling by *** percent from 1991 to 1992, and then *** from 1992 to 1993. U.S. importers' inventories of crude silicon carbide from all other sources rose unevenly from 1990 to 1992, increasing by 155 percent, but then declined by 57 percent from 1992 to 1993. From 1990 to 1992, the bulk of U.S. importers' inventories of refined silicon carbide was accounted for by refined silicon carbide originating in countries other than China. In 1993, however, *** percent of such inventories consisted of the Chinese-produced product.

The ratio of U.S. importers' inventories of Chinese crude silicon carbide to their U.S. shipments of this product fell unevenly from *** percent in 1990 to *** percent in 1992. The ratio increased significantly in 1993, rising to 50 percent. The ratio of U.S. importers' inventories of Chinese-produced refined silicon carbide to shipments increased from *** in 1990 to *** percent in 1991, fell back to *** in 1992, and then increased to *** percent in 1993.

Ability of Foreign Producers to Generate Exports and the Availability of Export Markets Other Than the United States

This section of the report is based on information supplied directly or through counsel by respondents 7th Grinding Wheel, Hainan, IMI/E, Qinghai, Shaanxi, and Xiamen, and the China Chamber of Commerce of Metals, Minerals and Chemicals Importers and Exporters (hereinafter "China Chamber").⁷³ The Commission also requested and received information by telegram from the American embassy in Beijing.

There are an estimated 80 silicon carbide factories in China, most of which are "small collectives and village workshops" located in remote parts of China where electricity and raw materials are plentiful.⁷⁴ A large percentage of the production of those factories that produce silicon carbide for export is sold through the six Chinese respondents in this investigation, each one of which represents upwards of five or more factories.⁷⁵ The Chinese silicon carbide industry is said to be diminishing as a result of the economic reform occurring in China resulting from double-digit growth rates. The China Chamber argues that the rapid rate of growth of the Chinese economy has caused a shortage of raw materials and

⁷³ Counsel for respondents provided the Commission with information on the producers from whom they purchase silicon carbide in China. These data are presented in appendix E. Total silicon carbide exports to the United States as reported by respondents accounted for *** percent of industrywide exports to the United States in 1993 as reported by the China Chamber.

⁷⁴ Testimony of Ms. Wang Wan Hong, assistant director of Foreign Affairs, China Chamber, at the Commission's hearing. (Hearing transcript, p. 178.)

⁷⁵ Ibid., p. 178.

energy, boosting the costs of transportation and electricity.^{76 77} Internal demand for silicon carbide is said to be on the rise as the economy continues to accelerate. The China Chamber estimates that more than 60 percent of China's production of silicon carbide, which consists mostly of metallurgical grade crude,⁷⁸ is consumed in the Chinese market.⁷⁹

According to information provided by the American Embassy in Beijing, all of the producers contacted by the Embassy indicated that they do not currently export silicon carbide to the United States, although some have in the past. One source which the Embassy contacted estimated that about *** percent of China's silicon carbide production is exported and that these exports are mostly produced in factories situated in the province of Jilin. Purportedly, the largest factory in Jilin Province has about *** employees, ***.⁸⁰

The data supplied by the China Chamber offer the broadest coverage of the Chinese silicon carbide industry. Those data, which are for crude silicon carbide, are presented in the following tabulation (in short tons, except as noted):

	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>
Production	308,644	264,552	286,598	341,713 ¹
Capacity	330,690	308,644	308,644	308,644
Capacity utilization (percent)	93.3	85.7	92.9	110.7
Domestic demand	143,299	154,322	176,368	192,902
Exports to--				
United States	***	***	36,376	90,389
Europe	***	***	43,210	10,582
Japan	***	***	25,463	31,967
Subtotal	***	***	<u>105,049</u>	<u>132,938</u>
All others	***	***	11,795	10,361
Total	***	***	116,844	143,299
As a share (percent) of production:				
Domestic demand	46.4	58.3	61.5	56.5
Exports:				
To the United States	***	***	12.7	26.5
To Europe	***	***	15.1	3.1
To Japan	***	***	8.9	9.4
Subtotal	***	***	<u>36.7</u>	<u>38.9</u>
To all others	***	***	4.1	3.0
Total	***	***	40.8	41.9

¹ Includes 66,138 short tons of material with a SiC content of 60 percent or less.

⁷⁶ Ibid., pp. 178 and 179.

⁷⁷ Ms. Chang Lin, China trade specialist with Transtech, Inc., testified at the Commission's hearing that, since Jan. 18, 1994, the cost of electricity in some parts of China has risen as much as 30 percent above that of 1993 costs (hearing transcript, p. 188).

⁷⁸ Respondents argue that Chinese producers are not able to produce crystalline grade silicon carbide of a quality able to compete with that produced in the United States because Chinese producers use coal instead of coke as a furnace catalyst (hearing transcript, p. 180).

⁷⁹ Hearing transcript, p. 180.

⁸⁰ Based on Embassy staff interview with ***.

The data in the tabulation show that Chinese silicon carbide production fell by 14 percent from 1990 to 1991, increased by 8 percent from 1991 to 1992, and rose by 19 percent from 1992 to 1993 (including 66,138 short tons of material with a SiC content of 60 percent or less). Capacity fell by 7 percent from 1990 to 1991, and then was unchanged from 1991 to 1993. Capacity utilization fell unevenly from 93.3 percent in 1990 to 92.9 percent in 1992, then rose to 110.7 percent in 1993 (including production of low-SiC-content material). As a share of production, demand for silicon carbide in the Chinese market increased from 46 percent in 1990 to 62 percent in 1992, then fell to 56 percent in 1993. Exports to the United States, one of three major markets for Chinese-produced silicon carbide, increased from *** percent of production in 1990 to 26 percent in 1993.

On March 9, 1994, the EU issued an affirmative decision in its antidumping investigation concerning silicon carbide from China. The definitive antidumping duty imposed by the EU on such imports from China was 52.5 percent. In accordance with EU antidumping law, definitive duties apply for a maximum period of 5 years.

CONSIDERATION OF THE CAUSAL RELATIONSHIP BETWEEN IMPORTS OF THE SUBJECT MERCHANDISE AND THE ALLEGED MATERIAL INJURY

U.S. Imports

Because Exolon, the only U.S. producer of crude silicon carbide, does not have sufficient capacity to supply the refining operations of other U.S. producers/refiners, imports of crude silicon carbide are necessary.

Data presented in this section of the report are based on responses to the Commission's importers' questionnaire; official import statistics are presented in appendix F. The quantity of U.S. imports of silicon carbide from China based on questionnaire responses exceeded the quantity shown in the official statistics by 8,605 short tons in 1990. However, in 1991, 1992, and 1993, the quantities shown in the official statistics exceeded the totals from questionnaire responses by 10,511, 15,144, and 17,340 short tons, respectively. Moreover, total U.S. imports from all sources based on questionnaire responses were greater than the totals shown in the official statistics in 1990 and 1991 by differences of 28,044 and 4,021 short tons, respectively. However, the totals shown in the official statistics for 1992 and 1993 exceeded the totals reported in Commission questionnaires by 7,850 and 3,056 short tons, respectively.

U.S. imports of silicon carbide, by forms and by sources, based on Commission questionnaires are presented in table 29. U.S. imports of crude silicon carbide from all sources rose unevenly from 108,548 short tons, valued at \$56.8 million, in 1990 to 117,613 short tons, valued at \$49.5 million, in 1993. The average unit value (per short ton) of such imports declined from \$523 in 1990 to \$421 in 1993. The quantity and value of U.S. imports of crude silicon carbide from China fluctuated upward from 17,310 short tons, valued at \$6.5 million, in 1990 to 53,007 short tons, valued at \$13.6 million, in 1993. The average unit value of such imports declined by 33 percent from 1990 to 1992 and rose insignificantly from 1992 to 1993.

The quantity and value of U.S. imports of refined silicon carbide from all sources rose uninterruptedly from 1990 to 1993, increasing from 2,875 short tons, valued at \$2.8 million, in 1990 to 6,482 short tons, valued at \$5.6 million, in 1993. The quantity and value of U.S. imports from China of refined silicon carbide rose similarly, increasing from *** short tons in 1990 to 3,573 short tons, valued at \$***, in 1993.

Table 29

Silicon carbide: U.S. imports, by forms and by sources, 1990-93

Item	1990	1991	1992	1993
	Quantity (short tons)			
Crude silicon carbide:				
China	17,310	11,794	23,471	53,007
Other sources	91,238	64,966	66,108	64,606
Total	108,548	76,760	89,579	117,613
Refined silicon carbide:				
China	***	***	***	3,573
Other sources	***	***	***	2,909
Total	2,875	4,300	5,802	6,482
	Value (1,000 dollars)			
Crude silicon carbide:				
China	6,542	3,557	5,905	13,593
Other sources	50,241	36,643	38,031	35,949
Total	56,783	40,200	43,936	49,542
Refined silicon carbide:				
China	***	***	***	***
Other sources	***	***	***	***
Total	2,799	3,686	4,625	5,561
	Unit value (per short ton)			
Crude silicon carbide:				
China	\$378	\$302	\$252	\$256
Other sources	551	564	575	556
Average	523	524	490	421
Refined silicon carbide:				
China	***	***	***	***
Other sources	***	***	***	***
Average	974	857	796	858

Note.--Unit values are calculated using data of firms supplying both quantity and value information.

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

In its questionnaire, the Commission asked U.S. importers whether they had imported, or arranged for the importation of, silicon carbide from China for delivery after December 31, 1993 (the end of the period covered by the Commission's questionnaires), and to provide information on any such imports or orders. In all cases, U.S. importers responded in the negative to this question.

On March 1, 1994, petitioners filed an amendment to the petition alleging that "there have been massive imports of silicon carbide from China over a relative short period of time." Data on monthly

U.S. imports of silicon carbide from China, based on official import statistics, are presented in table F-2, appendix F.⁸¹

Figure 8 shows the volume of U.S. imports from China of crude metallurgical grade silicon carbide and imports from China of all other grades of silicon carbide. As shown in the figure, while U.S. imports of silicon carbide grades other than crude metallurgical grade were on the rise during 1990-93, such imports were consistently dwarfed by the volume of imports of the crude metallurgical grade product.

Figure 8
Silicon carbide: U.S. imports from China, by grades, 1990-93

* * * * *

Market Penetration of Imports

Market shares of silicon carbide by forms and by grades are presented in tables 30 and 31.⁸² As shown in table 30, U.S. producers' shipments of refined silicon carbide held a predominate share of the U.S. market during 1990-93, whereas U.S. imports from sources other than China (principally Canada) held a predominate share of the market for crude silicon carbide. Nonetheless, the Chinese share of the U.S. crude silicon carbide market rose from *** percent of the quantity and *** percent of the value in 1990 to *** percent and *** percent, of the quantity and value, respectively, in 1993. As a share of the U.S. market for refined silicon carbide, the Chinese share increased from less than *** percent of the quantity and value in 1990 to *** percent of the quantity and *** percent of the value in 1993.

As shown in table 31, the U.S. market share of crude metallurgical grade silicon carbide captured by Chinese imports increased from *** percent of the quantity and *** percent of the value in 1990 to *** percent of the quantity and *** percent of the value in 1993. Chinese-produced crude crystalline grade silicon carbide *** of the U.S. market during 1990-91 and *** share of the market in 1993. Shares of the U.S. refined metallurgical and refined crystalline grade silicon carbide markets captured by Chinese-produced products *** percent during 1990-93.

Market Characteristics

Since silicon carbide is an intermediate product used mainly for applications in the abrasive and refractory industries and as an deoxidizing agent in the iron foundry industry, the demand for silicon carbide depends upon the demand for products produced by those industries. Some industry sources believe that the overall demand for silicon carbide has declined since 1990 as a result of the general

⁸¹ Commerce's final determination is discussed in the section of the report entitled "Critical Circumstances." The three Chinese exporters (Hainan, Shaanxi, and Xiamen) for which Commerce made affirmative critical circumstances determinations accounted for *** percent and *** percent of total U.S. imports of crude silicon from China in 1992 and 1993, respectively. The three exporters for which Commerce made a negative critical circumstances determination (7th Grinding Wheel, IMI/E, and Qingha) accounted for *** and *** percent, respectively, of such U.S. imports from China in the same periods.

⁸² Consumption and market shares using official import statistics are presented in appendix G.

Table 30

Silicon carbide: U.S. market shares, by forms and by sources, 1990-93

(Percent)				
Item	1990	1991	1992	1993
	Share of the quantity of U.S. consumption			
Crude silicon carbide:				
Producers' U.S. shipments	***	***	***	***
Importers' U.S. shipments:				
China	***	***	***	***
Other sources	***	***	***	***
Total	***	***	***	***
Refined silicon carbide:				
Producers' U.S. shipments	95.5	93.1	88.8	90.8
Importers' U.S. shipments:				
China	***	***	***	***
Other sources	***	***	***	***
Total	4.5	6.9	11.2	9.2
	Share of the value of U.S. consumption			
Crude silicon carbide:				
Producers' U.S. shipments	***	***	***	***
Importers' U.S. shipments:				
China	***	***	***	***
Other sources	***	***	***	***
Total	***	***	***	***
Refined silicon carbide:				
Producers' U.S. shipments	94.1	92.1	88.1	87.8
Importers' U.S. shipments:				
China	***	***	***	***
Other sources	***	***	***	***
Total	5.9	7.9	11.9	12.2

Note.—Because of rounding, shares may not add to the totals shown.

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

Table 31

Silicon carbide: U.S. market shares, by forms, by grades, and by sources, 1990-93

* * * * *

weakness in the U.S. economy during much of this period, although consumption rose in 1992 and 1993.⁸³

Silicon carbide competes with a variety of substitute products for sales in its major markets. Ferrosilicon is an important substitute for silicon carbide in metallurgical applications. In some cases, particularly foundry uses, ferrosilicon and silicon carbide compete directly on the basis of price.⁸⁴ In the abrasive market, aluminum oxide, diamonds, garnet, emery, and aluminum zirconia are all potential substitutes in some cases. Diamonds and aluminum oxide are harder than silicon carbide, but are priced much higher. In contrast, garnet and emery are not as hard as silicon carbide, but are less expensive. In special circumstances boron carbide is also a substitute, but it is priced much higher than silicon carbide. In refractory applications, clays, calcined bauxite, kaolin, fireclay, fused bauxite, chromite, and magnesite are all potential substitutes.⁸⁵

U.S. producers and importers market both crude and refined silicon carbide in the United States. The largest share of imports from China consist of crude silicon carbide, although refined silicon carbide from China is also sold in the United States. Producers' sales are weighted more heavily toward refined products, since Exolon is the only domestic producer of crude silicon carbide. Refined silicon carbide is sold principally to distributors or to manufacturing companies for further processing into various products such as grinding wheels, coated abrasives, and refractory products.⁸⁶ It is also sold to other companies that convert it into abrasive and refractory grain for sale to end users through the same channels of distribution. Metallurgical crude silicon carbide is sold directly to the iron foundry industry or to companies that produce briquettes for use in the iron foundries. It is also sold directly to end users for applications in the refractory industry.

Although domestically produced silicon carbide and imports from China often compete for sales to a variety of customers, Chinese imports are more heavily focused on metallurgical applications than the domestic product. For example, one large importer, ***, reported that *** percent of its sales are to briquetters. Another smaller importer, ***, reported that all of its sales are to briquetters. In contrast, the share of sales to briquetters among the larger producers ranged from a low of *** percent for *** to *** percent for ***.

In the questionnaire, purchasers were asked whether they had been unable to obtain silicon carbide from a supplier in a timely manner at prevailing prices and in the quantities desired at any time

⁸³ In their questionnaire responses *** and *** both stated that the overall demand had declined since 1990 due to the poor condition of the U.S. economy, and *** stated that it had remained largely unchanged. However, in their prehearing brief, and in testimony at the hearing, the petitioners stated that overall demand in downstream industries using silicon carbide has been increasing (petitioners' prehearing brief, exhibit 1, pp. 1-14 and hearing transcript, pp. 54-65). Among the other producers, *** and *** reported that overall demand has declined since 1990, and *** stated that it has remained largely unchanged.

⁸⁴ Mr. Gordon Austin, a silicon carbide analyst with the U.S. Bureau of Mines, said that silicon carbide and ferrosilicon are close substitutes in foundry applications. However, in the case of advanced steel products, ferrosilicon is generally preferred. Mr. Austin said that declining ferrosilicon prices in recent years have exerted downward pressure on silicon carbide prices (telephone interview, July 15, 1993).

Although silicon carbide and ferrosilicon are often close substitutes, some foundries rely completely on either silicon carbide or ferrosilicon to satisfy their needs. Therefore, the percentage of sales in which silicon carbide faces direct competition from ferrosilicon cannot be easily estimated.

⁸⁵ Exolon questionnaire, p. 72B.

⁸⁶ Petition, p. 11.

during January 1990-December 1993. Of the 29 purchasers that responded to this question, 9 indicated that they had experienced varying amounts of difficulty.⁸⁷

In some cases the problems reported have not been serious. For example, *** reported that once or twice material had not been packaged to their requirements, causing delays in shipments. Another purchaser, ***, reported that on one occasion in 1992 an importer had been unable to deliver Chinese silicon carbide on schedule. After several delays *** switched to a domestic source. *** reported that it had difficulty obtaining truckload lots of silicon carbide from a domestic company on a trial basis during January through July of 1993. As a result, *** dropped the supplier from its list. *** reported that during 1990-91 the availability of certain mesh sizes was limited due to excessive demand. This company also reported that the availability of silicon carbide graded to international standards for coated abrasives is currently limited, especially in certain mesh sizes.

