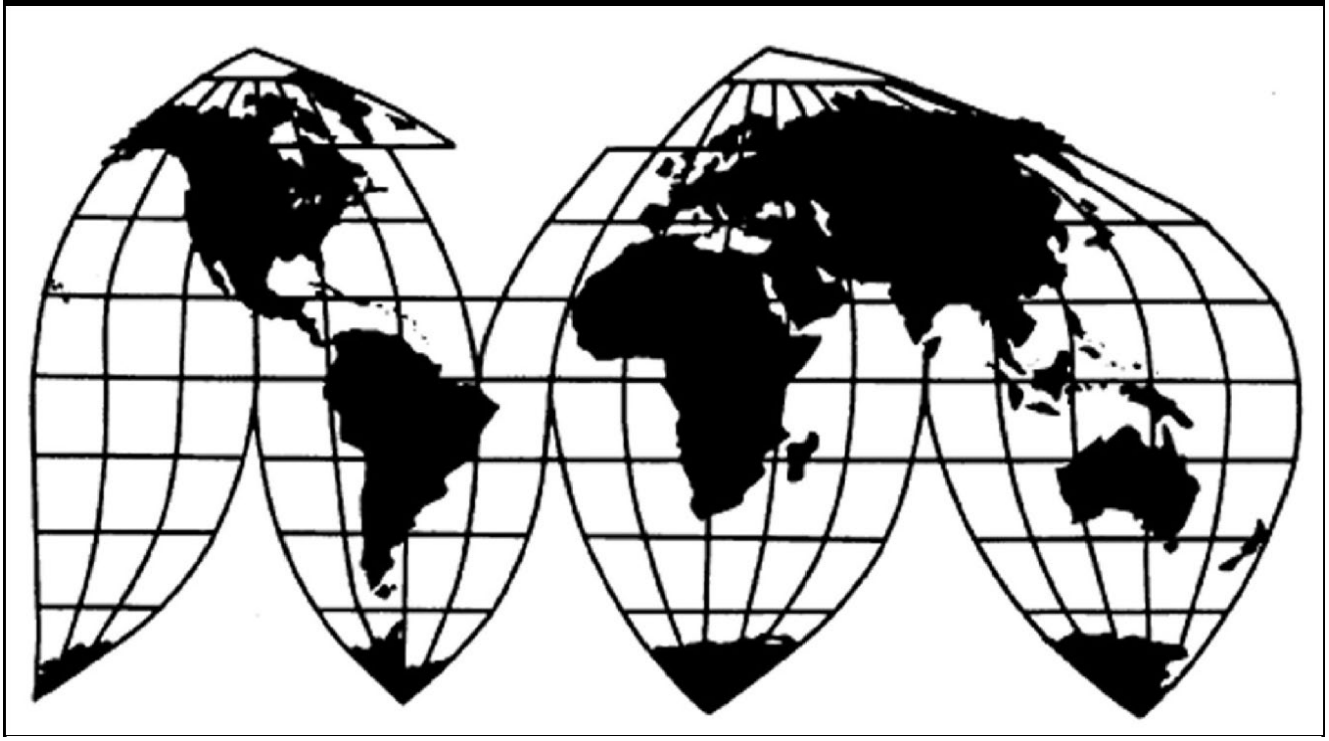
Sol Gel Alumina-Based Ceramic Abrasive Grains from China

Investigation Nos. 701-TA-750 and 731-TA-1728 (Preliminary)

Publication 5581 **February 2025**

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Note.—Information that would reveal confidential operations of individual firms may not be published. Such information is identified by brackets ([ ]) in confidential reports and is deleted and replaced with asterisks (***) in public reports. Zeroes, null values, and undefined calculations are suppressed and shown as em dashes (—) in tables. If using a screen reader, we recommend increasing the verbosity setting.

UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation Nos. 701-TA-750 and 731-TA-1728 (Preliminary)

Sol Gel Alumina-Based Ceramic Abrasive Grains from China

DETERMINATIONS

On the basis of the record[1] developed in the subject investigations, the United States International Trade Commission ("Commission") determines, pursuant to the Tariff Act of 1930 ("the Act"), that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of sol gel alumina-based ceramic abrasive grains from China, provided for in subheading 2818.10.20 of the Harmonized Tariff Schedule of the United States, that are alleged to be sold in the United States at less than fair value ("LTFV") and alleged to be subsidized by the government of China.[2] [3]

COMMENCEMENT OF FINAL PHASE INVESTIGATIONS

Pursuant to section 207.18 of the Commission's rules, the Commission also gives notice of the commencement of the final phase of its investigations. The Commission will issue a final phase notice of scheduling, which will be published in the *Federal Register* as provided in § 207.21 of the Commission's rules, upon notice from the U.S. Department of Commerce ("Commerce") of affirmative preliminary determinations in the investigations under §§ 703(b) or 733(b) of the Act, or, if the preliminary determinations are negative, upon notice of affirmative final determinations in those investigations under §§ 705(a) or 735(a) of the Act. Parties that filed entries of appearance in the preliminary phase of the investigations need not enter a separate appearance for the final phase of the investigations. Any other party may file an entry of appearance for the final phase of the investigations after publication of the final phase notice of scheduling. Industrial users, and, if the merchandise under investigation is sold at the retail level, representative consumer organizations have the right to appear as parties in Commission antidumping and countervailing duty investigations. The Secretary will prepare a

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

[2] 90 FR 3175 and 90 FR 3179 (January 14, 2025).

[3] Commissioner Rhonda K. Schmidtlein not participating.

public service list containing the names and addresses of all persons, or their representatives, who are parties to the investigations. As provided in section 207.20 of the Commission's rules, the Director of the Office of Investigations will circulate draft questionnaires for the final phase of the investigations to parties to the investigations, placing copies on the Commission's Electronic Document Information System (EDIS, https://edis.usitc.gov), for comment.

BACKGROUND

On November 25, 2024, Saint-Gobain Ceramics & Plastics, Inc., Malvern, Pennsylvania, filed petitions with the Commission and Commerce, alleging that an industry in the United States is materially injured or threatened with material injury by reason of subsidized and LTFV imports of sol gel alumina-based ceramic abrasive grains from China. Accordingly, effective November 25, 2024, the Commission instituted countervailing duty investigation No. 701-TA-750 and antidumping duty investigation No. 731-TA-1728 (Preliminary).

Notice of the institution of the Commission's investigations and of a public conference to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the *Federal Register* of December 2, 2024 (89 FR 95235).[4] The Commission conducted its conference on December 16, 2024. All persons who requested the opportunity were permitted to participate.

[4] The Commission published a revised schedule on December 18, 2024 (89 FR 102953) to conform with Commerce's new schedule after Commerce extended the deadline for its initiation determinations from December 16, 2024 to January 6, 2025 (89 FR 100465, December 12, 2024).

Views of the Commission

Based on the record in the preliminary phase of these investigations, we determine that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of sol gel alumina-based ceramic abrasive grains ("ceramic abrasive grains") from China that are allegedly sold in the United States at less than fair value ("LTFV") and subsidized by the government of China.