While the problems reported by these purchasers were relatively minor, in other cases the problems were more serious. For example, ***, a refractory manufacturer that purchases both refined metallurgical and crystalline grade silicon carbide, reported that its domestic supplier lacked capacity to meet its needs in the spring of 1992. As a result, *** was forced to switch to purchases of imports of refined metallurgical and crystalline grade silicon carbide from China. It has continued to rely largely on Chinese imports since that time. ***, a briquetter that purchases both crude and refined metallurgical grade silicon carbide, reported that *** restricted the amount of crude silicon carbide that it was willing to supply from its Canadian operations during 1990-93. *** also reported that *** would not supply them with silicon carbide because it considers them to be a competitor. *** currently relies upon Chinese imports for the majority of its silicon carbide needs. ***, another briquetter that purchases both crude and refined metallurgical grade silicon carbide, reported that it was unable to get enough material from *** to meet its need. *** reported that the lack of availability of domestic silicon carbide and preferential treatment to some of *** competitors has forced it to rely upon increased imports from China.⁸⁸ *** relies mainly upon purchases of crude crystalline grade silicon carbide from *** to obtain its inputs. Saint-Gobain and Treibacher only produce crude silicon carbide at their Canadian facilities. *** reported in its purchaser questionnaire that it had difficulties in obtaining adequate amounts of silicon carbide from all three of its sources during 1990-93. It stated that *** cut its shipments in half during 1989-90 and that *** could not handle all of its needs in 1990. It reported that *** was short by *** tons in that year. *** further stated that *** canceled deliveries without warning in 1992 and 1993, and that *** was unwilling to bid for any business in 1993. ***, ***, reported that it has purchased imported silicon carbide from China because of a shortage of the material produced by ***. *** actually sold *** the imported Chinese material in 1992 and 1993. ***'s purchases consist entirely of crude metallurgical grade silicon carbide and other crude grades of silicon carbide.⁸⁹

Another company, ***, a processor of silicon carbide, stated in its questionnaire that silicon carbide was being allocated during 1987-90 because not enough was being produced in the United States or Canada. It reported that *** raised its price during this period, and that this led to a switch from silicon carbide to increased use of ferrosilicon and the entry of imported Chinese silicon carbide into the U.S. market. However, *** indicated that it was able to obtain enough silicon carbide during this

⁸⁷ In addition to responses to purchasers' questionnaires, Terry Kelly, the manager of R.I Lampus Co. of Springdale, PA, reported at the hearing that Lampus often had difficulty in obtaining domestically produced silicon carbide throughout 1988-93 (hearing transcript, pp. 162-170). In a fax transmission of May 16, 1994, Lampus offered additional allegations that it has difficulty in obtaining sufficient quantities of silicon carbide. Allegations by Lampus were also discussed in exhibit 4 of the respondents' posthearing brief.

⁸⁸ *** elaborated further on their difficulties in obtaining sufficient silicon carbide in exhibit 1 of the respondents' posthearing brief.

⁸⁹ However, *** does not purchase crude crystalline grade silicon carbide.

period to meet its own needs. ***'s purchases consist mainly of crude and refined metallurgical grade silicon carbide.

Product Comparisons

Producers, importers, and purchasers were asked to discuss differences between domestic and imported silicon carbide that would help to explain differences in prices and in purchasing patterns. Product characteristics and marketing characteristics were both discussed in the questionnaire responses. Opinions differ concerning the extent of substitutability between domestically produced and imported silicon carbide from China. Although the majority of producers consider the products to be comparable in quality and interchangeable in use, two producers, *** and ***, and some of the importers consider the Chinese product to be inferior. *** have both purchased Chinese-produced crude crystalline grade silicon carbide.⁹⁰ They stated that the Chinese product has smaller and weaker crystals than the U.S. product, is lower in toughness and bulk density, and has lower purity levels. Purchasers were also asked to compare the quality of the U.S.-produced and Chinese-produced silicon carbide. Of the 14 purchasers that responded to this question, 8 considered the domestic and Chinese products to be comparable and 6 considered the Chinese product to be inferior. One additional purchaser indicated that the Chinese silicon carbide was inferior when they last bought it in 1990.⁹¹ Another purchaser did not compare the overall quality of the products but said that there are more quality control problems with the Chinese material than with the U.S.-produced material.⁹²

Prices

Silicon carbide is commonly marketed on either a spot basis or a contract basis by producers and importers. Over half of all sales by producers are on a contract basis. Contract sales as a share of total sales ranged from a low of *** percent for *** to a high of *** percent for ***. Among other producers, *** reported that *** percent of its sales are on a contract basis, *** and *** both reported that *** percent of their sales are by contract, and *** reported that *** percent of its business is contract. Producers reported that contracts are commonly 1 year in duration, with prices, and in some cases quantities, fixed during the period. Among importers, *** sells exclusively on a spot basis while *** reported that all of its sales are on a contract basis. Policies of other importers vary. Contracts reported by importers tend to be shorter in duration than those reported by domestic producers. The periods typically ranged from 1 to 6 months.

Prices of silicon carbide are commonly quoted on either an f.o.b. or a delivered basis. Among the producers, *** and *** generally quotes prices on an f.o.b. plant or warehouse basis, *** and *** both quote on an f.o.b. plant basis, and *** and *** both quote on either an f.o.b. or delivered basis. All of the domestic producers arrange for transportation for their customers. *** and *** both generally pay transportation charges, while the other producers require the customer to pay charges. Among importers, prices are commonly quoted on either an f.o.b. or a delivered basis. *** and *** both stated that they do not have a standard policy. *** reported that it generally quotes prices on a delivered basis, but that the method of quoting depends upon the customer's preference. Other importers reported that they usually quote prices on an f.o.b. warehouse or barge basis. Importers reported that they normally arrange for transportation of the silicon carbide to their customer's location.

⁹⁰ *** only purchases crude crystalline grade silicon carbide. It obtains this material from domestic and import sources for use in its refining operations. It did not purchase Chinese-produced silicon carbide during 1991-93. However, it reported in its purchasers' questionnaire that it had imported Chinese-produced crude crystalline grade silicon carbide on order for delivery in 1994 through an importer. *** purchases both crude metallurgical grade and crude crystalline grade silicon carbide for use in its refining operations. Its purchases from China have consisted of ***.

⁹¹ Purchaser questionnaire response of ***.

⁹² Purchaser questionnaire response of ***.

While most of the producers reported that they publish price lists, they stated that these list prices don't usually reflect final transaction prices. They are used mainly as a benchmark or starting point in negotiating for a sale. Substantial discounts from list prices are common. In contrast to the domestic producers, none of the importers reported publishing price lists.

Purchasers consider price to be a major consideration when buying silicon carbide, but product quality tends to be the most important factor.⁹³ In the questionnaires, purchasers were asked to rank various factors including availability, credit terms, prearranged contract, price, product quality, range of supplier's product line, and traditional supplier in terms of importance. Among these factors, price along with availability and product quality were generally among the top three. Only 2 of the 26 purchasers that completed this part of the questionnaire ranked price in first place alone. However, 10 other purchasers ranked price in first place along with availability or product quality, or both. Product quality was ranked alone in first place by 9 of the purchasers. It shared first place along with price and/or availability in the case of 10 other purchasers. The nine companies that ranked quality in first place were typically end-use customers that require silicon carbide in their manufacturing or processing operations.⁹⁴

Producers, importers, and the majority of purchasers all consider inland transportation costs to be an important consideration in sourcing decisions. Estimates of typical costs ranged from about 2 percent of the delivered price to as much as 10 percent. Silicon carbide is shipped by train or truck in bulk or in a variety of different containers, including drums, paper bags, supersacks, and plastic pails. Some suppliers allow the supersacks and drums to be returned for a credit, but company policies vary. The largest share of U.S.-produced silicon carbide is shipped in some form of container. *** reported that *** percent of its 1993 sales were shipped in containers. *** and *** reported that *** percent and *** of their respective shipments were in containers, and *** reported that they shipped only in containers. In contrast, the majority of imports from China are shipped in a bulk form. For example, *** reported that *** percent of its shipments were in a bulk form in 1993 and *** reported that *** percent were on a bulk basis. Silicon carbide is commonly sold by producers in all areas of the United States. However, the majority of imports from China are sold in the Northeast and the Midwest. The majority of shipments of silicon carbide by producers are for distances of 100 miles or more from the storage facilities, and distances of more than 500 miles are common. In contrast, the majority of shipments reported by importers were for distances of less than 100 miles from their storage facilities in the United States.

The average lead time between a customer's order and the date of delivery tends to be significantly shorter for U.S. producers than for importers of silicon carbide from China. Lead times reported by producers ranged from about 3 days to as much as 2 weeks. Lead times reported by importers varied widely, but questionnaire responses by the larger importers indicate that periods of 3 to 4 months are typical.⁹⁵ Purchasers generally reported that delivery lead times for domestically produced silicon are less than 1 week while lead times for imports from China are commonly 2 to 3 months.

⁹³ Although company policies varied, questionnaire responses indicated that purchasers often conduct tests on samples of silicon carbide before buying from new suppliers.

⁹⁴ None of the briquetters that responded to this question ranked quality in first place alone.

⁹⁵ One importer, ***, reported that the lead time for delivery of imported silicon carbide from China ranged from 1 week to 3 months.

Questionnaire Price Data

U.S. producers, importers, and purchasers were asked to provide price data on various categories of silicon carbide which are commonly used in foundry, abrasive, and refractory applications.⁹⁶ For each of the eight products, producers and importers were asked to provide prices on their largest sales in each quarter and total quantities and total values shipped in all quarters during January 1990-December 1993. Requests for data were further broken down between spot and contract sales and between bulk shipments and shipments in containers. Finally, the data were requested separately for each of three customer categories, including distributors, end users, and converters. Briquetters were included within the end-users category and the term converter was defined to include firms that refined silicon carbide. The product categories were:

- Product 1: Silicon carbide containing 82 to 95 percent silicon carbide for foundry application, size 1" and finer or 25 mm. and finer.
- Product 2: Silicon carbide containing 50 to 75 percent silicon carbide for foundry application, size 1" and finer or 25 mm. and finer.
- Product 3: Silicon carbide containing 20 to 50 percent silicon carbide for foundry application, size 1" and finer or 25 mm. and finer.
- Product 4: Silicon carbide containing 82 to 96 percent silicon carbide for refractory application, with a particle size of 100 mesh and finer, including all mesh sizes smaller than 100 mesh.
- Product 5: Silicon carbide containing 96 to 98 percent silicon carbide, size 1" and finer or 25 mm. and finer.
- Product 6: Silicon carbide containing 96 to 98 percent silicon carbide for refractory application, with any group size combination between 8 and 100 mesh.
- Product 7: Silicon carbide containing 96 to 98 percent silicon carbide for abrasive application, in any individual grit size between 12 and 100 grit.
- Product 8: Crude silicon carbide containing 97 percent silicon carbide.

Five U.S. producers, 5 importers, and 19 purchasers provided varied amounts of useable price information. The producers that provided price data accounted for 100 percent of U.S.-produced refined silicon carbide marketed in the United States in 1993. Exolon provided largely complete data for the majority of the products and the other producers were able to provide complete or largely complete data for some product categories. Data received from importers and purchasers were less complete. The information received was sufficient for comparing domestic and import prices of products 1, 4, and 5. However, very little price data were received for products 2 and 3 and no prices

⁹⁶ In the case of 4 of the 8 products, the petitioners were either unable to classify the products as crude or refined or they disagreed among themselves concerning the proper classification (petitioners' posthearing brief, exhibit 18). Exolon, Saint-Gobain, and Treibacher stated that product categories 1 and 2 could encompass either crude or refined material. Exolon and Treibacher both consider product 3 to fall into the crude category, but Saint-Gobain argued that it is a by-product and difficult to categorize. Exolon considers product 5 to be a refined product, but the other two producers argued that it could be either crude or refined. All three companies stated that products 4, 6 and 7 consist of refined silicon carbide. They also agreed that product 8 is crude, but argued that the definition is broad enough that it could mean different things to different producers.

were reported by producers or importers for product 8.⁹⁷ Domestic prices were reported for product 6, which is used in refractory applications, and for product 7, which is used in abrasives, but no prices of imports from China were reported for those categories. Some quantity and value data relating to imports of product 7 from China were received from one purchaser.

Price trends

As a result of the varied breakouts of product categories, a large number of different price series for silicon carbide were developed. The graph and price tables presented in this section of the report are for product categories where a reasonable amount of comparable domestic and import price data are available. The price data in appendix H are for categories where no import data or very little import data are available, or where the domestic and import data are not completely comparable.

F.o.b. prices of product 1 are presented in figures 9 and 10, tables 32 and 33, and table H-1 in appendix H. The data in figure 9 and table 32 represent prices on spot sales of silicon carbide shipped in containers to end users, while figure 10 and table 33 represent prices on contract sales to end users shipped in bulk form. The data in table H-1 are for contract sales to end users in containers. In all cases the data show that domestic prices of product 1 *** between 1990 and 1993.⁹⁸ The price on spot sales shown in figure 9 and table 32 *** during all years in the period, *** from \$*** per ton throughout 1990 to \$*** per ton during 1993. The price for contract sales of silicon carbide in bulk form shown in figure 10 and table 33 *** from 1990 to 1991. However, it *** from 1991 to 1993, ranging from a low of \$*** per ton in *** to a high of \$*** from *** through ***. Domestic prices on contract sales to end users shipped in containers *** throughout January-March 1990-October-December 1993, as shown in table H-1. Prices of imports of product 1 from China *** since 1990. As shown in figure 9 and table 32, prices on spot sales in containers of product 1 *** during the 11 quarters where data were available, *** from \$*** per ton in the first quarter of 1990 to \$*** in the second and third quarters of 1992. The very limited data on contract sales in bulk form of Chinese imports shown in figure 10 and table 33 also indicate that the Chinese price of this product ***.

F.o.b. prices on spot sales of product 4 to end users are shown in figure 11 and table 34 and prices on contract sales of this product to end users are shown in table H-2 in appendix H. The data show that prices of the U.S.-produced product *** from 1990 to 1993. The spot price of product 4 remained at a level of \$*** per pound in *** out of *** quarters during 1990 and 1991, but *** during the next 2 years. The contract price of product 4 fluctuated between \$*** and \$*** per pound during 1990-92, *** during this period. However, it *** during all quarters in 1993, reaching a *** of \$*** per pound in the fourth quarter. The available data suggest that spot prices of imports of Chinese product 4 *** (figure 11 and table 34). However, Chinese prices were only reported in 8 quarters.

F.o.b. prices of product 5 on contract sales to end users shipped in containers are presented in figure 12 and table 35, and delivered prices on contract sales of this product shipped in bulk to end users and converters are presented in table H-3 in appendix H. The data show that prices of U.S.-produced product 5 fluctuated during 1990-93, showing no clear trends. The contract price of product 5 shipped in containers *** from \$*** per ton during 1990 to \$*** per ton in 1991 and then *** to \$*** in 1992 and to \$*** in 1993. No trend is evident in either series shown for domestic bulk prices of product 5 in table H-3. The price on bulk sales to end users ranged from a low of \$*** per ton in *** to a high of \$*** per ton in ***. It remained at a constant level of \$*** per ton from *** through ***. The price on bulk sales to converters ranged from a low of \$*** per ton in *** to a high of \$*** per ton from *** through ***. The prices of imports from China were only available during 3 quarters for sales in containers to end users (table 35). Therefore, no trend could be determined. No sales of Chinese imports of product 5 in bulk form were reported.

⁹⁷ One purchaser reported buying domestically produced product 8.

⁹⁸ The limited data received from purchasers also indicate that the domestic price of product 1 ***.

Figure 9

Net f.o.b. prices on spot sales of product 1 in containers to end users reported by one U.S. producer and by one importer, by quarters, Jan. 1990-Dec. 1993

* * * * *

Figure 10

Net f.o.b. prices on contract sales of product 1 in bulk form to end users reported by one U.S. producer and by one importer, by quarters, Jan. 1990-Dec. 1993

* * * * *

Table 32

Net f.o.b. prices on spot sales of product 1 in containers to end users reported by one U.S. producer and by one importer, margins of underselling (overselling), and total shipments, by quarters, Jan. 1990-Dec. 1993

* * * * *

Table 33

Net f.o.b. prices on contract sales of product 1 in bulk form to end users reported by one U.S. producer and by one importer, margins of underselling (overselling), and total shipments, by quarters, Jan. 1990-Dec. 1993

* * * * *

Figure 11

Net f.o.b. prices on spot sales of product 4 in containers to end users reported by one U.S. producer and by one importer, by quarters, Jan. 1990-Dec. 1993

* * * * *

Table 34

Net f.o.b. prices on spot sales of product 4 in containers to end users reported by one U.S. producer and by one importer, margins of underselling (overselling), and total shipments, by quarters, Jan. 1990-Dec. 1993

* * * * *

Figure 12

Net f.o.b. prices on contract sales of product 5 in containers to end users reported by one U.S. producer and by one importer, by quarters, Jan. 1990-Dec. 1993

* * * * *

Table 35

Net f.o.b. prices on contract sales of product 5 in containers to end users reported by one U.S. producer and by one importer, margins of underselling (overselling), and total shipments, by quarters, Jan. 1990-Dec. 1993

* * * * *

Price data relating to product 3 are presented in appendix table H-4. The domestic price on contract sales of this product to end users in bulk form fluctuated widely during 1990-92, ranging from a low of \$*** per ton in several quarters to a high of \$*** in ***. It remained stable at \$*** per ton throughout 1993. No trend could be determined from the four observations of Chinese import prices shown in the table.