I. The Legal Standard for Preliminary Determinations

The legal standard for preliminary antidumping and countervailing duty determinations requires the Commission to determine, based upon the information available at the time of the preliminary determinations, whether there is a reasonable indication that a domestic industry is materially injured or threatened with material injury, or that the establishment of an industry is materially retarded, by reason of the allegedly unfairly traded imports.[1] In applying this standard, the Commission weighs the evidence before it and determines whether "(1) the record as a whole contains clear and convincing evidence that there is no material injury or threat of such injury; and (2) no likelihood exists that contrary evidence will arise in a final investigation."[2]

[1] 19 U.S.C. §§ 1671b(a), 1673b(a) (2000); *see also American Lamb Co. v. United States*, 785 F.2d 994, 1001–04 (Fed. Cir. 1986); *Aristech Chem. Corp. v. United States*, 20 CIT 353, 354–55 (1996). No party argues that the establishment of an industry in the United States is materially retarded by the allegedly unfairly traded imports.

[2] *American Lamb Co.*, 785 F.2d at 1001; *see also Texas Crushed Stone Co. v. United States*, 35 F.3d 1535, 1543 (Fed. Cir. 1994).

II. Background

Saint-Gobain Ceramics & Plastics, Inc. ("Petitioner"), a domestic producer of ceramic abrasive grains, filed the petitions in these investigations on November 25, 2024.[3] Petitioner participated in the staff conference[4] accompanied by counsel and submitted a postconference brief.[5] No respondent entities participated in the investigations.

U.S. industry data are based on the questionnaire responses of two domestic producers, which accounted for all known U.S. production of ceramic abrasive grains in 2023.[6] U.S. import data are based on questionnaire responses from six importers, estimated to have accounted for *** percent of subject imports in 2023.[7] The Commission received responses to its

[3] *See generally* Petitions, EDIS Doc. 837952 (Nov. 25, 2024) ("Petitions"). Although the petitions were filed on November 25, 2024, the Commission's investigation schedule was extended because the U.S. Department of Commerce ("Commerce") extended its deadline for determining the adequacy of the antidumping and countervailing duty petitions. *See Notice of Extension of the Deadline for Determining the Adequacy of the Antidumping and Countervailing Duty Petitions: Sol Gel Alumina-Based Ceramic Abrasive Grains from the People's Republic of China*, 89 Fed. Reg. 100465 (Dec. 12, 2024). Specifically, under the statute, the Commission shall make its preliminary determinations within 25 days after the date on which the Commission receives notice from Commerce of initiation of the investigations. *See* 19 U.S.C. §§ 1671b(a)(2)(A)(ii), 1673b(a)(2)(A)(ii). Commerce initiated its antidumping and countervailing duty investigations of ceramic abrasive grains from China on January 6, 2025. *Sol Gel Alumina-Based Ceramic Abrasive Grains from the People's Republic of China: Initiation of Less-Than-Fair-Value Investigation*, 90 Fed. Reg. 3179 (Jan. 14, 2025); *Sol Gel Alumina-Based Ceramic Abrasive Grains from the People's Republic of China: Initiation of Countervailing Duty Investigation*, 90 Fed. Reg. 3175 (Jan. 14, 2025).

[4] *See generally* Transcript of Preliminary Conference, EDIS Doc. 839366 (Dec. 16, 2024) ("Conf. Tr.").

[5] Saint-Gobain's Postconference Brief, EDIS Doc. 839718 (Dec. 19, 2024) ("Petitioner's Postconf. Br.").

[6] Confidential Report, Memorandum INV-XX-004 (Jan. 13, 2025) ("CR") at 1.4, 3.1; Public Report, *Sol Gel Alumina-Based Ceramic Abrasive Grains from China*, Inv. Nos. 701-TA-750 & 731-TA-1728 (Preliminary), USITC Pub. 5581 (Feb. 2025) ("PR") at 1.4, 3.1.

[7] CR/PR at 1.4, 4.1. The tariff heading used to calculate coverage ratios covers only ceramic abrasive grains in their "loose" form, although the scope encompasses both loose grains and grains incorporated into downstream articles. *See id.* at 4.1 & n.3 (stating that "coverage estimates presented were calculated based on proprietary Customs records using HTS statistical reporting number 2818.10.2090," a category that includes "Artificial corundum, whether or not chemically defined: In (Continued…)

questionnaires from one Chinese producer of subject merchandise, accounting for approximately *** percent of production of ceramic abrasive grains in China in 2023, and whose exports accounted for an estimated *** percent of subject imports from China in 2023.[8]

III. Domestic Like Product

In determining whether there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury by reason of imports of the subject merchandise, the Commission first defines the "domestic like product" and the "industry."[9] Section 771(4)(A) of the Tariff Act of 1930, as amended ("the Tariff Act"), defines the relevant domestic industry as the "producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[10] In turn, the Tariff Act defines "domestic 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."[11]

By statute, the Commission's "domestic like product" analysis begins with the "article subject to an investigation," *i.e.*, the subject merchandise as determined by the U.S.

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grains, or ground, pulverized or refined – Other"). At the preliminary conference, when asked whether the subject abrasive grains incorporated in downstream products represented a substantial volume of subject imports, Petitioner's counsel responded that "to this point it's principally the grains." Conf. Tr. at 18–19 (Schaefer). Petitioner also argues, however, that import statistics do not accurately capture the grains incorporated into downstream articles. *See* Petitioner's Postconf. Br. at 16–17. We intend to investigate this issue further in any final phase of the investigations.

[8] CR/PR at 1.4, 7.3.

[9] 19 U.S.C. § 1677(4)(A).

[10] 19 U.S.C. § 1677(4)(A).

[11] 19 U.S.C. § 1677(10).

Department of Commerce ("Commerce").[12] Therefore, Commerce's determination as to the scope of the imported merchandise that is subsidized and/or sold at less than fair value is "necessarily the starting point of the Commission's like product analysis."[13] The Commission then defines the domestic like product in light of the imported articles Commerce has identified.[14] The decision regarding the appropriate domestic like product(s) in an investigation is a factual determination, and the Commission has applied the statutory standard of "like" or "most similar in characteristics and uses" on a case-by-case basis.[15] No single factor is dispositive, and the Commission may consider other factors it deems relevant based on the facts of a particular investigation.[16] The Commission looks for clear dividing lines among

[12] 19 U.S.C. § 1677(10). The Commission must accept Commerce's determination as to the scope of the imported merchandise that is subsidized and/or sold at less than fair value. *See*, *e.g.*, *USEC, Inc. v. United States*, 34 F. App'x 725, 730 (Fed. Cir. 2002) ("The ITC may not modify the class or kind of imported merchandise examined by Commerce."); *Algoma Steel Corp. v. United States,* 688 F. Supp. 639, 644 (Ct. Int'l Trade 1988), *aff'd*, 865 F.3d 240 (Fed. Cir.), *cert. denied*, 492 U.S. 919 (1989).

[13] *Cleo Inc. v. United States*, 501 F.3d 1291, 1298 (Fed. Cir. 2007); *see also Hitachi Metals, Ltd. v. United States*, 949 F.3d 710, 717 (Fed. Cir. 2020) (the statute requires the Commission to start with Commerce's subject merchandise in reaching its own like product determination).