Price data relating to U.S.-produced products 6 and 7 are presented in appendix table H-5. The price on contract sales of product 6 to end users fluctuated with no clear trend, ranging from a low of \$*** per pound in *** to a high of \$*** in ***. The price on spot sales of product 6 to end users *** during 1990-93. It *** from \$*** per pound during the first three quarters of 1990 to \$*** during 1991 and then *** over the next 2 years, reaching a *** of \$*** in the fourth quarter of 1993. No price trends were evident for any of the categories shown for product 7 during 1990-93. Domestic prices of this product on contract sales to end users, spot sales to end users, and spot sales to distributors all remained relatively stable throughout the 4-year period.

Additional price data relating to products 6 and 7 were received from ***, although most of these data were not presented in a form that could be used in computing weighted-average prices. Transaction quantities reported were consistently very small. The prices reported by *** on its sales to distributors and end users have *** in recent years.⁹⁹ *** prices on contract sales of product 6 to end users were only available from *** through ***. The reported price of this product *** from \$*** per pound throughout *** to \$*** per pound throughout ***. The price reported by *** on *** contract sales of product 7 to distributors remained at \$*** per pound throughout *** and then *** to \$*** per pound throughout ***. The price on contract sales of product 7 to U.S. converters *** from \$*** per pound during *** to \$*** during ***, and the price reported by *** on spot sales of product 7 to end users remained at \$*** per pound throughout ***.

Price comparisons from producer and importer data

Although price data relating to Chinese imports were very limited in most categories, some price comparisons were developed from the data received in producer, importer, and purchaser questionnaires. The data show that prices of Chinese imports of silicon carbide were generally lower than prices of comparable domestic products during 1990-93. The product 1 data shown in figures 9 and 10, tables 32 and 33, and appendix table H-1 indicate that the Chinese price was lower than the U.S. price in all 16 quarters where comparisons were possible. In the case of spot sales of product 1 to end users in containers, the Chinese price was lower than the domestic price in all 11 quarters where comparisons could be made. Margins of underselling ranged from *** percent to *** percent (table 32). In the case of contract sales of product 1 in bulk form, the Chinese price was lower in all 3 quarters where comparisons were possible (table 33). Underselling margins ranged from *** percent to *** percent. In both of the comparisons for contract sales in containers to end users, the Chinese price was lower by margins ranging from *** to *** percent (table H-1).

⁹⁹ Price data provided by two purchasers, ***, also show that prices of U.S.-produced product 7 *** during 1990-93.

Prices of Chinese imports were consistently lower than domestic prices of products 4 and 5. The import price on spot sales of product 4 to end users was lower than the domestic price in all 8 quarters where comparisons could be made by margins ranging from *** percent to *** percent (figure 11 and table 34). In the single comparison on contract sales of product 4 to end users the import price was lower than the domestic price by a margin of *** percent (table H-2). In the case of contract sales of product 5 to end users the Chinese price was lower than the domestic price in all 3 quarters where comparisons could be made (figure 12 and table 35). Margins ranged from *** percent to *** percent.

A few product 3 comparisons between contract sales of U.S.-produced silicon carbide sold to end users in bulk form and spot sales of imported silicon carbide from China sold to end users in bulk form were possible. As shown in table H-4 the import price of product 3 was lower than the domestic price in 3 out of the 4 quarters where comparisons could be made by margins ranging from *** to *** percent. In the other quarter the import price was higher by a margin of *** percent.

Price comparisons from purchaser data

In addition to the price comparisons available from producer and importer data, a number of comparisons were also obtained from individual purchasers that reported buying competing U.S.-produced and Chinese silicon carbide in the same quarters. In the majority of cases the prices of the imports from China were lower than comparable domestically produced items. Unit value comparisons were also developed for product 7 from data provided by one purchaser.

*** all reported purchases of domestically produced product 1 and imports of this product from China. *** reported contract purchases of *** tons of U.S.-produced product 1 and *** tons of the Chinese-produced product 1 in the fourth quarter of 1992.¹⁰⁰ The domestic price of \$*** per ton was higher than the Chinese price of \$*** per ton. *** purchased *** tons of domestically produced product 1 and *** tons of imports of product 1 from China in the third quarter of 1992.¹⁰¹ Both purchases were on a contract basis in a bulk form. The domestic price was \$*** per ton and the Chinese price was \$***. *** also bought *** tons of U.S.-produced product 1 and *** tons of Chinese-produced product 1 in the third quarter of 1993. Again, both purchases were on a contract basis in a bulk form. The U.S. price was \$*** per ton and the import price was \$***. *** purchased *** tons of U.S.-produced product 1 in bulk form and *** tons of Chinese silicon carbide in bulk form in the second quarter of 1992. The U.S. price was \$*** per ton, while the Chinese price was only \$***. *** purchased both domestically produced and imported product 1 on a contract basis in a bulk form in the third quarter of 1991, the second and third quarters of 1992, and the second and third quarters of 1993. In all three of the transactions during 1991 and 1992 the U.S. price was \$*** per ton. Transaction quantities on these three U.S. purchases ranged from *** tons to *** tons. The price of the imports was lower than the U.S. price for all three of the comparisons during 1991 and 1992. The Chinese price was \$*** per ton in the third quarter of 1991, \$*** in the second quarter of 1992, and \$*** in the third quarter of that year. Purchase quantities of the Chinese imports during the three quarters in 1991 and 1992 ranged from *** tons to *** tons. The domestic price of \$*** per ton reported by *** for the second and third quarters of 1993 was lower than the import price in those quarters. The Chinese price was \$*** per ton in the second quarter of 1993 and \$*** in the third quarter. Transaction quantities of domestic purchases amounted to *** tons and *** tons in the second and third quarters of 1993, respectively, and transaction quantities for import purchases amounted to *** tons and *** tons, respectively, in those quarters.

Four companies, ***, all purchased various quantities of product 4 produced in the United States and imported from China between 1991 and 1993. *** bought *** tons of U.S.-produced product 4 on a spot basis in both the first and the fourth quarters of 1993. In both transactions the U.S.

¹⁰⁰ *** reported in its questionnaire that its purchases consist entirely of refined silicon carbide.

¹⁰¹ In its questionnaire, *** reported that its purchases of U.S.-produced and imported silicon carbide from China consisted entirely of crude material.

delivered price was about \$*** per pound. *** also purchased *** tons of imports of Chinese-produced product 4 on a spot basis in the first quarter of 1993 and *** tons in the fourth quarter of 1993. In both cases the Chinese delivered price was approximately \$*** per pound--slightly lower than the U.S. price. *** reported spot purchases of *** tons of domestically produced product 4 and *** tons of Chinese-produced product 4 in the third quarter of 1991.¹⁰² The U.S. delivered price was \$*** per pound and the Chinese delivered price was \$*** per pound. *** reported contract purchases of *** tons of domestically produced product 4 and *** tons of imports of product 4 from China in the fourth quarter of 1991.¹⁰³ The domestic delivered price was \$*** per pound and the imported price was \$*** per pound. *** also purchased *** tons of U.S.-produced product 4 and *** tons of Chinese-produced product 4 in July-September 1993. The purchases were on a spot basis, and in both transactions the delivered price was \$*** per pound.

*** purchased domestically produced product 3 on a spot basis during 1992 and 1993 and Chinese produced silicon carbide on a contract basis during these years. In both quarters where comparisons were possible, the import price was higher. *** bought *** tons of the domestic product and *** tons of the Chinese product in July-September 1993. The spot price of the bulk purchases of the domestic product was \$*** per ton and the contract price of the bulk purchase of the imported product was \$*** per ton. In the second quarter of 1993, *** bought *** tons of product 3 on a bulk basis at a spot price of \$*** per ton. During the same quarter it bought *** tons of Chinese silicon carbide on a bulk basis at a contract price of \$*** per ton.

Data provided by *** allowed for three comparisons for product 2 and one comparison for product 5. *** reported that it purchased both domestically produced and imported product 2 from China on a contract basis in the second and third quarters of 1991. The U.S. price was \$*** per ton in the second quarter of 1991 and \$*** in the third quarter of that year. In both quarters the domestic purchase quantity was *** tons. The Chinese price was \$*** per ton on a purchase of *** tons in the second quarter of 1991 and \$*** per ton on a purchase of *** tons in the third quarter of 1991. *** reported that it bought *** tons of U.S.-produced product 2 in the third quarter of 1992 and *** tons of imported product 2 in the third quarter of 1993. The domestic price was \$*** per ton while the Chinese price was just \$*** per ton. Both purchases were on a contract basis in a bulk form. *** reported contract purchases of *** tons of domestically produced product 5 and *** tons of Chinese-produced product 5 in July-September 1992. Both purchases were on a contract basis. The U.S. price was \$*** per ton and the Chinese price was \$*** per ton. *** purchased domestically produced product 3 on a spot basis during 1992 and 1993 and Chinese-produced silicon carbide on a contract basis during these years. In both quarters where comparisons were possible, the import price was higher. *** bought *** tons of the domestic product and *** tons of the Chinese product in July-September 1993. The spot price of the bulk purchases of the domestic product was \$*** per ton and the contract price of the bulk purchase of the imported product was \$*** per ton. In the second quarter of 1993, *** bought *** tons of product 3 on a bulk basis at a spot price of \$*** per ton. During the same quarter it bought *** tons of Chinese silicon carbide on a bulk basis at a contract price of \$*** per ton.

One purchaser, *** reported quantities and values of purchases of product 7 produced in the United States and in China. The unit value data indicated that Chinese prices of this product were lower than U.S. prices. During 1991 and 1992 the average unit value of purchases of Chinese-produced product 7 was \$*** per pound. In contrast the average unit values of the domestic product reported by *** for different suppliers ranged from \$*** per pound to \$*** in 1991 and from \$*** to \$*** in 1992. In the third quarter of 1993 the average unit value of the Chinese product was \$***. During this period the average unit values of the domestic product ranged from \$*** to \$*** per pound.

¹⁰² *** reported in its questionnaire that its purchases of U.S.-produced and imported silicon carbide from China consisted entirely of refined material.

¹⁰³ *** reported in its questionnaire that its purchases of U.S.-produced and imported silicon carbide from China consist entirely of refined material.

Exchange Rates

Quarterly data reported by the International Monetary Fund show that during January-March 1990 through October-December 1993, the nominal value of the Chinese currency depreciated by 18.6 percent overall in relation to the U.S. dollar (figure 13).¹⁰⁴

Lost Sales and Lost Revenues

Four U.S. producers provided a total of 15 allegations of lost sales and 19 allegations of lost revenues relating to imports of silicon carbide from China during January 1990-December 1993 in the preliminary and final investigations.¹⁰⁵ The lost sales allegations involved over 8,000 tons of silicon carbide valued at more than \$700,000. The staff has investigated all of the allegations.

*** alleged that it lost a sale of *** tons of *** silicon carbide valued at \$*** to *** in *** as a result of competition from imports from China. ***, the spokesman for ***, acknowledged that the company had purchased the imports from China *** because they were priced much lower than the domestic product. However, he said that the actual quantity purchased was *** tons rather than the *** tons alleged by ***. *** said that his company has not purchased any additional silicon carbide from China since ***. *** uses silicon carbide in the manufacture of ***.

*** alleged that it lost revenues of over \$*** on a sale of *** tons of bagged silicon carbide in *** and that it lost revenues of \$*** on a sale of *** tons of bagged silicon carbide in *** to *** due to competition from imports from China. ***, the spokesman for ***, which is *** of silicon carbide, said that the allegations were valid. He acknowledged that *** had been forced to reduce its prices in order to make these sales to ***. *** said that imports of silicon carbide from China and other sources, including Venezuela, are priced significantly lower than the domestic product. However, *** currently still purchases all of its silicon carbide from ***.

During the preliminary investigation *** alleged that it lost a sale of *** tons of silicon carbide valued at \$*** in *** and that it lost revenues of \$*** on a sale of *** tons in January of 1992 to *** due to import competition from China. ***, the spokesman for ***, stated that both allegations were valid. He said that his company has been relying almost exclusively on imports from China because they are priced lower than the domestic product. ***.

In the final investigation *** alleged that it lost revenues of \$*** on a sale of *** tons of silicon carbide in *** and that it lost a sale of *** tons of silicon carbide valued at \$*** in *** to *** as a result of Chinese competition. However, *** stated that he could not remember the details of these transactions.

*** alleged that it lost a sale of *** tons of *** percent silicon carbide valued at \$*** to *** in *** due to competition from imports from China. ***, the spokesman for ***, could not address the allegation. However, he said that most of the silicon carbide purchased by *** has a lower silicon content than the product cited by *** in its allegation. *** is also a *** producer.

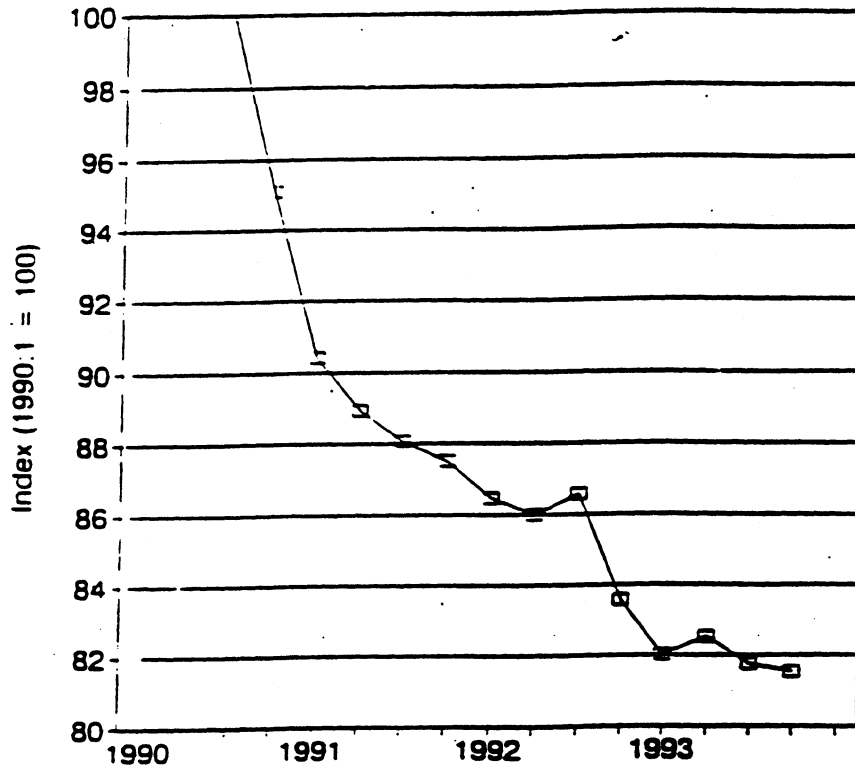
Four of the lost sales allegations related to ***, a large producer of *** products. *** alleged that it lost a sale of over *** tons of silicon carbide valued at \$*** in *** and *** alleged that it lost a sale of *** tons valued at \$*** in ***. *** alleged that it lost sales in *** and *** involving a total of over *** tons of silicon carbide valued at more than \$***. ***, the spokesman for ***, denied the

¹⁰⁴ *International Financial Statistics*, Apr. 1994. The real exchange rate could not be computed because of a lack of information on the rate of inflation in China.

¹⁰⁵ Four of ***'s lost revenue allegations related to *** a company that has gone out of business. These allegations, which concerned transactions in 1990 and 1991, could not be investigated, since no company contacts or telephone numbers are currently available.

Figure 13

Indexes of nominal exchange rates of the Chinese currency in relation to the U.S. dollar, by quarters, Jan. 1990-Dec. 1993



Source: International Monetary Fund, *International Financial Statistics*, Apr. 1994.

allegations. He acknowledged that his company had purchased significant quantities of imports from China but denied that these imports were a substitute for products offered by domestic producers. According to ***, *** relies mainly on *** to meet its needs. He said that the domestic industry does not offer silicon carbide that meets ***'s specifications. Therefore, his company has been purchasing from companies that offer *** in recent years. However, as a result of a dispute with their supplier in 1992, *** began importing significant quantities of silicon carbide from China. According to ***, only the *** and importers of silicon carbide from China are willing to offer a product that meets ***'s requirements.

*** alleged that it lost a sale of *** tons of silicon carbide valued at \$*** in *** to *** due to competition from imports from China. *** denied the allegation. *** said that the grade level of silicon carbide available from China is not high enough to meet the requirements of the ***. *** said

that *** has always purchased all of its silicon carbide from *** and from briquettes provided by *** produced from Venezuelan imports.¹⁰⁶

*** alleged that it lost revenues of more than \$*** on two sales totalling nearly *** tons of silicon carbide in *** to ***, ***, due to competition from imports from China. ***, the spokesman for ***, acknowledged that he had been able to negotiate the prices of the domestic product down due to the availability of lower priced Chinese imports. However, according to ***, *** has been largely forced to rely upon imports to meet its needs because U.S.-produced silicon carbide has not always been available. He said that Exolon, the only domestic producer of crude silicon carbide, cut off shipments to *** completely during the late 1980s in a period when the product was in short supply. Since that time *** has relied largely upon imported silicon carbide from Canada, China, Brazil, and other foreign sources to meet its needs, although it is currently purchasing some silicon carbide from Exolon.

*** alleged that it lost revenues on two separate occasions on sales to *** as a result of Chinese import competition. The first allegation involved lost revenues of over \$*** on a sale of *** tons of silicon carbide in *** and the second involved a transaction of an unspecified volume on ***. ***, a vice president of ***, denied the first allegation. He said that *** did not enter into any negotiations for purchases of Chinese-produced silicon carbide until ***. *** was generally aware of the transaction in ***, but could not specifically address the second allegation. He did acknowledge that *** has bought imported silicon carbide from China and that it is priced lower than domestically produced silicon carbide. *** said that *** needs to obtain silicon carbide at the lowest possible cost in order to produce *** that are price competitive with those offered by ***. In addition to producing and marketing ***, *** also produces and sells ***.