[14] *Cleo*, 501 F.3d at 1298 n.1 ("Commerce's {scope} finding does not control the Commission's {like product} determination."); *Hosiden Corp. v. Advanced Display Mfrs.,* 85 F.3d 1561, 1568 (Fed. Cir. 1996) (the Commission may find a single like product corresponding to several different classes or kinds defined by Commerce); *Torrington Co. v. United States*, 747 F. Supp. 744, 748–52 (Ct. Int'l Trade 1990), *aff'd*, 938 F.2d 1278 (Fed. Cir. 1991) (affirming the Commission's determination defining six like products in investigations where Commerce found five classes or kinds).

[15] *See, e.g.*, *Cleo*, 501 F.3d at 1299; *NEC Corp. v. Dep't of Commerce*, 36 F. Supp. 2d 380, 383 (Ct. Int'l Trade 1998); *Nippon Steel Corp. v. United States*, 19 CIT 450, 455 (1995); *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) ("every like product determination 'must be made on the particular record at issue' and the 'unique facts of each case'"). The Commission generally considers a number of factors including the following: (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) customer and producer perceptions of the products; (5) common manufacturing facilities, production processes, and production employees; and, where appropriate, (6) price. *See Nippon*, 19 CIT at 455 n.4; *Timken Co. v. United States*, 913 F. Supp. 580, 584 (Ct. Int'l Trade 1996).

[16] *See*, *e.g.*, S. Rep. No. 96-249 at 90–91 (1979).

possible like products and disregards minor variations.[17] The Commission may, where appropriate, include domestic articles in the domestic like product in addition to those described in the scope.[18]

A. Scope Definition

In its notices of initiation, Commerce defined the imported merchandise within the scope of the investigations as follows:

> The merchandise covered by this investigation is sol gel alumina-based ceramic abrasive grains which are comprised of minimum 94% aluminum oxide (Al_2O_3), and may contain other compounds, including, but not limited to, titanium dioxide, silicon dioxide, calcium oxide, sodium superoxide, ferric oxide, magnesium oxide, di-aluminum magnesium tetroxide, lanthanum oxide, lanthanum magnesium oxide, zirconium dioxide, or zirconium carbonate. Grain sizes of sol gel alumina-based ceramic abrasive grains range from 0.85 mm to 0.0395 mm (which corresponds to American National Standards Institute (ANSI) grit sizes from 20 to 280).
>
> Shapes include but are not limited to angular, sharp, extra sharp, blocky, splintery, round stripped, triangular or shaped like extruded rods or stars.
>
> Ceramic abrasive grains have unique crystalline structures that impart certain advanced properties, such as their extreme hardness and strength ranging between 16 and 22 gigapascals by the Vickers Diamond Indent Method, high melting point (2050°C), and a single- or multi-phase microstructure, which may contain multiple phases, having crystalline sizes ranging from 0.05 to 30µm. These ceramic abrasive grains include

[17] *See*, *e.g.*, *Nippon*, 19 CIT at 455; *Torrington*, 747 F. Supp. at 748–49*; see also* S. Rep. No. 96-249 at 90–91 (Congress has indicated that the like product standard should not be interpreted in "such a narrow fashion as to permit minor differences in physical characteristics or uses to lead to the conclusion that the product and article are not 'like' each other, nor should the definition of 'like product' be interpreted in such a fashion as to prevent consideration of an industry adversely affected by the imports under consideration.").

[18] *See*, *e.g.*, *Pure Magnesium from China and Israel*, Inv. Nos. 701-TA-403 & 731-TA-895–896 (Final), USITC Pub. 3467 (Nov. 2001) at 8 n.34; *Torrington,* 747 F. Supp. at 748–49 (holding that the Commission is not legally required to limit the domestic like product to the product advocated by the petitioner, co-extensive with the scope).

> but are not limited to blue, white, white-translucent, or off-white opaque colors.
>
> Sol gel alumina-based ceramic abrasive grains are covered by the scope of this investigation, whether or not incorporated into downstream articles, including but not limited to, abrasive papers, grinding wheels, grinding cylinders, and grinding discs. When incorporated into downstream articles, only the sol gel alumina-based ceramic abrasive grains component of such articles is covered by the product scope, and not the downstream product as a whole.
>
> The merchandise subject to this investigation is properly classified under subheadings 2818.10.2010 and 2818.10.2090 of the Harmonized Tariff Schedule of the United States (HTSUS). Other merchandise subject to the current scope, including when incorporated into the abovementioned downstream articles, may be classified under HTSUS subheadings 2818.10.1000, 2818.20.0000, 2818.30.0000, 3824.99.1100, 3824.99.1900, 6805.10.0000, 6805.20.0000, 6805.30.1000, 6805.30.5000, 6804.22.1000, 6804.22.4000, 6804.22.6000, 8204.12.0000, 8474.90.0010, 8474.90.0020, 8474.90.0050, and 8474.90.0090. Although the HTSUS statistical reporting numbers are provided for convenience and customs purposes, the written description of the merchandise is dispositive.[19]

Subject abrasive grains are composed of at least 94 percent aluminum oxide (Al_2O_3), derived from bauxite, and may contain trace compounds such as titanium dioxide, silicon dioxide, calcium oxide, sodium superoxide, ferric oxide, magnesium oxide, di-aluminum magnesium tetroxide, zirconium dioxide, or zirconium carbonate.[20] These abrasive grains are

[19] *Sol Gel Alumina-Based Ceramic Abrasive Grains from the People's Republic of China: Initiation of Less-Than-Fair-Value Investigation*, 90 Fed. Reg. 3179 (Jan. 14, 2025); *Sol Gel Alumina-Based Ceramic Abrasive Grains from the People's Republic of China: Initiation of Countervailing Duty Investigation*, 90 Fed. Reg. 3175 (Jan. 14, 2025); *Sol Gel Alumina-Based Ceramic Abrasive Grains from the People's Republic of China: Initiation of Less-Than-Fair-Value Investigation; Correction*, 90 Fed. Reg. 7657 (Jan. 22, 2025; *Sol Gel Alumina-Based Ceramic Abrasive Grains from the People's Republic of China: Initiation of Countervailing Duty Investigation; Correction*, 90 Fed. Reg. 7659 (Jan. 22, 2025). Although subheading 2818.10.2010 includes "Artificial corundum, whether or not chemically defined: In grains, or ground, pulverized or refined – White, pink or ruby, containing more than 97.5 percent by weight of aluminum oxide," Petitioner confirmed at the preliminary conference that the scope does not encompass any abrasive grains with a pink or ruby color. *See* Conf. Tr. at 37 (Leonard); CR/PR at 1.6 n.12.

[20] CR/PR at 1.7 & n.16; Petitioner's Postconf. Br. at 2.

typically white translucent to off-white opaque in color, although domestic producer 3M Company ("3M") produces a blue abrasive grain by introducing cobalt during the manufacturing process.[21] Ceramic abrasive grains are produced via the sol gel method, which includes six steps: (1) solution preparation, (2) sol formation, (3) gelation, (4) drying, (5) calcination, and (6) crushing or shaping and sintering.[22] The sol gel production method imparts unique characteristics to these abrasive grains, such as extreme hardness and strength, resistance to abrasion and chemicals, a high melting point, high thermal conductivity, a high degree of refractoriness, high dielectric strength, and high electrical resistivity at elevated temperatures when compared to out-of-scope aluminum oxide grains.[23] Most ceramic abrasive grains are incorporated into downstream abrasive products, such as grinding wheels, sanding pads, blast media, and deburring and cutting tools, through bonding or coating.[24] Once incorporated into the downstream product, these abrasive grains are used for grinding, dressing, and deburring applications in industries such as automotive, aerospace, foundry, woodworking, electronics and semiconductors, and metal fabrication.[25]

B. Petitioner's Arguments

Petitioner argues that the Commission's traditional domestic like product factors support defining a single domestic like product consisting of all ceramic abrasive grains, coextensive with the scope.[26] Petitioner also argues that ceramic abrasive grains incorporated

[21] CR/PR at 1.7 & n.16.