*** alleged that it lost a sale of *** tons of silicon carbide valued at over \$*** to *** due to competition from imports from China. ***, the spokesman for *** denied the allegation. He said that *** has always bought its silicon carbide exclusively from domestic sources. The company currently buys all of its silicon carbide from ***, although it has previously purchased this material from ***.

*** provided one lost sales allegation, three lost revenue allegations of unspecified value, and a fourth lost revenue allegation involving over *** tons valued at more than \$*** relating to ***. The lost sale allegation concerned a transaction in *** and the lost revenue allegations involved transactions in ***. *** acknowledged that the allegations were generally true. He said that *** had made use of the availability of low-cost imports from China in negotiating a lower price from its main supplier, ***. He also said that on some occasions, *** had actually purchased the lower priced Chinese product instead of silicon carbide available from ***. According to ***, ***, which produces ***, needs to obtain silicon carbide at the lowest possible cost in order to remain competitive with ***. *** said that ***.

*** alleged that it lost revenue of \$*** on a sale of *** tons of silicon carbide to *** in *** and *** alleged that it lost a sale of *** tons of silicon carbide valued at \$*** to the same company in *** due to import competition from China. ***, the spokesman for ***, stated that these allegations were true. He said that the because of the availability of low-priced silicon carbide from China, *** had been able to negotiate lower prices on purchases of the U.S.-produced silicon carbide, and, in some cases had purchased the lower priced imports instead of the domestic product. *** is a *** manufacturer.

*** alleged that it lost two sales to ***, as a result of competition from Chinese imports. The first allegation concerned a sale of *** tons valued at \$*** in *** and the second concerned a sale of *** tons valued at \$*** in ***. ***, the spokesman for ***, could not address the specific allegations.

¹⁰⁶ *** did make a trial purchase of *** tons of silicon carbide in the fourth quarter of 1992 for use at its *** location, but no additional purchases of the Chinese product have been made since that time.

However, he stated that *** purchases its silicon carbide primarily from China, but has also purchased imports from Canada and other sources. He said that the imported silicon carbide from China is less expensive than the U.S.-produced product.

*** further alleged that it lost revenue of \$*** in *** on a sale of *** tons of silicon carbide to ***. ***, the spokesman for ***, a manufacturer of ***, could not recall the transaction. However, he said that his company has never purchased that much silicon carbide in a single transaction. *** said that *** has purchased smaller quantities of silicon carbide imported from China, and that the price has tended to be lower than the domestic price of comparable material. He does not consider silicon carbide to be a very important input in ***'s manufacturing operations.

*** also alleged that it lost revenues of over \$*** on a sale of *** tons of silicon carbide in *** and that it lost a sale of *** tons of silicon carbide in *** valued at nearly \$*** to *** due to competition from Chinese imports. *** could not address the specific allegations. He said that *** does purchase silicon carbide to produce ***, but that this is only a very small part of the company operations. He does not know whether any of the silicon carbide that *** purchases has come from China.

APPENDIX A
FEDERAL REGISTER NOTICES

Investigation No. 731-TA-651 (Final)

Silicon Carbide From the People's Republic of China; Investigation

AGENCY: United States International Trade Commission.

ACTION: Institution and scheduling of a final antidumping investigation.

SUMMARY: The Commission hereby gives notice of the institution of final antidumping investigation No. 731-TA-651 (Final) under section 733(b) of the Tariff Act of 1930 (19 U.S.C. 1673d(b)) (the Act) to determine whether an industry in the United States is materially injured, or is threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of imports from the People's Republic of China of silicon carbide,¹ provided for

¹ As defined by the Department of Commerce, the product covered by this investigation is silicon carbide, regardless of grade or form, consisting by weight from 25 to 85 percent, inclusive, of silicon carbide and with a grain size coarser than size 325F (as set by the American National Standards Institute), and inclusive of split sizes. Silicon carbide covered by this investigation typically contains additional impurities: iron, aluminum, silica, oxygen, and carbon as well as calcium and magnesium.

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

EFFECTIVE DATE: December 8, 1993.

FOR FURTHER INFORMATION CONTACT:

Woodley Timberlake (202-205-3188),

Office of Investigations, U.S.

International Trade Commission, 500 E Street SW., Washington, DC 20436.

Hearing-impaired persons can obtain information on this matter by contacting the Commission's TDD terminal on 202-205-1610. Persons with mobility impairments who will need special assistance in gaining access to the Commission should contact the Office of the Secretary at 202-205-2000.

SUPPLEMENTARY INFORMATION:

Background

This investigation is being instituted as a result of an affirmative preliminary determination by the Department of Commerce that imports of silicon carbide from the People's Republic of China are being sold in the United States at less than fair value within the meaning of section 733 of the Act (19 U.S.C. 1673b). The investigation was requested in a petition filed on June 21, 1993, by counsel for the Ad Hoc Silicon Carbide Coalition.³

Participation in the Investigation and Public Service List

Persons wishing to participate in the investigation as parties must file an entry of appearance with the Secretary to the Commission, as provided in § 201.11 of the Commission's rules, not later than twenty-one (21) days after publication of this notice in the Federal Register. The Secretary will prepare a public service list containing the names and addresses of all persons, or their representatives, who are parties to this investigation upon the expiration of the period for filing entries of appearance.

Limited Disclosure of Business Proprietary Information (BPI) Under an Administrative Protective Order (APO) and BPI Service List

Pursuant to § 207.7(a) of the Commission's rules, the Secretary will make BPI gathered in this final investigation available to authorized applicants under the APO issued in the investigation, provided that the

application is made not later than twenty-one (21) days after the publication of this notice in the Federal Register. A separate service list will be maintained by the Secretary for those parties authorized to receive BPI under the APO.

Staff Report

The prehearing staff report in this investigation will be placed in the nonpublic record on April 12, 1994, and a public version will be issued thereafter, pursuant to § 207.21 of the Commission's rules.

Hearing

The Commission will hold a hearing in connection with this investigation beginning at 9:30 a.m. on April 27, 1994, at the U.S. International Trade Commission Building. Requests to appear at the hearing should be filed in writing with the Secretary to the Commission on or before April 18, 1994. A party who has testimony that may aid the Commission's deliberations may request permission to present a short statement at the hearing. All parties and nonparties desiring to appear at the hearing and make oral presentations should attend a prehearing conference to be held at 9:30 a.m. on April 20, 1994, at the U.S. International Trade Commission Building. Oral testimony and written materials to be submitted at the public hearing are governed by §§ 201.6(b)(2), 201.13(f), and 207.23(b) of the Commission's rules. Parties are strongly encouraged to submit as early in the investigation as possible any requests to present a portion of their hearing testimony in camera.

Written Submissions

Each party is encouraged to submit a prehearing brief to the Commission. Prehearing briefs must conform with the provisions of § 207.22 of the Commission's rules; the deadline for filing is April 20, 1994. Parties may also file written testimony in connection with their presentation at the hearing, as provided in § 207.23(b) of the Commission's rules, and posthearing briefs, which must conform with the provisions of § 207.24 of the Commission's rules. The deadline for filing posthearing briefs is May 5, 1994; written testimony must be filed no later than three (3) days before the hearing. In addition, any person who has not entered an appearance as a party to the investigation may submit a written statement of information pertinent to the subject of the investigation on or before May 4, 1994. All written submissions must conform with the provisions of § 201.8 of the

Commission's rules; any submissions that contain BPI must also conform with the requirements of §§ 201.6, 207.3, and 207.7 of the Commission's rules.

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

Auditory: This investigation is being conducted under authority of the Tariff Act of 1930, title VII. This notice is published pursuant to § 207.20 of the Commission's rules.

By order of the Commission.

Dated: January 18, 1994.

Diana E. Keebala,

Secretary.

(PR Doc. 94-1893 Filed 1-25-94; 8:45 am)
STUAN COOK 788-69-9

³ The coalition members include Eutecan-ESX Co., Tonawanda, NY; General Alvarado Trekler, Inc., Niagara Falls, NY; and Sull-Coburn/Hansen Industrial Ceramics Corp., Worcester, MA.

exports of merchandise covered by this investigation. On December 1 and 3, 1993, these exporters requested that the Department of Commerce (the "Department") postpone its final determination until not later than 135 days after the date of publication of the preliminary determination.

Our November 29, 1993, preliminary determination (58 FR 64549, December 8, 1993) in this proceeding was affirmative. In accordance with section 735(a)(2) of the Tariff Act of 1930, as amended (the Act) and 19 CFR 353.20(b), when, subsequent to an affirmative preliminary determination, we receive a request for postponement of the final determination from exporters who account for a significant proportion of the merchandise under investigation, we are required, absent compelling reasons for denial, to grant the request. Accordingly, we are postponing our final determination as to whether sales of silicon carbide from the PRC have been made at less than fair value until not later than April 22, 1994.

Amended Preliminary Determination

On December 2, 1993, we disclosed our calculations for the preliminary determination to counsel for Hainan, Shuaxi, and Xiamen. On December 7, 1993, we received timely submissions from each of these three exporters alleging ministerial errors in the Department's preliminary determination calculations. (For specific details of these allegations and our analysis of them, see Memorandum from Richard W. Moreland to Barbara R. Stafford of December 20, 1993).

One of these exporters, Hainan, alleged that the Department made certain errors with respect to the valuation of freight rates and packing materials. We agree, and in accordance with procedures set forth in the proposed regulations, we are amending Hainan's preliminary dumping margin because the corrections represent a change of more than five absolute percentage points and more than 25 percent of the dumping margin calculated in the original (erroneous) preliminary determination. See § 353.15(g)(4)(ii) of the Department's proposed regulations, 57 FR 1131 (January 10, 1992). The corrected dumping margin for Hainan is 50.42 percent.

The rest of the alleged ministerial errors were either not ministerial in nature or could not be considered a "significant ministerial error." See § 353.15(g)(4) of the Department's proposed regulations.

14-879-899

Postponement of Final Antidumping Duty Determination and Correction of Ministerial Errors: Silicon Carbide From the People's Republic of China

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

ACTION: Notice.

EFFECTIVE DATE: January 5, 1994.
FOR FURTHER INFORMATION CONTACT: Edward Easton or Steve Alley, 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) 482-1777 or (202) 462-5288, respectively.

Postponement of Final Determination

Hainan Feitian Electrontech Co., Ltd. (Hainan), Shuaxi Minerals (Shuaxi), Xiamen Abrasive Co. (Xiamen), 7th Grinding Wheel Factory Import and Export Corp., Qinghai Metals and Minerals Import & Export Corp., and The Import and Export Corporation of Inner Mongolia Autonomous Region, responding exporters in this proceeding, account for a significant proportion of

Public Comment

In accordance with 19 CFR 353.38, case briefs or other written comments in at least ten copies must now be submitted to the Assistant Secretary for Import Administration no later than March 30, 1994, and rebuttal briefs, no later than April 4, 1994. In accordance with 19 CFR 353.38(b), we will hold a public hearing, if requested, to afford interested parties an opportunity to comment on arguments raised in case or rebuttal briefs. Tentatively, the hearing will now be held on April 6, 1994, at 10 a.m. at the U.S. Department of Commerce, room 3708, 14th Street and Constitution Avenue, NW., Washington, DC 20230. Parties should confirm by telephone the time, date, and place of the hearing 48 hours before the scheduled time.

This notice is published pursuant to section 735(d) of the Act, 19 CFR 353.20(b)(2) and in accordance with procedures set forth in the Department's proposed regulations, § 353.15(g)(3), 57 FR 1131 (January 10, 1992).

Dated: December 23, 1993.

Barbara R. Stafford,
Acting Assistant Secretary for Import
Administration.

[FR Doc. 94-161 Filed 1-4-94; 8:45 am]

BILLING CODE 2510-06-P

Trade Administration, U.S. Department of Commerce, 14th Street and Constitution Avenue, NW., Washington, DC 20230; telephone: (202) 482-5288 or (202) 482-0108, respectively.

FINAL DETERMINATION: We determine that silicon carbide from the People's Republic of China (PRC) is being, or is likely to be, sold in the United States at less than fair value, as provided in section 735 of the Tariff Act of 1930, as amended (the Act). The estimated margins are shown in the "Suspension of Liquidation" section of this notice.

Case History

Since the preliminary determination on November 29, 1993, (58 FR 64549, December 8, 1993), the following events have occurred:

On December 1, 1993, the Department of Commerce (the Department) received a letter from Hainan Feitian Electrotech Company, Limited (Hainan), Shaanxi Minmetals (Shaanxi) and Xiamen Abrasive Company (Xiamen), three of the six respondents in this investigation, requesting that the Department postpone the final determination to not later than April 22, 1994, or 135 days after the date of the publication of the preliminary determination. The letter from these three respondents also requested the Department to (1) collect information on third-country sales to use as foreign market value (FMV); (2) find that Treibacher and Saint-Gobain do not qualify as "interested parties" in this proceeding, bar them from further participation in this case, and re-examine the Department's decision that petitioner has standing to file the petition; and (3) verify fully respondents' answers to the Department's questionnaire. On the same day, the other three respondents in this investigation—Inner Mongolia Import and Export Corporation (IMI/E), Qinghai Metals Import and Export Corporation (QI/E), and Seventh Grinding Wheel Factory Import and Export Corporation (SGW)—also requested a disclosure conference and a postponement of the final determination.

On December 7, 1993, Hainan, Shaanxi and Xiamen submitted letters alleging ministerial errors in the Department's calculations for the preliminary determination. (For specific details of these allegations and our analysis of them, see Memorandum from Richard W. Moreland to Barbara R. Stafford of December 20, 1993.) One of these exporters, Hainan, alleged that the Department made certain errors with respect to the valuation of freight rates and packing materials. The Department

agreed with this one allegation, and in accordance with procedures set forth in the proposed regulations, published an amended preliminary dumping margin for Hainan (59 FR 570, January 5, 1994).

On December 29, 1993, petitioner submitted comments on issues relating to verification. On December 30, 1993, petitioner submitted publicly available information on electricity rates in India and Pakistan as well as information on electricity capacity in the PRC. Hainan, Shaanxi, and Xiamen submitted additional information on December 30 regarding the price and quantity of their U.S. sales and the mode of transportation used to transport coal. The Department sent verification agendas to all six respondents in this investigation on December 30, 1993.

On January 3, 1994, IMI/E, QI/E, and SGW submitted publicly available information about Indian electricity rates and additional information regarding freight distances. IMI/E supplemented its freight information on January 7, 1994.

On January 4, 1994, the Department wrote to SGW regarding the Department's intention to visit two other exporters during verification to confirm that U.S. sales of silicon carbide had been reported for all entities related to SGW. We also wrote to Xiamen regarding our intention to visit China Abrasives Export Corporation (CAEC), the parent corporation of Xiamen, to confirm that all U.S. sales during the period of investigation (POI) had been reported. On January 5, 1994, we requested the assistance of the Ministry of Foreign Trade and Economic Cooperation of the PRC (MOFTEC) in arranging these meetings as well as interviews with appropriate MOFTEC officials. We wrote to MOFTEC again on January 13, 1994, to request assistance in arranging additional meetings for the verification teams with Qinghai and Inner Mongolia provincial government officials and CAEC representatives. The Department verified responses in the PRC from January 10 to February 5, 1994 and its verification reports between February 15 and March 14, 1994.

Requests for a public hearing were received by the Department on January 5, 1994, from IMI/E, QI/E, and SGW, and on January 10, 1994, from Hainan, Shaanxi, and Xiamen.

On March 1, 1994, petitioner alleged that critical circumstances exist with regard to imports of silicon carbide from the PRC. We requested shipment data from the six respondents in this investigation on March 4, 1994, and received respondents' data on March 17, 18, 21 and 22. (Because Hainan,

[A-570-824]

Notice of Final Determination of Sales at Less Than Fair Value: Silicon Carbide From the People's Republic of China

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

EFFECTIVE DATE: May 2, 1994.

FOR FURTHER INFORMATION CONTACT: Steve Alley or Andrew McGilvray, Office of Antidumping Investigations, Import Administration, International

Shaanxi, and Xiamen failed to file public versions of their original March 11, 1994 submissions of shipment data, we rejected these submissions. Hainan, Shaanxi, and Xiamen refiled these submissions in proper form on March 17.) On March 31, 1994, we issued our preliminary affirmative determination of critical circumstances for two respondents in this investigation—Shaanxi and Xiamen. The other four respondents were found not to have massive increases in imports. In addition, the Department found that critical circumstances exist for all exporters who did not participate in this investigation (59 FR 16795, April 8, 1994). On April 6, 1994, Shaanxi and Xiamen requested that we base our calculations for critical circumstances on the date of shipment rather than the date of importation into the United States (the date used in the preliminary determination of critical circumstances). Petitioner also submitted comments on our preliminary affirmative determination of critical circumstances on April 6, 1994.

On March 11, 1994, petitioner filed information concerning the Department's surrogate value for electricity. Because this submission contained untimely filed new information, we rejected this submission. Petitioner filed new submissions regarding electricity valuation on March 23, 1994. Certain of these submissions also contained untimely filed new information and, therefore, were rejected. Petitioner and respondents submitted case briefs on March 30 and rebuttal briefs on April 4, 1994. A public hearing was held on April 6, 1994.

Scope of Investigation

The product covered by this investigation is silicon carbide, regardless of grade or form, containing by weight from 20 to 98 percent, inclusive, silicon carbide and with a grain size coarser than size 325F (as set by the American National Standards Institute), and inclusive of split sizes. Silicon carbide covered by this investigation typically contains additional impurities: iron, aluminum, silica, silicon, and carbon as well as calcium and magnesium. Silicon carbide is currently classifiable under subheadings 2849.20.10 and 2849.20.20 of the Harmonized Tariff Schedule (HTS). The HTS numbers are provided for convenience and customs purposes. The written description is dispositive.