[22] CR/PR at 1.11–1.13 & Figure 1.1; Petitioner's Postconf. Br. at 7.

[23] CR/PR at 1.7–1.9; Petitioner's Postconf. Br. at 3.

[24] CR/PR at 1.10; Petitioner's Postconf. Br. at 7–8.

[25] CR/PR at 1.9–1.10; Petitioner's Postconf. Br. at 3, 8.

[26] Petitioner's Postconf. Br. at 2–9. Petitioner's arguments primarily focus on purported similarities between domestically produced ceramic abrasive grains and subject imports; however, the (Continued…)

into downstream products should not be defined as separate domestic like products under the Commission's semifinished products analysis.[27]

C. Analysis

Based on the record in these preliminary phase investigations, we define a single domestic like product consisting of all ceramic abrasive grains, coextensive with Commerce's scope.

Physical Characteristics and Uses. All ceramic abrasive grains share physical characteristics and uses, although they may differ slightly in characteristics such as color, shape, and hardness, depending on their exact chemical composition and specific end use.[28] They are composed of at least 94 percent aluminum oxide and may contain other trace compounds.[29] Ceramic abrasive grains are characterized by their extreme hardness, self-sharpening ability, and unique crystalline microstructure.[30] Most are incorporated into downstream abrasive

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Commission's domestic like product analysis focuses on whether there is a clear dividing line between domestically produced products rather than comparisons of domestically produced and imported products. *See, e.g.*, *Paper Shopping Bags from Turkey*, Inv. No. 731-TA-1626 (Final), USITC Pub. 5504 at 17 (May 2024); *Acetone from Singapore and Spain*, Inv. Nos. 731-TA-1438 and 1440 (Final), USITC Pub. 4997 at 9 (Dec. 2019).

[27] Petitioner's Postconf. Br. at 9–10. To the extent that Petitioner may be arguing that the Commission expand the domestic like product to include downstream articles that are excluded from the scope, *see, e.g.*, Petitioner's Postconf. Br. at 10, we note that "{t}he Commission generally does not expand or broaden the definition of the domestic like product to include downstream articles when the scope does not encompass a corresponding subject product." *Thermal Paper from Germany, Japan, Korea, and Spain*, Inv. Nos. 731-TA-1546–1549 (Final), USITC Pub. 5237 at 15 n.68 (Nov. 2021); *accord Aluminum Foil from China*, Inv. Nos. 701-TA-570 and 731-TA-1346 (Final), USITC Pub. 4771 at 15 (Apr. 2018).

[28] CR/PR at 1.7–1.9; Petitioner's Postconf. Br. at 2–3.

[29] CR/PR at 1.7 & n.16; Petitioner's Postconf. Br. at 2.

[30] CR/PR at 1.7–1.9; Petitioner's Postconf. Br. at 3, 8.

products to be used for grinding, dressing, and deburring applications in industries such as metal fabrication, automotive, aerospace, and semiconductor.[31]

Manufacturing Facilities, Production Processes, and Production Employees. Ceramic abrasive grains are produced by the sol gel method, which imparts a unique crystalline microstructure resulting in the grains' desirable mechanical and thermal properties.[32] According to Petitioner, all ceramic abrasive grains regardless of source are produced via the sol gel method in the same manufacturing facilities, using the same production processes and employees.[33]

Channels of Distribution. During the period of investigation ("POI"), domestic producers sold ceramic abrasive grains primarily to end users. Specifically, domestic producers sold between *** and *** percent of their U.S. shipments to end users and between *** and *** percent to distributors during the POI.[34]

Interchangeability. The limited record evidence indicates that ceramic abrasive grains are generally interchangeable. All have the same basic chemical composition, and most are incorporated into downstream articles to be used for grinding, dressing, and deburring of difficult materials in various industries.[35] According to Petitioner, producers may optimize ceramic abrasive grains for a specific tool or application, but the differences between different grains are marginal.[36]

[31] CR/PR at 1.9–1.10; Petitioner's Postconf. Br. at 3.
[32] CR/PR at 1.11–1.15; Petitioner's Postconf. Br. at 5.
[33] CR/PR at 1.11–1.15; Petitioner's Postconf. Br. at 5–8.
[34] CR/PR at Table 2.2.
[35] CR/PR at 1.7–1.10; Petitioner's Postconf. Br. at 2–3.
[36] Petitioner's Postconf. Br. at 3.

Producer and Customer Perceptions. The available evidence indicates that producers and customers perceive that all ceramic abrasive grains can be used for the same end use applications.[37] Market participants tout ceramic abrasive grains' high quality, durability, performance in demanding applications, and energy efficiency.[38]

Price. The available evidence indicates that prices of all ceramic abrasive grains are determined by market conditions and product characteristics.[39]

Conclusion. The record evidence in the preliminary phase of these investigations indicates that ceramic abrasive grains generally possess the same unique physical characteristics imparted by the sol gel manufacturing process, are produced through the same production processes at the same manufacturing facilities using the same employees, and have generally the same end uses. Although ceramic abrasive grains may differ slightly in characteristics such as color, shape, and hardness, depending on their exact chemical composition and to the extent that they are optimized for a specific tool or application, the available information indicates that the differences are marginal, and the current record is limited as to whether or what extent such differences affect interchangeability. Accordingly,

[37] Petitioner's Postconf. Br. at 4–5.

[38] CR/PR at Table D.1; Petitioner's Postconf. Br., Exhibit 2.

[39] Petitioner's Postconf. Br. at 9 ("Ultimately, pricing is determined both by market factors: *i.e.*, volume, competitive position, and opportunity, and by the three drivers of cost inherent to ceramic grain production: macrostructure, microstructure, and chemical additives.").

we define a single domestic like product consisting of all ceramic abrasive grains, coextensive with the scope, for purposes of these preliminary determinations.[40] [41]

IV. Domestic Industry

The domestic industry is defined as the domestic "producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[42] In defining the domestic industry, the Commission's general practice has been to include in the industry producers of all domestic production of the like product, whether toll produced, captively consumed, or sold in the domestic merchant market.

We must also determine whether any producer of the domestic like product should be excluded from the domestic industry pursuant to Section 771(4)(B) of the Tariff Act. This provision allows the Commission, if appropriate circumstances exist, to exclude from the domestic industry producers that are related to an exporter or importer of subject merchandise

[40] As discussed above, Petitioner argues that the Commission should define a single domestic like product that includes ceramic abrasive grains that have been incorporated into downstream products and not define such grains as separate products under the semifinished product analysis. Because there is limited information on the record in the preliminary phase of these investigations, and no party has argued for separate domestic like products, we have not analyzed this issue. In any final phase of the investigations, any party that may wish to raise domestic like product issues must do so in their comments on the draft questionnaires. 19 C.F.R. § 207.20(b).