Period of Investigation

The POI is January 1, 1993, through June 30, 1993.

Best Information Available (BIA)

As stated in the preliminary determination, the Department must receive an adequate questionnaire response from each entity requesting a separate dumping margin rate before a separate rate can be applied. Consequently, all non-respondent entities, as well as respondents that fail to demonstrate eligibility for a separate rate, must receive a single "All Other" rate. We have based our "All Other" rate on BIA.

In determining what to use as BIA, the Department follows a two-tiered methodology, whereby the Department normally assigns lower margins to those respondents who cooperated in an investigation and margins based on more adverse assumptions for those respondents who did not cooperate in an investigation or who failed to qualify for a separate rate. According to the Department's two-tiered BIA methodology outlined in the Final Determination of Sales at Less Than Fair Value: Certain Hot-Rolled Carbon Steel Flat Products, Certain Cold-Rolled Carbon Steel Flat Products, and Certain Cut-to-Length Carbon Steel Plate From Belgium, 58 FR 37063 (July 9, 1993), when a company refuses to provide the information requested in the form required, or otherwise significantly impedes the Department's investigation, it is appropriate for the Department to assign to that company the higher of (a) the highest margin alleged in the petition, or (b) the highest calculated rate of any respondent in the investigation.

In this case, where some PRC exporters failed to respond to our questionnaire and, thus, are uncooperative, we are assigning an "All Other" rate of 406.00 percent (the highest margin calculated in the amendment petition) as BIA to the uncooperative exporters. The 406.00 percent rate also applies to all other exporters that are ineligible for separate rates.

Separate Rates

Respondents Xiamen, Hainan, and Shaanxi have requested that they be assigned separate rates. For Xiamen, we cannot consider eligibility for a separate rate because it failed to submit consolidated responses, including information on separate rates, for affiliated companies which it has stated are related to it within the meaning of section 771(13) of the Act. (See Memorandum dated April 22, 1994, from Richard W. Moreland to Barbara R. Stafford.)

For Hainan and Shaanxi, we were unable to verify certain information in their separate rates responses. Specifically, these respondents did not make available to us the bank records necessary to verify that they retain the proceeds from their export sales. Given our inability to verify Hainan's and Shaanxi's separate rate submissions, we cannot consider applying separate rates to them. (See *Ibid.*)

In addition to Xiamen, Hainan, and Shaanxi, respondents IMI/E, QI/E, and SGW have also requested that the Department issue to each of them a separate rate. These respondents have submitted completed and verified responses regarding their eligibility for separate rates.

We have analyzed the record in this investigation and agree that it is appropriate to assign separate rates to IMI/E, QI/E, and SGW. In making this determination, we have modified our separate rates policy, previously set forth in Final Determination of Sales at Less Than Fair Value: Certain Compact Ductile Iron Waterworks Fittings and Accessories Thereof From the People's Republic of China ("CDIW") (58 FR 37908, July 14, 1993) and Final Determination of Sales at Less Than Fair Value: Certain Helical Spring Lock Washers from the People's Republic of China ("Lock Washers") (58 FR 48833, September 20, 1993). In CDIW, we took the position that state-ownership (*i.e.* "ownership by all the people") "provides the central government the opportunity to manipulate the [exporter's] prices whether or not it has taken advantage of that opportunity during the period of investigation." Thus, we concluded in CDIW that state-owned enterprises would not be eligible for separate rates.

However, based upon further analysis and information developed in the course of this investigation, we find that the ownership of IMI/E, QI/E, and SGW "by all the people," in and of itself, cannot be considered as dispositive in determining whether those companies can receive separate rates. At verification, Mr. Zhang Yuqing, the Division Chief of the Department of Treaty and Law of MOFTEC (the Ministry of Foreign Trade and Economic Cooperation), explained that the designation on these respondents' business licenses that they are "owned by all the people" does not mean that the central, provincial, or local governments control these companies. Instead, "ownership by the people" signifies that "no individual can take the company; it cannot become a private company." The company "belongs to the community" and the company's

employees are entrusted with the management of the company. (See Memorandum from Andrew McGilvray, to Gary Taverman, dated February 15, 1994.)

A recent analysis by the Central Intelligence Agency supports MOFTEC's statement that ownership "by all the people" is not synonymous with central government control. (See 1992 report to the Joint Economic Committee, Hearings on Global Economic and Technological Change: Former Soviet Union and Eastern Europe and China, Pt. 2 (102 Cong., 2d Sess), 143, 196 (hereinafter, "CIA report").) The report states that a state-owned enterprise was subject to central government control prior to 1980, but that "[t]he reform decade of the 1980s brought significant changes to this scheme" and that the central government devolved control of enterprises owned "by all the people". We have, therefore, come to the conclusion that ownership "by all the people" does not require the application of a single rate. Thus, we believe a PRC respondent may receive a separate rate if it establishes on a *de jure* and *de facto* basis that there is an absence of governmental control. We have, therefore, adapted and amplified the test set out in *Final Determination of Sales at Less Than Fair Value: Sparklers From the People's Republic of China* (56 FR 20588, May 6, 1991) to determine whether the respondents in this case are entitled to separate rates.

1. Absence of De Jure Control

Three enactments that have been placed on the record in this case indicate that the responsibility for managing state-owned enterprises has been shifted from the government to the enterprise itself. These are the "Law of the People's Republic of China on Industrial Enterprises Owned by the Whole People," adopted on April 13, 1988 ("1988 Law"); "Regulations for Transformation of Operational Mechanism of State-owned Industrial Enterprises," approved on August 23, 1992 ("1992 Regulations"); and the "Temporary Provisions for Administration of Export Commodities," approved on December 21, 1992 ("Export Provisions"). The 1988 Law states that enterprises have the right to set their own prices (see Article 26). This principle is restated in the 1992 Regulations (see Article IX). The Export Provisions list those products subject to direct government control. Silicon carbide does not appear on this list and is not, therefore, subject to the constraints of these provisions.

The existence of these laws indicate that respondents IMI/E, QI/E, and SGW

are not subject to *de jure* control. However, there is publicly available information indicating that the PRC central government has acknowledged that the provisions of the above-cited laws and regulations have not been implemented uniformly among different sectors and/or jurisdictions in the PRC. See "[PRC] Government Findings on Enterprise Autonomy" in Foreign Broadcast Information Service-China-93-133 (July 14, 1993).

Given this report of uneven implementation of the PRC government's laws on devolution of government control, it is critical that we conduct a *de facto* analysis to determine whether these respondents were, in fact, not subject to governmental control.

2. Absence of De Facto Control

For the reasons stated below, we have determined that these respondents are not *de facto* controlled by the central, provincial or municipal governments. In conducting this analysis, we are aware that the CIA report stated that the central government has "decentralized the supervision and planning control over most state enterprises to provincial or municipal authorities." As elaborated below and in the responses to Comments 1 and 2, we have verified that these respondents are not, in fact, subject to provincial control. Municipal control is not an issue in this case as there is no tie between these companies and any municipality.

We have taken the following factors into account in our determination of absence of *de facto* control: First, the respondents' export prices are not set by, nor subject to approval by, a governmental authority. Second, the respondents also have authority to negotiate and sign contracts and other agreements. These points were confirmed by examination of correspondence files and other documentation relating to sales negotiations, as noted in the verification reports.

Third, we have determined, based on our investigation, that the respondents have autonomy from the central government in making decisions regarding selection of management, based on our examination of management election/evaluation forms completed by employees. Lastly, we have determined that the respondents retain the proceeds of their export sales and make independent decisions regarding disposition of profits or financing of losses. This last point was confirmed through examination of bank records, and company accounting records relating to investment and other activities. (See also Concurrence

Memorandum and various verification reports.)

3. Conclusion

Given that the record of this investigation demonstrates a *de jure* and *de facto* absence of governmental control over the export functions of IMI/E, QI/E, and SGW, we determine that IMI/E, QI/E, and SGW are eligible for separate rates.

Surrogate Country

Section 773(c) of the Act requires the Department to value the factors of production, to the extent possible, in one or more market economy countries that are at a level of economic development comparable to that of the non-market economy country, and that are significant producers of comparable merchandise. The Department has determined that India and Pakistan are the most comparable to the PRC in terms of overall economic development, based on per capita gross national product ("GNP"), the national distribution of labor, and growth rate in per capita GNP. (See memorandum from the Office of Policy to Gary Taverman, dated August 17, 1993, on file in room B-099 of the Main Commerce Department Building.) Because India fulfills both requirements outlined in the statute, India is the preferred surrogate country for purposes of calculating the factors of production used in producing the subject merchandise. Accordingly, for this final determination, we have used the values for the factors of production, as appropriate, from Indian sources. As in our preliminary determination, we have used a world market price in one instance where no appropriate surrogate value was available. We have obtained and relied upon published, publicly available information, wherever possible.

Fair Value Comparisons

To determine whether sales of silicon carbide from the PRC to the United States were made at less than fair value for those exporters deemed eligible to receive a separate rate, we compared the United States price (USP) to FMV, as specified in the "United States Price" and "Foreign Market Value" sections of this notice.

United States Price

United States price was calculated on the same basis as in the preliminary determination. Minor adjustments were made to the reported U.S. prices of IMI/E and SGW, pursuant to finding at verification. We also adjusted foreign inland freight based on verification

findings. (See Calculation Memorandum, attached to the Department's Concurrence Memorandum of April 22, 1994, on file in room B-099 of the Main Commerce Department Building.)

Foreign Market Value

We calculated FMV based on factors of production cited in the preliminary determination, making adjustments for specific verification findings (see Calculation Memorandum). To calculate FMV, the verified amounts for factors of production were multiplied by the appropriate surrogate values for the different inputs. We have used the same surrogate values as in the preliminary determination with the exception of the value for electricity.

In our November 29, 1993, preliminary determination, we had used publicly available information for Pakistan regarding electricity rates for industrial use during the POI. We did so because the publicly available information at the time for India either was out of date or was not necessarily specific to industrial use. After the preliminary determination, petitioner's December 30, 1993, submission provided new publicly available information from the Asian Development Bank (ADB) showing Indian electricity prices for industrial use in FY1990. Since this new ADB data shows recent electricity rates specific to industrial use for India (our first-choice surrogate), we have used the ADB data for the final determination in preference to data for Pakistan (our second-choice surrogate). (For a complete analysis of surrogate values, see Calculation Memorandum.)

Verification

As provided in section 776(b) of the Act, we verified all the information relied upon for this final determination.

Critical Circumstances

In our preliminary affirmative determination of critical circumstances of March 31, 1994, we found that critical circumstances exist for two respondents in this investigation—Shaanxi and Xiamen. We also preliminarily determined that critical circumstances exist for all exporters who did not participate in this investigation.

Pursuant to section 733(e)(1) of the Act, we based that preliminary determination on a finding of 1) a history of dumping of silicon carbide in the European Community (EC), and 2) massive imports of silicon carbide over a relatively short period by examining respondents' shipment data. Because

the timing of petitioner's allegation (after the completion of verification) precluded on-site verification of this information, the Department also referred to U.S. Customs IM-115 entry data to corroborate respondents' reported shipment information, pursuant to section 771(18)(E) of the Act. (See 59FR 16795, April 8, 1994).

For the final determination, we have continued to use BIA as the basis for our determination of critical circumstances for non-respondent exporters. The BIA margin (406.00 percent) for those exporters exceeds the 25 percent threshold for imputing a knowledge of dumping to the importers of the merchandise. In addition, we have adversely assumed, as BIA, a massive increase in imports from these non-respondent exporters. We, therefore, determine that critical circumstances exist for all non-respondent exporters in this investigation.

Since the preliminary determination of critical circumstances, we have determined that Hainan, Shaanxi and Xiamen are ineligible for rates separate from non-respondent PRC exporters. Because Hainan, Shaanxi and Xiamen are ineligible for rates separate from non-respondent exporters, we must extend to them the same BIA-based determination of critical circumstances applied to the non-respondent exporters.

For respondents IMI/E, QI/E, and SGW, we determine that critical circumstances do not exist. The shipment data for these respondents, which we have corroborated using U.S. Customs IM-115 entry data, shows that there has been no massive increase in shipments from these respondents in the period following the filing of the petition (See Preliminary Affirmative Determination of Critical Circumstances).

Interested Party Comments

Because respondents Hainan, Shaanxi, and Xiamen, are not eligible for calculated separate rates, we have not addressed comments made by these parties regarding calculations for this determination.

Comment 1: Petitioner maintains that the Department cannot assign separate rates to respondents because not all relevant entities in the PRC have participated in the investigation. Petitioner states that: (1) The silicon carbide industry in the PRC is characterized by significant provincial and/or local government ownership; (2) information on the record demonstrates a number of non-responding producers of silicon carbide in each province in which respondents and/or their

suppliers are located; (3) respondents and the non-responding producers are owned by the governments of the provinces in which they are located; and (4) respondents have offered no reason why cooperation is not required of the non-responding producers. Petitioner further states that, while PRC law prohibits the central government from controlling prices for silicon carbide, there is no evidence that provincial governments cannot regulate prices between silicon carbide producers and exporters. Petitioner concludes that the respondents are thus ineligible for separate rates.

IMI/E, QI/E, and SGW maintain that petitioner has confused the Department's market-oriented industry (MOI) policy with its separate rates policy. They state that PRC export companies do not need to prove that the product under investigation was produced in a market environment to be eligible for separate dumping margins. These respondents conclude that every PRC exporter and producer of silicon carbide does not need to participate in the case for participating exporters to qualify for separate rates.

DOC Position

We disagree with petitioner. Pursuant to the discussion in the "Separate Rates" section above, we have found that the three responding exporters "owned by all the people" are not controlled by the central, provincial, or municipal governments. (See discussion under "Separate Rates" section.) Further, the information on the record relating to provincial and local governments shows that their activities with regard to IMI/E, QI/E, and SGW are limited to such functions as taxation, business licensing, and the collection of export statistics. There is no evidence that these governments (1) can manipulate export prices or (2) interfere with other aspects of conducting business with the United States. Therefore, we determine that IMI/E, QI/E, and SGW are not subject to government control of their silicon carbide exports.

Finally, petitioner's concerns regarding the ability of provincial governments to regulate prices between domestic producers and exporters are not relevant to those respondents' eligibility for separate rates. The Department's separate rates analysis focuses on governmental control over the respondents' export activities, not the regulation of prices charged by the respondents' suppliers.

Comment 2: Petitioner maintains that the respondents in this case do not meet the Department's criteria for separate

rates because they have not demonstrated that they are independent of government ownership or control and, therefore, that the Department must presume central-government control. Petitioner also maintains that evidence on the record demonstrates that the respondents are subject to certain types of control by the central and provincial governments. Further, petitioner states that various provisions of PRC law demonstrate that respondents, whose business licenses state that they are owned by "the whole people," are subject to state control. In conclusion, petitioner states that, based on the record for this investigation, respondents are ineligible for separate rates.

IMI/E, QI/E, and SGW state that the Department should apply the Sparklers criteria and find them eligible for separate dumping margins. These respondents state that they have cooperated completely in this investigation and have provided information indicating a lack of ownership or control by the PRC central government. Moreover, these respondents emphasize that the appropriate test of ownership is control of property rather than simple legal title. IMI/E, QI/E, and SGW state that the record also provides evidence of a *de facto* absence of central control with respect to exporters.

Hainan, Shaanxi, and Xiamen state that they are not subject to *de jure* or *de facto* control by the central government. As evidence of *de jure* absence of control, Hainan, Shaanxi and Xiamen cite the specific law and regulations provided in the MOFTEC verification report which indicate that: (1) the PRC central government cannot dictate the decision-making of enterprises; (2) enterprises have the right to enjoy the benefits from their business activities; and (3) enterprises are free to select their own management independently from the PRC central government. These respondents also maintain that evidence on the record demonstrates a *de facto* absence of control.

DOC Position: The Department disagrees with petitioner regarding respondents IMI/E, QI/E, and SGW. As discussed at length in the "Separate Rates" section above, IMI/E, QI/E, and SGW are eligible for separate rates.

Respondents Hainan and Shaanxi have failed to establish their eligibility for separate rates because, at verification, these companies failed to produce bank records necessary to prove their retention of proceeds from export sales. Therefore, these respondents did not meet an important

criterion for separate rates (see "Separate Rates" section above).

Respondent Xiamen has also failed to establish its eligibility for a separate rate. As noted in the "Separate Rates" section above, Xiamen has stated that certain other PRC exporters of silicon carbide (*i.e.*, CAEC and its other affiliates) are related parties within the meaning of section 771(13) of the Act. However, Xiamen has failed to provide information regarding the eligibility for separate rates of CAEC, *et al.* Without such information, the Department cannot consider assigning a separate rate to Xiamen/CAEC. (See also the Concurrence Memorandum of April 22, 1994.)

Comment 3: Hainan, Shaanxi, and Xiamen argue that two of the members of the petitioning coalition, Treibacher and Saint-Gobain, should be excluded as interested parties in this investigation because these companies do not sell U.S.-manufactured silicon carbide. These respondents assert that Treibacher and Saint-Gobain sell silicon carbide produced in Canadian furnaces that is merely ground and screened in the United States. Respondents ask the Department to notify the U.S. International Trade Commission (ITC) that these two companies should not be considered as part of the domestic silicon carbide industry because of (1) their insignificant U.S. capital investment regarding silicon carbide, (2) their negligible U.S. employment, and (3) their negligible real value-added to the product in the United States.