[41] Petitioner contends that in-scope ceramic abrasive grains are distinct from out-of-scope abrasive grains in its petitions and postconference brief, and the Commission collected some information regarding the comparability of the domestic like product corresponding to the scope and non-sol gel alumina-based abrasive grains ("conventional abrasive grains"). CR/PR at 1.16, Tables D.1 & D.2. The available information suggests that most market participants consider these products to have limited or no comparability. *See id.* Additionally, no party argues that the Commission should expand the definition of the domestic like product to include out-of-scope abrasive grains.

[42] 19 U.S.C. § 1677(4)(A).

or which are themselves importers.[43] Exclusion of such a producer is within the Commission's discretion based upon the facts presented in each investigation.[44]

Petitioner argues that the Commission should define the domestic industry as all domestic producers of ceramic abrasive grains, namely Petitioner and 3M.[45] Petitioner does not address the issue of related parties.

The record indicates that *** is related to an importer that imported subject merchandise during the POI and to a Chinese producer and exporter of subject merchandise. Therefore, *** is subject to possible exclusion from the domestic industry under the related party provision in the preliminary phase of these investigations.[46]

*** was the *** domestic producer throughout the POI, accounting for *** percent of U.S. production in 2021, *** percent in 2022, *** percent in 2023, and *** percent in January

[43] *See Torrington Co. v. United States*, 790 F. Supp. 1161, 1168 (Ct. Int'l Trade 1992), *aff'd without opinion*, 991 F.2d 809 (Fed. Cir. 1993); *Sandvik AB v. United States*, 721 F. Supp. 1322, 1331–32 (Ct. Int'l Trade 1989), *aff'd mem.*, 904 F.2d 46 (Fed. Cir. 1990); *Empire Plow Co. v. United States*, 675 F. Supp. 1348, 1352 (Ct. Int'l Trade 1987).

[44] The primary factors the Commission has examined in deciding whether appropriate circumstances exist to exclude a related party include the following:

> (1) the percentage of domestic production attributable to the importing producer;
>
> (2) the reason the U.S. producer has decided to import the product subject to investigation (whether the firm benefits from the LTFV sales or subsidies or whether the firm must import in order to enable it to continue production and compete in the U.S. market);
>
> (3) whether inclusion or exclusion of the related party will skew the data for the rest of the industry;
>
> (4) the ratio of import shipments to U.S. production for the imported product; and
>
> (5) whether the primary interest of the importing producer lies in domestic production or importation.

Changzhou Trina Solar Energy Co. v. USITC, 100 F. Supp. 3d 1314, 1326–31 (Ct. Int'l. Trade 2015), *aff'd*, 879 F.3d 1377 (2018); *see also Torrington Co.*, 790 F. Supp. at 1168.

[45] Petitioner's Postconf. Br. at 11.

[46] CR/PR at Tables 3.2 & 3.13.

to September ("interim") 2024.[47] ***'s affiliate, ***,[48] imported *** pounds of subject merchandise from China in 2021, *** pounds in 2022, *** pounds in 2023, and *** pounds in interim 2024.[49] In comparison, *** produced *** pounds of ceramic abrasive grains in 2021, *** pounds in 2022, *** pounds in 2023, and *** pounds in interim 2024.[50] The ratio of ***'s subject imports to ***'s U.S. production was *** percent in 2021, *** percent in 2022, *** percent in 2023, and *** percent in interim 2024.[51] *** reported importing subject merchandise during the POI because ***.[52]

's capital expenditures for its domestic production operations during the POI totaled $ in 2021, $*** in 2022, $*** in 2023, and $*** in interim 2024.[53] Its profitability was *** the domestic industry average throughout the POI.[54] The record contains no information concerning exports of subject merchandise by ***'s Chinese affiliate, ***, because the affiliate did not provide a questionnaire response to the Commission.[55]

[47] CR/PR at Table 3.4.

[48] ***. CR/PR at Table 3.2.

[49] CR/PR at Table 3.13. *** itself did not directly import or purchase any subject merchandise during the POI. *Id.* at 3.1, 3.13.

[50] CR/PR at Table 3.13.

[51] CR/PR at Table 3.13.

[52] CR/PR at Table 3.14.

[53] CR/PR at Table 6.8. *** also reported research and development expenses totaling $*** in 2021, $*** in 2022, $*** in 2023, and $*** in interim 2024. *Id.* at Table 6.10.

[54] ***'s operating margins were *** percent in 2021, *** percent in 2022, *** percent in 2023, and *** percent in interim 2024. CR/PR at Table 6.5. In comparison, the domestic industry's average operating margins were *** percent in 2021, *** percent in 2022, *** percent in 2023, and *** percent in interim 2024. *Id.*

***'s net income margins were *** percent in 2021, *** percent in 2022, *** percent in 2023, and *** percent in interim 2024. *Id.* In comparison, the domestic industry's average net income margins were *** percent in 2021, *** percent in 2022, *** percent in 2023, and *** percent in interim 2024. *Id.*

[55] CR/PR at 3.1 n.1.

Because *** accounted for approximately *** of domestic production throughout the POI and did not import any subject merchandise itself, its principal interest appears to be domestic production. The ratio of ***'s imports of subject merchandise to ***'s production grew over the POI not only because of ***'s increased imports, but also because of ***'s declining production, which it attributes to underselling by subject imports.[56] There is no evidence on the record indicating that ***'s relationship with *** shielded *** from subject import competition or otherwise benefitted its operations such that its inclusion in the domestic industry would mask injury to the domestic injury. Indeed, ***'s statement that price competitiveness led it to import subject merchandise rather than purchase the domestic like product from *** indicates that ***'s imports compete with ***'s products. Likewise, *** reports that it did not purchase any subject imports during the POI, and there is no evidence that the Chinese affiliate's exports shielded *** from subject import competition or otherwise benefitted its operations such that including *** in the domestic industry would mask injury to the domestic industry.[57] Given these considerations, and the absence of any contrary argument, we find that appropriate circumstances do not exist to exclude *** from the domestic industry as a related party.

Accordingly, consistent with our definition of the domestic like product, we define the domestic industry as all domestic producers of ceramic abrasive grains, namely Petitioner and 3M.

[56] ***; CR/PR at Tables 3.3 & 3.4.

[57] ***'s Chinese affiliate did not respond to the Commission's foreign producer questionnaire. We will seek a complete response in any final investigation.

V. Negligible Imports

Pursuant to Section 771(24) of the Tariff Act, imports from a subject country of merchandise corresponding to a domestic like product that account for less than three percent of all such merchandise imported into the United States during the most recent 12 months for which data are available preceding the filing of the petition shall be deemed negligible.[58]

During the 12-month period preceding the filing of the petitions (November 2023 to October 2024), the volume of imports from China subject to both the antidumping and countervailing duty investigations accounted for *** percent of total imports of ceramic abrasive grains.[59] Because subject imports exceed the three percent negligibility threshold, we find that imports of ceramic abrasive grains from China subject to the antidumping and countervailing duty investigations are not negligible.

VI. Reasonable Indication of Material Injury by Reason of Subject Imports

A. Legal Standard

In the preliminary phase of antidumping and countervailing duty investigations, the Commission determines whether there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury by reason of the imports under investigation.[60] In making this determination, the Commission must consider the volume of subject imports, their effect on prices for the domestic like product, and their impact on domestic producers of the domestic like product, but only in the context of U.S. production

[58] 19 U.S.C. §§ 1671b(a), 1673b(a), 1677(24)(A)(i), 1677(24)(B); *see also* 15 C.F.R. § 2013.1 (developing countries for purposes of 19 U.S.C. § 1677(36)).

[59] CR/PR at Table IV-4.

[60] 19 U.S.C. §§ 1671b(a), 1673b(a).

operations.[61] The statute defines "material injury" as "harm which is not inconsequential, immaterial, or unimportant."[62] In assessing whether there is a reasonable indication that the domestic industry is materially injured by reason of subject imports, we consider all relevant economic factors that bear on the state of the industry in the United States.[63] No single factor is dispositive, and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[64]

Although the statute requires the Commission to determine whether there is a reasonable indication that the domestic industry is "materially injured or threatened with material injury by reason of" unfairly traded imports,[65] it does not define the phrase "by reason of," indicating that this aspect of the injury analysis is left to the Commission's reasonable exercise of its discretion.[66] In identifying a causal link, if any, between subject imports and material injury to the domestic industry, the Commission examines the facts of record that relate to the significance of the volume and price effects of the subject imports and any impact of those imports on the condition of the domestic industry. This evaluation under the "by reason of" standard must ensure that subject imports are more than a minimal or tangential

[61] 19 U.S.C. § 1677(7)(B). The Commission "may consider such other economic factors as are relevant to the determination" but shall "identify each {such} factor … and explain in full its relevance to the determination." 19 U.S.C. § 1677(7)(B).

[62] 19 U.S.C. § 1677(7)(A).

[63] 19 U.S.C. § 1677(7)(C)(iii).

[64] 19 U.S.C. § 1677(7)(C)(iii).

[65] 19 U.S.C. §§ 1671b(a), 1673b(a).

[66] *Angus Chemical Co. v. United States*, 140 F.3d 1478, 1484–85 (Fed. Cir. 1998) ("{T}he statute does not 'compel the commissioners' to employ {a particular methodology}."), *aff'g* 944 F. Supp. 943, 951 (Ct. Int'l Trade 1996).

cause of injury and that there is a sufficient causal, not merely a temporal, nexus between subject imports and material injury.[67]

In many investigations, there are other economic factors at work, some or all of which may also be having adverse effects on the domestic industry. Such economic factors might include nonsubject imports; changes in technology, demand, or consumer tastes; competition among domestic producers; or management decisions by domestic producers. The legislative history explains that the Commission must examine factors other than subject imports to ensure that it is not attributing injury from other factors to the subject imports, thereby inflating an otherwise tangential cause of injury into one that satisfies the statutory material injury threshold.[68] In performing its examination, however, the Commission need not isolate

[67] The Federal Circuit, in addressing the causation standard of the statute, observed that "{a}s long as its effects are not merely incidental, tangential, or trivial, the foreign product sold at less than fair value meets the causation requirement." *Nippon Steel Corp. v. USITC*, 345 F.3d 1379, 1384 (Fed. Cir. 2003). This was further ratified in *Mittal Steel Point Lisas Ltd. v. United States*, 542 F.3d 867, 873 (Fed. Cir. 2008), where the Federal Circuit, quoting *Gerald Metals, Inc. v. United States*, 132 F.3d 716, 722 (Fed. Cir. 1997), stated that "this court requires evidence in the record 'to show that the harm occurred "by reason of" the LTFV imports, not by reason of a minimal or tangential contribution to material harm caused by LTFV goods.'" *See also Nippon Steel Corp. v. United States*, 458 F.3d 1345, 1357 (Fed. Cir. 2006); *Taiwan Semiconductor Industry Ass'n v. USITC*, 266 F.3d 1339, 1345 (Fed. Cir. 2001).

[68] Statement of Administrative Action (SAA) to the Uruguay Round Agreements Act (URAA), H.R. Rep. No. 103-316, vol. I at 851–52 (1994) ("{T}he Commission must examine other factors to ensure that it is not attributing injury from other sources to the subject imports."); S. Rep. No. 96-249 at 75 (1979) (the Commission "will consider information which indicates that harm is caused by factors other than less-than-fair-value imports."); H.R. Rep. No. 96-317 at 47 (1979) ("in examining the overall injury being experienced by a domestic industry, the ITC will take into account evidence presented to it which demonstrates that the harm attributed by the petitioner to the subsidized or dumped imports is attributable to such other factors"; those factors include "the volume and prices of nonsubsidized imports or imports sold at fair value, contraction in demand or changes in patterns of consumption, trade restrictive practices of and competition between the foreign and domestic producers, developments in technology and the export performance and productivity of the domestic industry"); *accord Mittal Steel*, 542 F.3d at 877.

the injury caused by other factors from injury caused by unfairly traded imports.[69] Nor does the "by reason of" standard require that unfairly traded imports be the "principal" cause of injury or contemplate that injury from unfairly traded imports be weighed against other factors, such as nonsubject imports, which may be contributing to overall injury to an industry.[70] It is clear that the existence of injury caused by other factors does not compel a negative determination.[71]

Assessment of whether material injury to the domestic industry is "by reason of" subject imports "does not require the Commission to address the causation issue in any particular way" as long as "the injury to the domestic industry can reasonably be attributed to the subject imports."[72] The Commission ensures that it has "evidence in the record" to "show that the

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[69] SAA at 851–52 ("{T}he Commission need not isolate the injury caused by other factors from injury caused by unfair imports."); *Taiwan Semiconductor Industry Ass'n*, 266 F.3d at 1345 ("{T}he Commission need not isolate the injury caused by other factors from injury caused by unfair imports ... Rather, the Commission must examine other factors to ensure that it is not attributing injury from other sources to the subject imports." (emphasis in original)); *Asociacion de Productores de Salmon y Trucha de Chile AG v. United States*, 180 F. Supp. 2d 1360, 1375 (Ct. Int'l Trade 2002) ("{T}he Commission is not required to isolate the effects of subject imports from other factors contributing to injury" or make "bright-line distinctions" between the effects of subject imports and other causes.); *see also Softwood Lumber from Canada*, Inv. Nos. 701-TA-414 & 731-TA-928 (Remand), USITC Pub. 3658 at 100–01 (Dec. 2003) (Commission recognized that "{i}f an alleged other factor is found not to have or threaten to have injurious effects to the domestic industry, *i.e*., it is not an 'other causal factor,' then there is nothing to further examine regarding attribution to injury" (citing *Gerald Metals*, 132 F.3d at 722 (the statute "does not suggest that an importer of LTFV goods can escape countervailing duties by finding some tangential or minor cause unrelated to the LTFV goods that contributed to the harmful effects on domestic market prices.")).

[70] S. Rep. No. 96-249 at 74–75; H.R. Rep. No. 96-317 at 47.

[71] *See Nippon Steel Corp*., 345 F.3d at 1381 ("{A}n affirmative material-injury determination under the statute requires no more than a substantial-factor showing. That is, the 'dumping' need not be the sole or principal cause of injury.").