Hainan, Shaanxi, and Xiamen assert that, once the Department has excluded Treibacher and Saint-Gobain from participating as interested parties in this proceeding, the Department must scrutinize Exolon-ESK, the sole remaining petitioner with standing as a U.S. producer of silicon carbide. These respondents point out that Exolon was indicted in February 1994 for alleged improper commercial activities. These charges, Hainan, Shaanxi, and Xiamen argue, are "directly relevant to the credibility of the certifications on which the Department based the initiation of this investigation and to the legitimacy of Exolon's request for import relief." These respondents conclude that since (1) the Department must reject Exolon's submissions as an unreliable basis for the initiation of this investigation, and (2) Treibacher and Saint-Gobain are not interested parties and are thus barred from status as petitioners, there are no remaining petitioners with standing to continue this investigation. Therefore, these respondents maintain that the Department should rescind its

investigation of silicon carbide from the PRC.

Petitioner argues that based on long-standing practices, the Department analyzes petitioner's standing only in the event of a challenge from other U.S. producers. Petitioner rebuts respondents' argument by maintaining that the indictment of the petitioner is not relevant to this investigation, that Exolon, the indicted party, is innocent of the charges, and that Treibacher and Saint-Gobain are interested parties to this investigation.

DOC Position: We agree, in part, with petitioner. Exolon's indictment is irrelevant to our analysis and its status as a U.S. producer of subject merchandise is unchallenged. Further, the ITC preliminarily determined that Treibacher and Saint-Gobain are engaged in U.S. "production" of subject merchandise and thus qualify as members of the domestic industry (see *Silicon Carbide From the People's Republic of China*, Inv. No. 731-TA-651 (Preliminary) (Pub. 2668, August 1993), at 12-13). We have reviewed the ITC's analysis, which addresses the same arguments raised by respondents in this proceeding, and we concur with the ITC. Therefore, we determine that Treibacher and Saint-Gobain are engaged in "production" of silicon carbide in the United States. Thus, these companies qualify as interested parties to this proceeding. Given these facts, there is no basis for rescinding the initiation of this investigation.

Comment 4: Hainan, Shaanxi, and Xiamen argue that, if the Department decides not to rescind the initiation of this investigation, the Department should consider crude silicon carbide and refined silicon carbide to be separate classes or kinds of merchandise.

Petitioner asserts that these respondents have offered no evidence on the record to support an alternative class or kind analysis.

DOC Position: We agree with petitioner. Hainan, Shaanxi, and Xiamen have provided no substantial analytical or factual basis for their claim that crude silicon carbide and refined silicon carbide should be considered as separate classes or kinds of merchandise.

Comment 5: IMI/E, QI/E, and SGW argue that the Department should continue to use the Pakistani rates for electricity because the Indian rates for industrial use from the petitioner's December 30, 1993, submission were artificially high.

Petitioner asserts that the Department should follow its preference for using surrogate values from one country when

possible. In this case, the Department has surrogate values from India for all factors of production, including electricity. Petitioner further asserts that the Pakistani rate used as the surrogate value for electricity in the preliminary determination was flawed because it did not completely capture electricity costs for industrial users.

DOC Position: We agree with petitioner. In its preliminary determination, the Department relied upon published, publicly-available information (PPI) regarding Pakistani electricity rates for industrial use during the POI. We did so because the PPI available at that time for India either was out of date or was not necessarily specific to industrial use. Since that time, publicly available electricity rates for India have become available and these rates more accurately capture total costs for Indian industrial users.

With regard to the concern raised by IMI/E, QI/E, and SGW regarding artificially high electricity rates in India, the document which these respondents cites as evidence of their contention simply fails to support their position; viz., that document states that "(t)o encourage industrial development, many states also offer low rates to large industries." Therefore, the Department has selected the publicly-available industrial rates for India to value electricity consumption for the calculations for this determination (see Calculation Memorandum).

Comment 6: Petitioner states that there is a history of dumping in the United States and Europe of silicon carbide from the PRC. Moreover, petitioner states that the import data show there have been massive imports of silicon carbide from PRC over a relatively short period of time. Since preliminarily estimated dumping margins in this case exceed 25 percent, petitioner maintains that the importers knew or should have known that the product was being sold at less than fair value. Petitioner maintains that the Department should find critical circumstances in this case.

QI/E, IMI/E, and SGW state that since their exports were not massive after the petition was filed, the Department should not find critical circumstances.

Hainan, Shaanxi, and Xiamen state that the EC findings which petitioner cites as evidence of a history of dumping do not, in fact, demonstrate such a history. These respondents maintain that, because the PRC exporters offered the EC "satisfactory undertakings" (i.e., agreed to eliminate injurious dumping), there is no "history of dumping" in the EC.

DOC Position: As described in the "Critical Circumstances" section above, we have analyzed the information on the record regarding critical circumstances and have found that critical circumstances do not exist for the three respondents (IMI/E, QI/E, and SGW) that are eligible for separate rates. For non-respondent exporters during the POI, we have used BIA to determine the existence of critical circumstances. Since Hainan, Shaanxi, and Xiamen are ineligible for rates separate from those non-respondent exporters, we must extend to them the same BIA-based determination of critical circumstances.

Comment 7: Petitioner maintains that the silicon carbide industry is not a market-oriented industry due to: (1) State ownership of some producers; (2) government control of production levels and prices for a significant portion of the industry; and (3) government control of prices and production of significant inputs.

IMI/E, QI/E, and SGW contend that, since prices for energy inputs in the United States are also set by governments, the PRC respondents' market rates submission should not have been rejected on the basis that coal rates are set by the Government of the PRC. IMI/E, QI/E, and SGW further contend that no U.S. industry could ever be considered an MOI under these criteria. The Department's criteria according to IMI/E, QI/E, and SGW, are therefore, inherently unreasonable.

According to Hainan, Shaanxi, and Xiamen, the Department's MOI analysis is inaccurate. They maintain that the Department's MOI test is a charade since, once the Department determines that a country is a non-market economy, it is a foregone conclusion that respondents will be unable to prove that an MOI exists.

DOC Position: We agree with petitioner. And MOI does not exist because coal, a significant material input used to produce silicon carbide, is not purchased at market-determined prices. On November 16, 1993, petitioner submitted for the record of this investigation a World Bank Discussion Paper entitled "The Sectoral Foundations of China's Development." This paper demonstrates that much of the coal supply of the PRC is subject to central regulation of both price and allocation. Coal not subject to central regulation is often subject to regulation by provincial price boards. The PRC's coal market is also distorted by substantial "in plan" production. Given the many distortions of the coal market evident from information on the record, we cannot consider the price of coal in the PRC to be market-determined. (For

further discussion, see the preliminary determination in this investigation (58 FR 64549, December 8, 1993).

Comment 8: Petitioner maintains that IMI/E has not demonstrated its independence from other entities listed on its organizational chart or that these other entities did not export silicon carbide to the United States during the POI. Further, petitioner maintains that the Department's failure to find evidence of investments between IMI/E and these other entities does not indicate a lack of business relationships. Petitioner concludes that IMI/E's potential relationship with these other entities renders it ineligible for a separate rate.

IMI/E states that its maintenance of business relationships with other companies should not disqualify it from receiving a separate rate.

DOC Position: The Department disagrees with petitioner. First, at verification the Department examined the completeness of IMI/E's sales reporting. That examination encompassed IMI/E's records and substantial other documentation. There was no indication at verification that any part of IMI/E had failed to report POI sales to the United States.

IMI/E for its part has stated that other entities shown on its organizational chart are "not related to IMI/E". Rather, they contend that those "independent and unrelated organizations appear on IMI/E's organization chart to give the impression that IMI/E is a large company that is prepared to do business with huge customers requiring enormous volumes of products." IMI/E's explanation is consistent with the Department's examinations at verification.

Finally, although petitioner concedes that IMI/E's investment accounts demonstrated no investments between IMI/E and the entities in question, petitioner maintains that IMI/E is ineligible for a separate rate because of potential business relationships with these entities. However, petitioner has not indicated any reasonable basis upon which the Department can determine that such potential relationships offer entities an opportunity to manipulate IMI/E's export pricing.

Comment 9: Petitioner states that SGW is ineligible for a separate rate because other silicon carbide exporters in the same province have failed to respond to the Department's questionnaire. Further, petitioner maintains that information on the record links SGW to other exporters. Petitioner concludes that since exporters of silicon carbide related to SGW are not cooperating in this

investigation, the Department cannot issue a separate rate for SGW.

SGW states that it is unrelated to any other exporters of silicon carbide. In particular, SGW maintains that it demonstrated during verification its independence from its provincial government and, thus, from other exporters in the same province.

DOC Position: We agree with SGW that it has established its eligibility for a separate rate. As noted in our "Separate Rates" section above, our analysis shows that SGW is not subject to central-government control of its silicon carbide exports. Further, other than the now disproven contention of relationships based on the common "provincial ownership" of exporters, the only other basis for petitioner's assertion of a relationship among exporters is the use by SGW of ledger paper bearing the name of another exporter. SGW has satisfactorily explained this situation at verification (see Concurrence Memorandum and Verification Report). There is no other indication of a relationship between SGW and other exporters of silicon carbide and, therefore, SGW's eligibility for a separate rate is unaffected.

Comment 10: Petitioner states that the Department was unable to verify the factors of production reported by IMI/E, QI/E, and SGW and, therefore, must base FMV on BIA for the final determination.

IMI/E, QI/E, and SGW request that the Department accept the correct and verified consumption factors and use these inputs in the final determination.

DOC Position: The Department agrees with respondents. While the Department's verification uncovered several inaccuracies in these respondents' reported data, the inaccuracies do not undermine the fundamental soundness of their questionnaire responses because the inaccuracies were not significant and there was no pattern of under-reporting of the factors of production. Given these findings, the Department has used the verified factors of production in its calculations for the final determination.

Comment 11: Petitioner states that, should the Department use the factors of production for IMI/E, QI/E, and SGW, it must adjust these factors for findings at verification. Specifically, petitioner maintains that the Department should do the following: (1) For IMI/E, adjust sand consumption and electricity consumption, account for previously unreported input materials, reallocate labor hours, and correct transportation distances for certain raw materials; (2) QI/E, adjust QI/E's rail freight distance from factory to port, coal transportation

distance and use BIA for sand transportation distance, electricity consumption, and labor; and (3) for SGW adjust distances for shipping sand and coal, reverse the number of skilled and unskilled workers used in the calculations for the preliminary determination ignore unverified information regarding labor rates, and use BIA for rail freight distance from factory to port as well as SGW's reported truck freight distances.

These respondents assert that the Department should use these respondents' verified factors of production, taking clerical errors at verification into account, where appropriate.

DOC Position: As stated in the Department's position to the previous comment, we have used the verified amounts for each of these respondents' factors of production. Any inaccuracies found at verification do not undermine the fundamental soundness of the respondent's questionnaire responses. The inaccuracies were not significant and there was no pattern of under-reporting of the factors of production. Given these findings, the Department has used the verified factors of production in its calculations for the final determination because the verified factors of production yield the most accurate measure of the respondents' margins of dumping. (For an in-depth discussion of verification findings, see our Concurrence Memorandum).

Comment 12: Petitioner states that, should the Department consider a separate rate for IMI/E, the Department should adjust IMI/E's U.S. price to eliminate a claimed bonus payment for product purity in excess of requirements.

IMI/E requests that the Department use its verified sales prices in the final determination.

DOC Position: The Department agrees with respondent. The Department verified the proof of payment for the sales in question. That proof of payment demonstrated that actual final sales price for the reported sales, including bonus payments. We have used the verified final sales prices in the calculations for this determination.

Comment 13: Petitioner states that, should the Department consider a separate rate for QI/E, the Department must adjust QI/E's U.S. price based on documentation reviewed at verification. Specifically, petitioner maintains that the Department must exclude a certain price adjustment because the Department was unable to verify the silicon carbide content of one sale.

DOC Position: We disagree with petitioner. The Department verified the

proof of payment for the sale in question. That proof of payment demonstrated the actual final sales price for the reported sale. Since the Department's calculations are based on actual sales prices, proof of the silicon carbide content of the merchandise sold is unnecessary. We have used the verified final sales price in the calculations for this determination.

Comment 14: Petitioner states that the Department discovered at verification that QI/E had failed to report certain U.S. sales. In addition, petitioner maintains that changes in the terms of the sales, which Qinghai claims place the dates of sale after the POI, were immaterial. Petitioner concludes that the sales in question are POI sales, and that QI/E's failure to report those sales requires that the Department base its final determination for QI/E on BIA.

QI/E maintains that the changes in question were material changes in quantity. QI/E states that the date of sale for these sales was after the POI. QI/E concludes that these sales were properly excluded from QI/E's questionnaire responses.

DOC Position: We agree with QI/E. The change in question was a change in the quantity sold under the contract. Petitioner maintains that the implementation of the change through a quantity variation is an "immaterial" change. However, verification exhibits indicate that the customer's intent (and the final result) was a change in the quantity term of the shipment. That change went beyond the allowable quantity variation of the original contract. Thus, the quantity of the contract, a material term, was not established until after the POI. Therefore, the date of sale was after the POI.

Comment 15: Petitioner states that SGW understated its U.S. sales during the POI, and that the Department must use BIA for SGW's unreported sale.

SGW requests that the Department include the verified, but unreported sale, in its final determination because SGW did not benefit from this oversight.

DOC Position: The Department agrees with SGW. The omission in question appeared to be inadvertent and had the effect of raising, rather than lowering, SGW's calculated margin. In addition, we have no reason to believe that this omission is indicative of a larger pattern of inaccurate reporting by SGW. Further, this omission does not approach the magnitude of the omissions, errors, and inadequacies which we discovered during the verifications of Hainan, Shaanxi, and Xiamen, requiring us to use BIA for those respondents. Therefore, we have

used the actual, verified information for SGW's unreported sale in our calculations for this determination because its inclusion yields the most accurate estimate of SGW's margin of dumping. (See also the Concurrence Memorandum.)

Comment 16: IML/E, Q/E, and SGW state that the Department should not include coal and water in overhead, in order to avoid double-counting these items.

DOC Position: We agree with respondents that we should not double count these costs. Therefore, we have not included water as a separate factor of production because we believe that water costs are captured in the "other manufacturing expenses" category of the Department's surrogate overhead expense (see the Calculation Memorandum attached to the Concurrence Memorandum). However, we have continued to account for coal as a separate factor of production because we have excluded "power and fuel" from the surrogate overhead expense.

Continuation of Suspension of Liquidation

In accordance with sections 733(d)(1) and 735(c)(4) (A) and (B) of the Act, we are directing the Customs Service to continue to suspend liquidation of entries of silicon carbide from the PRC from three of the respondents in this investigation—IML/E, Q/E, and SGW—that are entered, or withdrawn from warehouse, for consumption on or after December 8, 1993, which is the date of publication of the preliminary determination in the Federal Register. For imports of silicon carbide from all other exporters from the PRC, we are directing the Customs Service to suspend liquidation on or after September 9 1993, which is 90 days prior to the date of publication of the preliminary determination in the Federal Register. The Customs Service shall require a cash deposit or posting of a bond equal to the estimated amount by which the FMV exceeds the USP as shown below. These suspensions of liquidation instructions will remain in effect until further notice.

The weighted-average dumping margins are as follows:

Exporter	Weighted-average margin percentage
7th Grinding Wheel Factory Import and Export Corporation	99.52
The Import and Export Trading Corporation of Inner Mongolia Autonomous Region	27.41

Exporter	Weighted-average margin percentage
The Qinghai Metals and Minerals Import and Export Corporation	7.50
All Others*	406.00

*Including respondents Hainan, Shaanxi, and Xiamen.

ITC Notification

In accordance with section 735(d) of the Act, we have notified the ITC of our determination. The ITC will now determine, within 45 days, whether these imports are materially injuring, or threaten material injury to, the U.S. industry. If the ITC determines that material injury, or threat of material injury does not exist, the proceeding will be terminated and all securities posted will be refunded or cancelled. If the ITC determines that such injury does exist, the Department will issue an antidumping duty order directing Customs officials to assess antidumping duties on all imports of the subject merchandise entered, or withdrawn from warehouse, for consumption on or after the effective date of the suspension of liquidation.

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

Dated: April 22, 1994.

Susan G. Esserman,
Assistant Secretary for Import Administration.

[FR Doc. 94-10455 Filed 4-29-94; 8:45 am]

SELLING CODE 2510-06-P

APPENDIX B
LIST OF WITNESSES APPEARING AT THE HEARING

CALENDAR OF THE PUBLIC CONFERENCE

Inv. No. 731-TA-651(Final)

SILICON CARIBE FROM THE PEOPLE'S REPUBLIC OF CHINA

Those listed below appeared at the United States International Trade Commission's hearing held in connection with the subject investigation on May 2, 1994, in the Main Hearing Room, the USITC Building, 500 E Street, SW, Washington, DC.

In support of imposition of antidumping duties

Baker & Hostetler
Washington, DC
On behalf of

Ad Hoc Silicon Carbide Coalition

Exolon-ESK Company
Treibacher Schleifmittel Corp.
Saint-Gobain/Norton Industrial Ceramics Corp.

Mr. Wilhelm Jorg, president, Treibacher Schleifmittel Corp.
Mr. Thomas Randler, vice president, sales and marketing,
Treibacher Schleifmittel Corp.
Mr. John Crowe, business director, Saint-Gobain/Norton
Industrial Ceramics Corp.
Mr. Hans Pfingstl, president, Exolon-ESK Company
Mr. John Redshaw, North American sales and marketing
manager, Exolon-ESK Company

Law & Economic Consulting Group

Mr. Andrew Wechsler, managing director
Mr. John Davitt, economist

Shirley A Coffield)
Mitchell Dale)---OF COUNSEL
Gerald Connell)

In opposition to the imposition of antidumping duties

Ober, Kaler, Grimes & Shriver
Washington, DC
On behalf of

Miller & Co.
Qinghai Metals & Minerals Import & Export Corp.
Import & Export Corp. of Inner Mongolia Autonomous Region
7th Grinding Wheel Import & Export Corp.
China Chamber of Commerce for Metals, Minerals and Chemicals
Importers and Exporters

Mr. Sudhir Gupta, product/marketing manager, Miller & Co.
Mr. John Adcock, vice president, Miller & Co.
Mr. Terence Kelly, manager, R.I. Lampus Company
Mr. Zhou Kefang, general manager, 7th Grinding Wheel Import &
Export Corp.
Ms. Wang Wan Hong, assistant director of foreign affairs,
China Chamber of Commerce for Metals, Minerals and Chemicals
Importers and Exporters
Mr. Liu Anyu, deputy general manager, Qinghai Metals & Minerals
Import & Export Corp.