[72] *Mittal Steel*, 542 F.3d at 876, 878; *see also id.* at 873 ("While the Commission may not enter an affirmative determination unless it finds that a domestic industry is materially injured 'by reason of' subject imports, the Commission is not required to follow a single methodology for making that determination ... {and has} broad discretion with respect to its choice of methodology." (citing *U.S. Steel Group v. United States*, 96 F.3d 1352, 1362 (Fed. Cir. 1996); S. Rep. No. 96-249 at 75)). In its decision in (Continued…)

harm occurred 'by reason of' the LTFV imports," and that it is "not attributing injury from other sources to the subject imports."[73] The Federal Circuit has examined and affirmed various Commission methodologies and has disavowed "rigid adherence to a specific formula."[74]

The question of whether the material injury threshold for subject imports is satisfied notwithstanding any injury from other factors is factual, subject to review under the substantial evidence standard.[75] Congress has delegated this factual finding to the Commission because of the agency's institutional expertise in resolving injury issues.[76]

B. Conditions of Competition and the Business Cycle

The following conditions of competition inform our analysis of whether there is a reasonable indication of material injury by reason of subject imports.

1. Captive Production

These investigations have raised the issue of the applicability of the statutory captive production provision.[77] Petitioner argues that the captive production provision does not apply

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Swiff-Train v. United States, 793 F.3d 1355 (Fed. Cir. 2015), the Federal Circuit affirmed the Commission's causation analysis as comporting with the Court's guidance in *Mittal*.

[73] *Mittal Steel*, 542 F.3d at 873, 877–79 (quoting *Gerald Metals*, 132 F.3d at 722). One relevant "other factor" may involve the presence of significant volumes of price-competitive nonsubject imports in the U.S. market, particularly when a commodity product is at issue. In appropriate cases, the Commission collects information regarding nonsubject imports and producers in nonsubject countries in order to conduct its analysis.

[74] *Nucor Corp. v. United States*, 414 F.3d 1331, 1336, 1341 (Fed. Cir. 2005); *see also Mittal Steel*, 542 F.3d at 879 ("*Bratsk* did not read into the antidumping statute a Procrustean formula for determining whether a domestic injury was 'by reason' of subject imports.").

[75] We provide in our discussion below a full analysis of other factors alleged to have caused any material injury experienced by the domestic industry.

[76] *Mittal Steel*, 542 F.3d at 873; *Nippon Steel Corp*., 458 F.3d at 1350 (citing *U.S. Steel Group*, 96 F.3d at 1357); S. Rep. No. 96-249 at 75 ("The determination of the ITC with respect to causation is ... complex and difficult, and is a matter for the judgment of the ITC.").

[77] The captive production provision, 19 U.S.C. § 1677(7)(C)(iv), as amended by the Trade Preferences Extension Act of 2015 ("TPEA"), provides:

(Continued…)

to its production of downstream products in these investigations because the ceramic abrasive grains in those products remain within the definition of the domestic like product.[78]

The captive production provision can be applied only if, as a threshold matter, domestic producers transfer significant production of the domestic like product internally for the production of a downstream article and sell significant production of the domestic like product in the merchant market. We find that for purposes of these preliminary determinations the threshold criterion for application of the captive production provision is not satisfied. The domestic industry's internal consumption and transfers to related firms accounting for between *** and *** percent of total U.S. shipments during the POI represent the internal transfer of significant production of the domestic like product.[79] However, we find for purposes of these

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> (iv) CAPTIVE PRODUCTION – If domestic producers internally transfer significant production of the domestic like product for the production of a downstream article and sell significant production of the domestic like product in the merchant market, and the Commission finds that–
>
> > (I) the domestic like product produced that is internally transferred for processing into that downstream article does not enter the merchant market for the domestic like product, and
> >
> > (II) the domestic like product is the predominant material input in the production of that downstream article;
>
> then the Commission, in determining market share and the factors affecting financial performance set forth in clause (iii), shall focus primarily on the merchant market for the domestic like product.

The SAA indicates that where a domestic like product is transferred internally for the production of another article coming within the definition of the domestic like product, such transfers do not constitute internal transfers for the production of a "downstream article" for purposes of the captive production provision. SAA at 853.

[78] Petitioner's Postconf. Br. at 14–15. In the alternative, Petitioner claims that "the domestic industry's experience in the merchant market establishes more than a 'reasonable indication' of material injury by reason of subject imports." *Id.* at 15.

[79] *Calculated from* CR/PR at Table 3.7. Internal consumption accounted for *** percent of U.S. shipments in 2021, *** percent in 2022, *** percent in 2023, and *** percent in interim 2024. *Id.* Transfers to related firms accounted for *** percent of U.S. shipments in 2021, *** percent in 2022, *** (Continued…)

preliminary determinations that the domestic industry's U.S. shipments to the merchant market, which accounted for between *** and *** percent of its total U.S. shipments, do not constitute a significant portion of the domestic industry's production.[80] Therefore, the threshold criterion for applying the captive production provision is not satisfied.

Accordingly, in the preliminary phase of these investigations, we determine that the threshold criterion for application of the captive production provision has not been met, and we find that the captive production provision does not apply. We nonetheless consider, as a relevant condition of competition, that a significant portion of domestic production is captively consumed.

2. Demand Conditions

Domestic demand for ceramic abrasive grains corresponds generally to the condition of the U.S. economy overall and is largely driven by the demand for downstream products in industries such as aerospace, automotive, metal fabrication, and semiconductor.[81] *** U.S. producers and three of six importers reported that overall U.S. demand for ceramic abrasive grains either steadily decreased or fluctuated down during the POI.[82] Citing market studies and its customers' representations, however, Petitioner claims that demand for ceramic abrasive

percent in 2023, and *** percent in interim 2024. *Id.* The Commission generally considers both internal consumption and transfers to related parties as internal transfers for purposes of the captive production provision. *See, e.g.*, *Utility Scale Wind Towers from Malaysia*, Inv. No. 701-TA-661 (Final), USITC Pub. 5215 at 18 n.92 (July 2021) ("We calculate internal transfers to include internal consumption and transfers to related firms.").

[80] CR/PR at Table 3.7.

[81] CR/PR at 1.9 & 2.6; Petitioner's Postconf. Br. at 16–17; Conf. Tr. at 48–49 (Mydlarz).

[82] CR/PR at Table 2.5. Additionally, one importer reported that demand had fluctuated up during the POI, and two others reported no change in demand. *Id.*

grains incorporated into downstream products actually increased over the POI, and that it expects such demand to continue to rise.[83]

*** U.S. producers and four of seven responding importers reported that demand for ceramic abrasive grains is subject to business cycles.[84] Importer *** claims that there are three-year business cycles for ceramic abrasive grains during which demand increases and decreases.[85] *** also claims that demand is usually stronger at the beginning of the year and weaker at the end of the year, which aligns with the production cycles of major end users.[86] Importer *** asserts that business cycles for ceramic abrasive grains are caused by demand by end use manufacturing using metal as a raw material, particularly aerospace, automotive, infrastructure, transportation, and defense manufacturing.[87] All responding U.S. producers and importers reported that there are no substitutes for ceramic abrasive grains.[88]

Apparent U.S. consumption of ceramic abrasive grains decreased from *** pounds in 2021 to *** pounds in 2022 and *** pounds in 2023, for a decrease of *** percent from 2021 to 2023.[89] Apparent U.S. consumption of *** pounds in interim 2024 was *** percent higher than apparent U.S. consumption of *** pounds in interim 2023.[90]

[83] Petitioner's Postconf. Br. at 16–17.
[84] CR/PR at 2.6.
[85] CR/PR at 2.6.
[86] CR/PR at 2.6.
[87] CR/PR at 2.6.
[88] CR/PR at 2.7.
[89] CR/PR at Tables 4.7 & C.1. In the merchant market, apparent U.S. consumption increased from *** pounds in 2021 to *** pounds in 2022 and then declined to *** pounds in 2023, for a decrease of *** percent from 2021 to 2023. *Id.* at Tables 4.8 & C.2.
[90] CR/PR at Tables 4.7 & C.1. In the merchant market, apparent U.S. consumption of *** pounds in interim 2024 was *** percent higher than apparent U.S. consumption of *** pounds in interim 2023. *Id.* at Tables 4.8 & C.2.