William E. Perry)
John B. Gantt)--OF COUNSEL

Coudert Brothers
Washington, DC
On behalf of

Transtech, Inc., U.S.A.
Xiamen Abrasive Co.
Shaanxi Minmetals
Hainan Feitian Electrotech

Mr. John Barney, president, Transtech, Inc.
Ms. Chang Lin, China trade specialist, Transtech, Inc.

Mark D. Herlach)
Matthew Jaffe)--OF COUNSEL

APPENDIX C
SUMMARY DATA TABLES

Table C-1
Crude silicon carbide: Summary data concerning the U.S. market, 1990-93

(Quantity=short tons; value=1,000 dollars; unit values, unit labor costs, and unit COGS are per short ton; period changes=percent, except where noted)

Item	Reported data				Period changes			
	1990	1991	1992	1993	1990-93	1990-91	1991-92	1992-93
U.S. consumption quantity:								
Amount.....	***	***	***	***	***	***	***	***
Producers' share <u>1/</u>	***	***	***	***	***	***	***	***
Importers' share: <u>1/</u>								
China.....	***	***	***	***	+17.3	+0.7	+13.3	+3.3
Other sources.....	***	***	***	***	-17.1	-8.8	-8.1	-0.1
Total.....	***	***	***	***	+0.2	-8.1	+5.1	+3.2
U.S. consumption value:								
Amount.....	***	***	***	***	***	***	***	***
Producers' share <u>1/</u>	***	***	***	***	***	***	***	***
Importers' share: <u>1/</u>								
China.....	***	***	***	***	+6.9	-1.8	+7.3	+1.4
Other sources.....	***	***	***	***	-11.1	-6.4	-4.9	+0.2
Total.....	***	***	***	***	-4.3	-8.2	+2.4	+1.6
U.S. importers' imports from--								
China:								
U.S. shipments quantity..	10,896	9,920	27,378	36,667	+236.5	-9.0	+176.0	+33.9
U.S. shipments value.....	5,152	3,139	7,888	9,454	+83.5	-39.1	+151.3	+19.9
Unit value.....	\$473	\$316	\$288	\$258	-45.5	-33.1	-8.9	-10.5
Ending inventory qty.....	***	9,062	***	21,563	***	***	***	***
Other sources:								
U.S. shipments quantity..	85,440	61,152	56,285	65,196	-23.7	-28.4	-8.0	+15.8
U.S. shipments value.....	48,012	35,535	33,728	36,602	-23.8	-26.0	-5.1	+8.5
Unit value.....	\$562	\$581	\$599	\$561	-0.1	+3.4	+3.1	-6.3
Ending inventory qty.....	2,998	2,864	7,658	3,315	+10.6	-4.5	+167.4	-56.7
All sources:								
U.S. shipments quantity..	96,336	71,072	83,663	101,863	+5.7	-26.2	+17.7	+21.8
U.S. shipments value.....	53,164	38,674	41,616	46,056	-13.4	-27.3	+7.6	+10.7
Unit value.....	\$552	\$544	\$497	\$452	-18.1	-1.4	-8.6	-9.1
U.S. producers'--								
Average capacity quantity..	***	***	***	***	***	***	***	***
Production quantity.....	***	***	***	***	***	***	***	***
Capacity utilization <u>1/</u>	***	***	***	***	***	***	***	***
U.S. shipments:								
Quantity.....	***	***	***	***	***	***	***	***
Value.....	***	***	***	***	***	***	***	***
Unit value.....	\$***	\$***	\$***	\$***	***	<u>2/</u>	***	***
Export shipments:								
Quantity.....	***	***	***	***	<u>3/</u>	<u>3/</u>	***	***
Exports/shipments <u>1/</u>	***	***	***	***	***	***	***	***
Value.....	***	***	***	***	<u>3/</u>	<u>3/</u>	***	***
Unit value.....	<u>3/</u>	\$***	\$***	\$***	<u>3/</u>	<u>3/</u>	***	***
Ending inventory quantity..	***	***	***	***	***	***	***	***
Inventory/shipments <u>1/</u>	***	***	***	***	***	***	***	***
Production workers.....	***	***	***	***	***	***	***	***
Hours worked (1,000s).....	***	***	***	***	***	***	***	***
Total comp. (\$1,000).....	***	***	***	***	***	***	***	***
Hourly total compensation..	\$***	\$***	\$***	\$***	***	***	***	***
Productivity (short tons per 1,000 hours).....	***	***	***	***	***	***	***	***
Unit labor costs.....	\$***	\$***	\$***	\$***	***	***	***	***
Net sales--								
Quantity.....	***	***	***	***	***	***	***	***
Value.....	***	***	***	***	***	***	***	***
Cost of goods sold (COGS)...	***	***	***	***	***	***	***	***
Gross profit (loss).....	***	***	***	***	***	***	***	***
SG&A expenses.....	***	***	***	***	***	***	***	***
Operating income (loss)....	***	***	***	***	***	***	***	***
Capital expenditures.....	***	***	***	***	***	***	***	***
Unit COGS.....	\$***	\$***	\$***	\$***	***	***	***	***
COGS/sales <u>1/</u>	***	***	***	***	***	***	***	***
Op. income (loss)/sales <u>1/</u> ..	***	***	***	***	***	***	***	***

1/ "Reported data" are in percent and "period changes" are in percentage points.

2/ ***.

3/ Not applicable.

Note.--Period changes are derived from the unrounded data. Because of rounding, figures may not add to the totals shown. Unit values and other ratios are calculated using data of firms supplying both numerator and denominator information.

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

Table C-2

Refined silicon carbide: Summary data concerning the U.S. market, 1990-93

(Quantity=short tons; value=1,000 dollars; unit values, unit labor costs, and unit COGS are per short ton; period changes=percent, except where noted)

Item	Reported data				Period changes			
	1990	1991	1992	1993	1990-93	1990-91	1991-92	1992-93
U.S. consumption quantity:								
Amount.....	62,913	54,577	54,976	59,880	-4.8	-13.3	+0.7	+8.9
Producers' share <u>1/</u>	95.5	93.1	88.8	90.8	-4.7	-2.5	-4.2	+2.0
Importers' share: <u>1/</u>								
China.....	***	***	***	***	+4.5	+0.5	+2.0	+1.9
Other sources.....	***	***	***	***	+0.3	+2.0	+2.2	-3.9
Total.....	4.5	6.9	11.2	9.2	+4.7	+2.5	+4.2	-2.0
U.S. consumption value:								
Amount.....	53,907	49,159	48,158	51,063	-5.3	-8.8	-2.0	+6.0
Producers' share <u>1/</u>	94.1	92.1	88.1	87.8	-6.3	-2.0	-4.0	-0.3
Importers' share: <u>1/</u>								
China.....	***	***	***	***	+3.7	+0.2	+1.6	+1.9
Other sources.....	***	***	***	***	+2.6	+1.7	+2.4	-1.6
Total.....	5.9	7.9	11.9	12.2	+6.3	+2.0	+4.0	+0.3
U.S. importers' imports from--								
China:								
U.S. shipments quantity..	***	***	***	***	<u>2/</u>	+665.9	+355.4	+89.5
U.S. shipments value.....	***	***	***	***	<u>2/</u>	+332.4	+506.1	+114.4
Unit value.....	\$829	\$468	\$623	\$705	-15.0	-43.5	+33.1	+13.1
Ending inventory qty.....	***	***	***	***	<u>3/</u>	<u>3/</u>	+100.0	<u>2/</u>
Other sources:								
U.S. shipments quantity..	***	***	***	***	+1.3	+25.6	+35.9	-40.6
U.S. shipments value.....	***	***	***	***	+36.6	+17.8	+29.4	-10.5
Unit value.....	\$1,145	\$1,074	\$1,021	\$1,543	+34.8	-6.2	-4.9	+51.1
Ending inventory qty.....	***	***	***	***	+66.3	+141.2	-51.9	+43.3
All sources:								
U.S. shipments quantity..	2,808	3,788	6,152	5,513	+96.3	+34.9	+62.4	-10.4
U.S. shipments value.....	3,202	3,879	5,722	6,236	+94.8	+21.1	+47.5	+9.0
Unit value.....	\$1,141	\$1,024	\$929	\$1,131	-0.8	-10.2	-9.3	+21.8
U.S. producers'--								
Average capacity quantity..	106,750	107,220	107,220	105,020	-1.6	+0.4	0	-2.1
Production quantity.....	66,128	55,394	55,753	59,168	-10.5	-16.2	+0.6	+6.1
Capacity utilization <u>1/</u>	61.9	51.7	52.0	56.3	-5.6	-10.3	+0.3	+4.3
U.S. shipments:								
Quantity.....	60,105	50,789	48,824	54,367	-9.5	-15.5	-3.9	+11.4
Value.....	50,705	45,280	42,436	44,827	-11.6	-10.7	-6.3	+5.6
Unit value.....	\$907	\$947	\$925	\$870	-4.0	+4.5	-2.3	-5.9
Export shipments:								
Quantity.....	6,488	5,373	5,779	5,373	-17.2	-17.2	+7.6	-7.0
Exports/shipments <u>1/</u>	9.7	9.6	10.6	9.0	-0.7	-0.2	+1.0	-1.6
Value.....	6,308	5,398	5,684	4,753	-24.7	-14.4	+5.3	-16.4
Unit value.....	\$972	\$1,005	\$984	\$885	-9.0	+3.3	-2.1	-10.1
Ending inventory quantity..	9,737	8,969	9,778	8,936	-8.2	-7.9	+9.0	-8.6
Inventory/shipments <u>1/</u>	14.6	16.0	17.9	15.1	+0.5	+1.4	+1.9	-2.8
Production workers.....	110	106	104	98	-10.9	-3.6	-1.9	-5.8
Hours worked (1,000s).....	221	204	205	182	-17.6	-7.7	+0.5	-11.2
Total comp. (\$1,000).....	5,087	4,825	5,110	4,439	-12.7	-5.2	+5.9	-13.1
Hourly total compensation..	\$21.24	\$21.66	\$22.64	\$21.58	+1.6	+2.0	+4.5	-4.7
Productivity (short tons								
per 1,000 hours).....	269.8	241.1	245.1	297.1	+10.1	-10.6	+1.7	+21.2
Unit labor costs.....	\$77	\$87	\$92	\$75	-2.5	+13.2	+5.2	-18.1
Net sales--								
Quantity.....	66,669	56,334	54,701	59,356	-11.0	-15.5	-2.9	+8.5
Value.....	62,152	54,822	51,363	53,483	-13.9	-11.8	-6.3	+4.1
Cost of goods sold (COGS)..	51,186	45,746	43,723	46,121	-9.9	-10.6	-4.4	+5.5
Gross profit (loss).....	10,966	9,076	7,640	7,362	-32.9	-17.2	-15.8	-3.6
SG&A expenses.....	5,293	5,219	4,665	5,086	-3.9	-1.4	-10.6	+9.0
Operating income (loss)....	5,673	3,857	2,975	2,276	-59.9	-32.0	-22.9	-23.5
Capital expenditures.....	***	***	***	***	+3.7	+34.4	-31.6	+12.8
Unit COGS.....	\$768	\$812	\$799	\$777	+1.2	+5.8	-1.6	-2.8
COGS/sales <u>1/</u>	82.4	83.4	85.1	86.2	+3.9	+1.1	+1.7	+1.1
Op.income (loss)/sales <u>1/</u> ..	9.1	7.0	5.8	4.3	-4.9	-2.1	-1.2	-1.5

1/ "Reported data" are in percent and "period changes" are in percentage points.2/ An increase of 1,000 percent or more.3/ Not applicable.

Note.--Period changes are derived from the unrounded data. Because of rounding, figures may not add to the totals shown. Unit values and other ratios are calculated using data of firms supplying both numerator and denominator information.

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

APPENDIX D

**COMMENTS RECEIVED FROM U.S. PRODUCERS ON THE IMPACT OF
IMPORTS OF SILICON CARBIDE FROM CHINA
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 silicon carbide from China 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. 3M did not respond. The responses of the other companies are as follows:

Actual Negative Effects

The Carborundum Company Performance Refractories Division

"*** "

Detroit Abrasives Company

"*** "

Electro Abrasives Corp.

"*** "

The Exolon-ESK Company

"*** "

Treibacher Schleifmittel Corp.

"*** "

Saint-Gobain/Norton Industrial Ceramics Corp.

"*** "

Washington Mills Electro Minerals Corp.

"*** "

Anticipated Negative Effects

The Carborundum Company Performance Refractories Division

"*** "

Detroit Abrasives Company

"*** "

Electro Abrasives Corp.

"*** "

The Exolon-ESK Company

"*** "

Treibacher Schleifmittel Corp.

"*** "

Saint-Gobain/Norton Industrial Ceramics Corp.

"*** "

Washington Mills Electro Minerals Corp.

"*** "

Influence of Imports on Capital Investment

The Carborundum Company Performance Refractories Division

"*** "

Detroit Abrasives Company

"*** "

Electro Abrasives Corp.

"*** "

The Exolon-ESK Company

"*** "

Treibacher Schleifmittel Corp.

"*** "

Saint-Gobain/Norton Industrial Ceramics Corp.

"*** "

Washington Mills Electro Minerals Corp.

"*** "

APPENDIX E

**SALIENT DATA ON THE SILICON CARBIDE OPERATIONS OF
SELECTED CHINESE EXPORTERS**

Table E-1

Crude silicon carbide: Production capacity, production, inventories, capacity utilization, and shipments of selected Chinese producers/exporters,¹ 1990-93 and projected 1994

Item	1990	1991	1992	1993	Projected 1994
	Quantity (short tons)				
Capacity	35,110	40,416	50,893	51,993	⁽²⁾
Production	***	***	32,881	37,709	31,489
End-of-period inventories	3,471	3,816	9,269	3,750	4,517
Shipments:					
Home market	***	***	***	***	***
Exports to--					
The United States	***	***	***	***	***
All other markets	***	***	***	***	***
Total exports	***	***	***	***	***
Total shipments	***	***	***	***	***
	Ratios and shares (percent)				
Capacity utilization	***	***	64.6	72.5	⁽²⁾
Inventories to production	***	***	35.1	11.5	14.3
Inventories to total shipments	***	***	***	9.8	14.7
Share of total quantity of shipments:					
Home market	63.6	53.8	50.5	26.0	37.7
Exports to--					
The United States	4.6	23.2	27.6	60.1	26.0
All other markets	31.7	23.0	21.9	13.8	36.2

¹ The data are for: Heqiao Silicon Carbide Factory, as provided by Minmetals Shaanxi & Minerals Import & Export Corp.; Hongrun Metalloid Co., Ltd., as supplied by Hainan Feitian Electrontech Co., Ltd.; Xinzheng Silicon Carbide Factory and Dengfeng Silicon Carbide Factory, as supplied by Xiamen Abrasive Co.; The Import and Export Corp. of Inner Mongolia Autonomous Region; Qinghai Provincial Metals and Minerals Import & Export Corp.; and The 7th Grinding Wheel Factory Import and Export Corp.

² Not available.

Note.--Capacity utilization and inventory ratios are calculated from data of firms providing both numerator and denominator information.

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

Table E-2

Crude metallurgical grade silicon carbide: Production capacity, production, inventories, capacity utilization, and shipments of selected Chinese producers/exporters,¹ 1990-93 and projected 1994

Item	1990	1991	1992	1993	Projected 1994
Quantity (short tons)					
Capacity	(2)	(2)	(2)	(2)	(2)
Production	14,994	18,625	24,620	28,236	21,234
End-of-period inventories	2,883	3,090	8,550	3,289	3,978
Shipments:					
Home market	10,476	8,372	9,303	7,207	6,845
Exports to--					
The United States	***	5,495	5,474	22,831	5,000
All other markets	***	4,551	4,382	3,459	8,700
Total exports	***	10,046	9,856	26,290	13,700
Total shipments	***	18,418	19,159	33,497	20,545
Ratios and shares (percent)					
Capacity utilization	(2)	(2)	(2)	(2)	(2)
Inventories to production	41.2	26.6	47.2	14.2	18.7
Inventories to total shipments	48.8	27.1	50.4	11.5	19.4
Share of total quantity of shipments:					
Home market	75.3	45.5	48.6	21.5	33.3
Exports to--					
The United States	2.0	29.8	28.6	68.2	24.3
All other markets	22.7	24.7	22.9	10.3	42.3

¹ The data are for: Heqiao Silicon Carbide Factory, as provided by Minmetals Shaanxi & Minerals Import & Export Corp.; Hongrun Metalloid Co., Ltd., as supplied by Hainan Feitian Electrontech Co., Ltd.; Xinzheng Silicon Carbide Factory and Dengfeng Silicon Carbide Factory, as supplied by Xiamen Abrasive Co.; The Import and Export Corp. of Inner Mongolia Autonomous Region; Qinghai Provincial Metals and Minerals Import & Export Corp.; and The 7th Grinding Wheel Factory Import and Export Corp.

² Not available.

Note.—Capacity utilization and inventory ratios are calculated from data of firms providing both numerator and denominator information.

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

Table E-3

Crude crystalline grade silicon carbide: Production capacity, production, inventories, capacity utilization, and shipments of selected Chinese producers/exporters,¹ 1990-93 and projected 1994

Item	1990	1991	1992	1993	Projected 1994
Quantity (short tons)					
Capacity	(2)	(2)	(2)	(2)	(2)
Production	***	***	8,261	9,473	10,255
End-of-period inventories	***	***	***	***	***
Shipments:					
Home market	***	***	***	***	***
Exports to--					
The United States	***	***	***	***	***
All other markets	***	***	***	***	***
Total exports	***	***	***	***	***
Total shipments	***	***	***	***	***
Ratios and shares (percent)					
Capacity utilization	(2)	(2)	(2)	(2)	(2)
Inventories to production	***	***	***	***	***
Inventories to total ship- ments	15.0	13.9	8.7	***	***
Share of total quantity of shipments:					
Home market	22.3	83.2	55.0	41.6	46.6
Exports to--					
The United States	14.0	.0	25.3	32.5	29.5
All other markets	63.7	16.8	19.7	25.9	23.9

¹ The data are for: Heqiao Silicon Carbide Factory, as provided by Minmetals Shaanxi & Minerals Import & Export Corp.; Hongrun Metalloid Co., Ltd., as supplied by Hainan Feitian Electrontech Co., Ltd.; Xinzheng Silicon Carbide Factory and Dengfeng Silicon Carbide Factory, as supplied by Xiamen Abrasive Co.; The Import and Export Corp. of Inner Mongolia Autonomous Region; Qinghai Provincial Metals and Minerals Import & Export Corp.; and The 7th Grinding Wheel Factory Import and Export Corp.

² Not available.

Note.--Capacity utilization and inventory ratios are calculated from data of firms providing both numerator and denominator information.

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

Table E-4

Other crude grades of silicon carbide: Production capacity, production, inventories, capacity utilization, and shipments of selected Chinese producers/exporters, 1990-93 and projected 1994

* * * * *

Table E-5

Refined silicon carbide: Production capacity, production, inventories, capacity utilization, and shipments of selected Chinese producers/exporters, 1990-93 and projected 1994

* * * * *

Table E-6

Refined metallurgical grade silicon carbide: Production capacity, production, inventories, capacity utilization, and shipments of selected Chinese producers/exporters, 1990-93 and projected 1994

* * * * *

Table E-7

Refined crystalline grade silicon carbide: Production capacity, production, inventories, capacity utilization, and shipments of selected Chinese producers/exporters, 1990-93 and projected 1994

* * * * *

Table E-8

Other refined grades of silicon carbide: Production capacity, production, inventories, capacity utilization, and shipments of selected Chinese producers/exporters, 1990-93 and projected 1994

* * * * *

APPENDIX F
OFFICIAL IMPORT STATISTICS ON SILICON CARBIDE

Table F-1
Silicon carbide: U.S. imports, by forms and by sources, 1990-93

Item	1990	1991	1992	1993
	Quantity (short tons)			
Crude silicon carbide:				
China	6,496	22,287	40,072	73,807
Canada	64,002	41,036	44,043	40,210
Other sources	2,802	8,571	7,779	6,115
Total	73,300	71,893	91,894	120,132
Refined silicon carbide:				
China	2,250	349	17	113
Canada	991	289	551	718
Other sources	6,838	4,508	5,769	6,187
Total	10,079	5,146	6,337	7,019
	Value (1,000 dollars)			
Crude silicon carbide:				
China	2,147	7,083	9,309	21,327
Canada	35,323	23,095	24,140	21,047
Other sources	2,040	4,751	4,445	5,365
Total	39,510	34,929	37,894	47,739
Refined silicon carbide:				
China	1,171	170	15	71
Canada	810	231	581	519
Other sources	13,550	12,800	15,112	13,481
Total	15,531	13,201	15,708	14,070
	Unit value (per short ton)			
Crude silicon carbide:				
China	\$331	\$318	\$232	\$289
Canada	552	563	548	523
Other sources	728	554	571	877
Average	539	486	412	397
Refined silicon carbide:				
China	520	488	917	623
Canada	817	799	1,054	723
Other sources	1,982	2,839	2,620	2,179
Average	1,541	2,565	2,479	2,005

Note.—Because of rounding, figures may not add to the totals shown; unit values are calculated from unrounded figures.

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

Table F-2

Silicon carbide: U.S. imports from China, by forms and by months, 1990-93

Item	1990	1991	1992	1993
	Quantity (short tons)			
Crude silicon carbide:				
Jan.	0	463	132	56
Feb.	1,146	4,862	328	0
Mar.	0	19	22	0
Apr.	502	198	2,184	2,929
May	0	1,603	3,173	22,668
Jun.	0	2,741	5,323	7,976
Jul.	0	3,638	375	5,238
Aug.	4,290	220	15,247	3,881
Sep.	0	154	1,596	9,449
Oct.	558	5,278	0	5,362
Nov.	0	1,610	0	16,246
Dec.	0	1,499	11,692	0
Total	6,496	22,287	40,072	73,807
Refined silicon carbide:				
Jan.	278	349	0	0
Feb.	66	0	0	0
Mar.	176	0	0	0
Apr.	246	0	0	36
May	496	0	0	0
Jun.	6	0	0	0
Jul.	152	0	0	30
Aug.	132	0	0	19
Sep.	110	0	0	28
Oct.	322	0	0	0
Nov.	132	0	0	0
Dec.	132	0	17	0
Total	2,250	349	17	113
	Value (1,000 dollars)			
Crude silicon carbide:				
Jan.	0	375	49	31
Feb.	672	1,412	123	0
Mar.	0	7	10	0
Apr.	223	73	525	550
May	0	365	988	5,546
Jun.	0	1,174	1,460	2,276
Jul.	0	1,178	158	1,207

See footnotes at end of table.

Table F-2--Continued
 Silicon carbide: U.S. imports from China, by forms and by months, 1990-93

Item	1990	1991	1992	1993
	Value (1,000 dollars)			
Aug.	1,026	88	3,177	1,061
Sep.	0	62	359	2,443
Oct.	225	1,474	0	4,114
Nov.	0	352	0	4,100
Dec.	0	522	2,459	0
Total	2,147	7,083	9,309	21,327
Refined silicon carbide:				
Jan.	127	170	0	0
Feb.	31	0	0	0
Mar.	76	0	0	0
Apr.	118	0	0	22
May	377	0	0	0
Jun.	5	0	0	0
Jul.	106	0	0	20
Aug.	49	0	0	11
Sep.	41	0	0	18
Oct.	147	0	0	0
Nov.	46	0	0	0
Dec.	46	0	15	0
Total	1,171	170	15	71
	Unit value (per short ton)			
Crude silicon carbide:				
Jan.	(¹)	\$811	\$367	\$547
Feb.	\$586	290	374	(¹)
Mar.	(¹)	386	472	(¹)
Apr.	445	370	241	188
May	(¹)	228	312	245
Jun.	(¹)	428	274	285
Jul.	(¹)	324	422	230
Aug.	239	401	208	273
Sep.	(¹)	400	225	259
Oct.	404	279	(¹)	767
Nov.	(¹)	219	(¹)	252
Dec.	(¹)	348	210	(¹)
Average	331	318	232	289
Refined silicon carbide:				
Jan.	458	488	(¹)	(¹)
Feb.	474	(¹)	(¹)	(¹)

See footnotes at end of table.

Table F-2--Continued

Silicon carbide: U.S. imports from China, by forms and by months, 1990-93

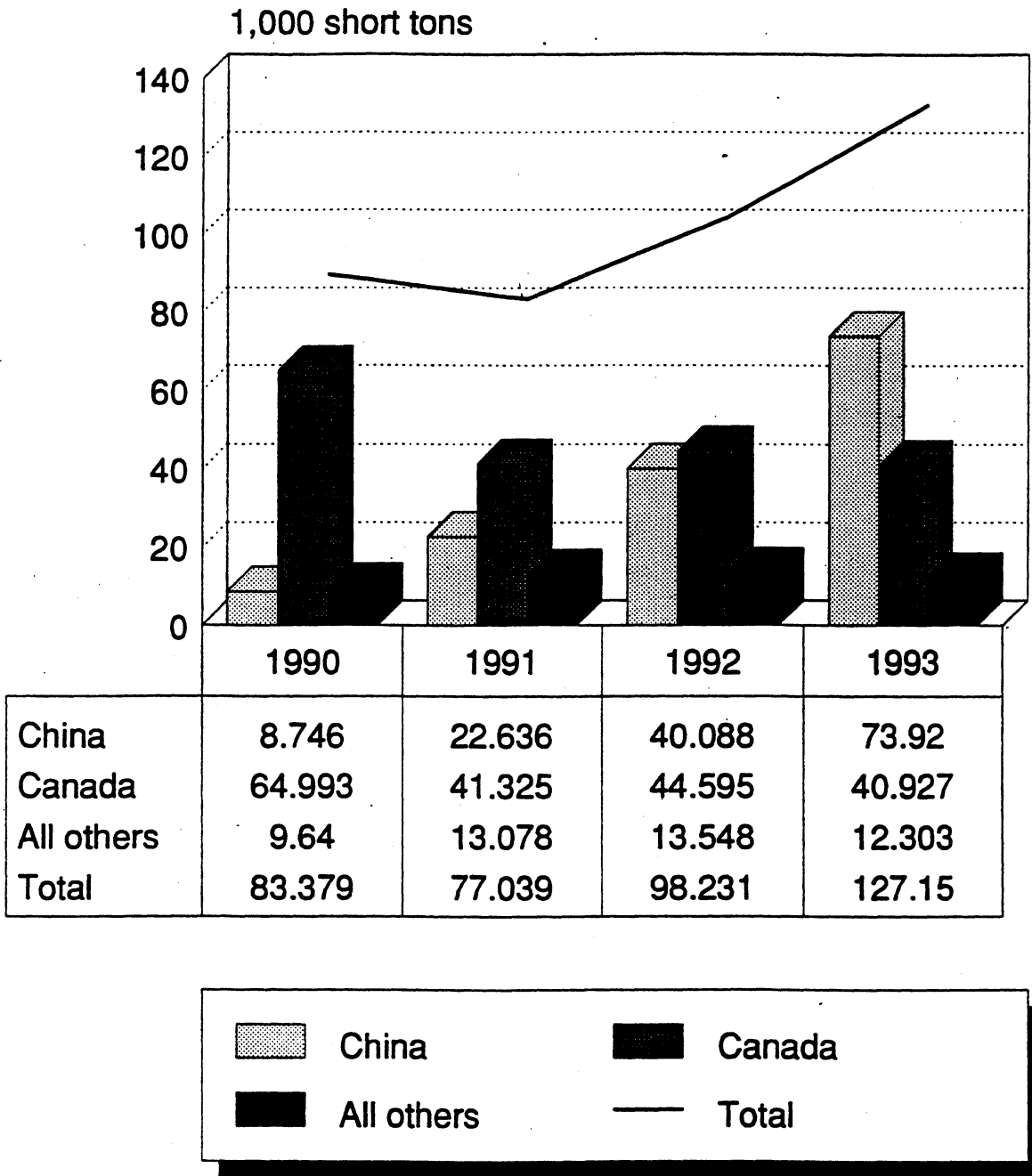
Item	1990	1991	1992	1993
	Unit value (per short ton)			
Mar.	\$430	0	0	0
Apr.	478	0	0	\$594
May	761	0	0	0
Jun.	914	0	0	0
Jul.	698	0	0	662
Aug.	373	0	0	578
Sep.	374	0	0	649
Oct.	458	0	0	0
Nov.	349	0	0	0
Dec.	349	0	\$917	0
Average	520	\$488	917	623

¹ Not applicable.

Note.—Because of rounding, figures may not add to the totals shown. Unit values are calculated from the unrounded figures.

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

Figure F-1
Silicon carbide: U.S. imports, by principal sources, 1990-93



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

APPENDIX G
MARKET SHARES BASED ON OFFICIAL IMPORT STATISTICS

Table G-1

Silicon carbide: U.S. shipments of domestic product, U.S. imports, by sources, and apparent U.S. consumption, by forms, 1990-93

Item	1990	1991	1992	1993
	<u>Quantity (short tons)</u>			
Crude silicon carbide:				
Producers' U.S. shipments	***	***	***	***
U.S. imports from--				
China	6,496	22,287	40,072	73,807
Other sources	66,804	49,607	51,822	46,325
Total	73,300	71,893	91,894	120,132
Apparent consumption	***	***	***	***
Refined silicon carbide:				
Producers' U.S. shipments	60,105	50,789	48,824	54,367
U.S. imports from--				
China	2,250	349	17	113
Other sources	7,829	4,797	6,320	6,905
Total	10,079	5,146	6,337	7,019
Apparent consumption	70,184	55,935	55,161	61,386
	<u>Value (1,000 dollars)</u>			
Crude silicon carbide:				
Producers' U.S. shipments	***	***	***	***
U.S. imports from--				
China	2,147	7,083	9,309	21,327
Other sources	37,363	27,846	28,585	26,412
Total	39,510	34,929	37,894	47,739
Apparent consumption	***	***	***	***
Refined silicon carbide:				
Producers' U.S. shipments	50,705	45,280	42,436	44,827
U.S. imports from--				
China	1,171	170	15	71
Other sources	14,360	13,031	15,693	14,000
Total	15,531	13,201	15,708	14,070
Apparent consumption	66,236	58,481	58,144	58,897
	<u>Share of the quantity of U.S. consumption</u>			
	(percent)			
Crude silicon carbide:				
Producers' U.S. shipments	***	***	***	***
U.S. imports from--				
China	***	***	***	***

See footnotes at end of table.

Table G-1--Continued

Silicon carbide: U.S. shipments of domestic product, U.S. imports, by sources, and apparent U.S. consumption, by forms, 1990-93

Item	1990	1991	1992	1993
Share of the quantity of U.S. consumption (percent)				
Other sources	***	***	***	***
Total	***	***	***	***
Refined silicon carbide:				
Producers' U.S. shipments	85.6	90.8	88.5	88.6
U.S. imports from--				
China	3.2	.6	⁽¹⁾	.2
Other sources	11.2	8.6	11.5	11.2
Total	14.4	9.2	11.5	11.4
Share of the value of U.S. consumption (percent)				
Crude silicon carbide:				
Producers' U.S. shipments	***	***	***	***
U.S. imports from--				
China	***	***	***	***
Other sources	***	***	***	***
Total	***	***	***	***
Refined silicon carbide:				
Producers' U.S. shipments	76.6	77.4	73.0	76.1
U.S. imports from--				
China	1.8	.3	⁽¹⁾	.1
Other sources	21.7	22.3	27.0	23.8
Total	23.4	22.6	27.0	23.9

¹ Positive figure, but less than significant digits displayed.

Note.--Because of rounding, figures may not add to the totals shown; shares are computed from the unrounded figures.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission and from official statistics of the U.S. Department of Commerce.

APPENDIX H
ADDITIONAL PRICE DATA

Table H-1

Weighted-average net f.o.b. prices on contract sales of product 1 in containers to end users reported by U.S. producers and by one importer, margins of underselling (overselling), and total shipments, by quarters, Jan. 1990-Dec. 1993

* * * * *

Table H-2

Weighted-average net f.o.b. prices on contract sales of product 4 to end users reported by U.S. producers and by one importer, margins of underselling (overselling), and total shipments, by quarters, Jan. 1990-Dec. 1993

* * * * *

Table H-3

Net delivered prices on contract sales of product 5 in bulk form to end users and converters reported by one U.S. producer, by quarters, Jan. 1990-Dec. 1993

* * * * *

Table H-4

Net delivered prices on contract sales of product 3 in bulk form to end users reported by one U.S. producer and spot and contract sales reported by one importer, margins of underselling (overselling), and total shipments, by quarters, Jan. 1990-Dec. 1993

* * * * *

Table H-5

Weighted-average net f.o.b. prices on spot sales of product 6 to end users and of spot and contract sales of product 7 to end users and distributors reported by U.S. producers, by quarters, Jan. 1990-Dec. 1993

* * * * *

APPENDIX I

**ADDITIONAL INFORMATION BASED ON THE
RECLASSIFICATION OF DATA REPORTED BY TREIBACHER
ON ITS REFINED SILICON CARBIDE OPERATIONS**



UNITED STATES INTERNATIONAL TRADE COMMISSION


WASHINGTON, DC 20436

INV-R-089

May 26, 1994

MEMORANDUM

TO: THE COMMISSION

FROM: Lynn Featherstone 
Director, Office of Investigations

SUBJECT: Investigation No. 731-TA-651 (Final): Silicon Carbide from the People's Republic of China--Additional Information Based on the Reclassification of Data Reported by Treibacher on Its Refined Metallurgical Grade Silicon Carbide Operations

In the Commission's producers' questionnaire, Treibacher Schleifmittel Corp., a member of the Ad Hoc Silicon Carbide Coalition, included as part of its U.S. silicon carbide operations information on production, shipments, and inventories of refined metallurgical grade silicon carbide which arguably may not be a product of the United States. As Mr. Randler, Vice President of Sales and Marketing for Treibacher, testified at the hearing (p. 28), "We purchase silica and petroleum coke in the United States. We truck it across the river for furnacing. And in it's most crude form, this product is transferred to our U.S. facility where it is screened, dried and bagged to be sold to the U.S. metallurgical market."

At the request of Commissioner Nuzum's office, staff reran the affected tables in the staff report based on the assumption that Treibacher's reported refined metallurgical grade silicon carbide is a product of Canada and not of the United States. Because Treibacher's sales of this product occurred in the United States, staff has reclassified such sales as importers' U.S. shipments of silicon carbide from sources other than China. The Commission is scheduled to vote on the investigation at 2:30 p.m. on May 26, 1994.

Attachment

cc: Director, Office of Operations
Secretary

* * * * *