3. Supply Conditions

The domestic industry was the *** supply source for the U.S. market during the POI.[91] The industry's share of overall apparent U.S. consumption increased from *** percent in 2021 to *** percent in 2022 and then declined to *** percent in 2023, for a decline of *** percentage points from 2021 to 2023.[92] Its share of *** percent in interim 2024 was *** percentage points lower than its *** percent share in interim 2023.[93]

During the POI, domestic producers experienced various production disruptions and capacity constraints due to production curtailments, longer production times for some products, equipment maintenance, and labor availability.[94] Petitioner claims that production equipment for ceramic abrasive grains is designed to function continuously at high temperatures, and production interruptions result in higher maintenance costs and shorten the lifespan of the equipment.[95] Additionally, *** reported an expansion of its operations during the POI, consisting of ***.[96]

The domestic industry's practical capacity decreased from *** pounds in 2021 to *** pounds in 2022 and *** pounds in 2023, for a decrease of *** percent from 2021 to 2023.[97] Its

[91] CR/PR at Tables 4.7, 4.8, C.1 & C.2. For purposes of apparent consumption, U.S. shipments include ***. *Id.* at 3.8 n.6, Tables C.1 n.2 & C.2 n.2.

[92] CR/PR at Tables 4.7 & C.1. In the merchant market, the industry's share of apparent U.S. consumption increased from *** percent in 2021 to *** percent in 2022 and then declined to *** percent in 2023, for a decline of *** percentage points from 2021 to 2023. *Id.* at Tables 4.8 & C.2.

[93] CR/PR at Tables 4.7 & C.1. In the merchant market, the industry's share of *** percent in interim 2024 was *** percentage points lower than its *** percent share in interim 2023. *Id.* at Tables 4.8 & C.2.

[94] CR/PR at Tables 3.3 & 3.5. The domestic producers attribute the ***. *Id.* at Table 3.3.

[95] CR/PR at 3.3; *accord* Petitioner's Postconf. Br. at 5; Conf. Tr. at 28 (Mydlarz).

[96] CR/PR at Table 3.3.

[97] CR/PR at Tables 3.4 & C.1. The domestic industry's practical capacity of *** pounds in interim 2024 was *** percent lower than its practical capacity of *** pounds in interim 2023. *Id.*

practical capacity utilization rate decreased from *** percent in 2021 to *** percent in 2022 and *** percent in 2023, for a decrease of *** percentage points from 2021 to 2023.[98]

Subject imports were the *** supply source for the U.S. market during the POI.[99] Subject imports' share of apparent U.S. consumption increased from *** percent in 2021 to *** percent in 2022 and *** percent in 2023, for an increase of *** percentage points from 2021 to 2023.[100] Subject imports' share of apparent U.S. consumption of *** percent in interim 2024 was *** percentage points higher than their share of *** percent in interim 2023.[101] Of the six responding importers, only one reported any supply constraints.[102]

Nonsubject imports were the *** supply source for the U.S. market during the POI.[103] Their share of apparent U.S. consumption decreased from *** percent in 2021 to *** percent in 2022 and *** percent in 2023, for a decrease of *** percentage points from 2021 to 2023.[104]

[98] CR/PR at Tables 3.4 & C.1. The domestic industry's practical capacity utilization rate of *** percent in interim 2024 was *** percentage points higher than its rate of *** percent in interim 2023. *Id.*

[99] CR/PR at Tables 4.7, 4.8, C.1 & C.2.

[100] CR/PR at Tables 4.7 & C.1. Subject imports' share of apparent U.S. consumption in the merchant market increased from *** percent in 2021 to *** percent in 2022 and *** percent in 2023, for an increase of *** percentage points from 2021 to 2023. *Id.* at Tables 4.8 & C.2.

[101] CR/PR at Tables 4.7 & C.1. Subject imports' share of apparent U.S. consumption in the merchant market of *** percent in interim 2024 was *** percentage points higher than their share of *** percent in interim 2023. *Id.* at Tables 4.8 & C.2.

[102] CR/PR at 2.5. The importer was ***. *Compare* ***, *with* ***.

[103] CR/PR at Tables 4.7, 4.8, C.1 & C.2.

[104] CR/PR at Tables 4.7 & C.1. Nonsubject imports' share of apparent U.S. consumption of *** percent in interim 2024 was *** percentage points higher than their *** percent share in interim 2023. *Id*. Their share of apparent U.S. consumption in the merchant market decreased from *** percent in 2021 to *** percent in 2022 and *** percent in 2023, for a decrease of *** percentage points from 2021 to 2023. *Id.* at Tables 4.8 & C.2. Their share of apparent U.S. consumption in the merchant market of *** percent in interim 2024 was *** percentage points higher than their *** percent share in interim 2023. *Id.*

In 2023, the largest sources of nonsubject imports were Austria, Japan, and Brazil, which together accounted for *** percent of nonsubject imports.[105]

4. Substitutability and Other Conditions

Based on the record in the preliminary phase of these investigations, we find that there is a high degree of substitutability between subject imports and the domestic like product. Primary factors contributing to this level of substitutability are similar quality, availability, and lead times for the domestic and subject products, little preference for particular country of origin or producers, and limited significant purchase factors other than price.[106] Domestic producers reported that subject imports were always or frequently interchangeable with domestically produced ceramic abrasive grains, and all importers reported that subject imports were at least sometimes interchangeable with the domestic grains.[107]

The current record indicates that price is an important factor in purchasing decisions for ceramic abrasive grains, among other important factors.[108] Of the two purchasers that responded to the Commission's lost sales/lost revenue survey, one purchaser ranked price as the most important factor, followed by availability/supply and quality, while the other purchaser ranked quality as the most important factor, followed by performance and price.[109] U.S. producers and importers generally agree that factors other than price are never or only

[105] CR/PR at 2.5. This percentage is based on official Commerce statistics for HTS statistical reporting number 2818.10.2090, a basket category that contains out-of-scope products. *Id.* at 4.1–4.2

[106] CR/PR at 2.7 to 2.8.

[107] CR/PR at Tables 2.7 & 2.8. Specifically, two importers reported that the domestic product and subject imports are always interchangeable, while three importers reported that the products are sometimes interchangeable. *Id.* at Table 2.8.

[108] CR/PR at Table 2.6.

[109] CR/PR at Table 2.6; Lost Sales and Lost Revenue Surveys at 5.

sometimes significant, regardless of the product's country of origin.[110] Importers reported that one significant factor other than price is the testing of the product for specific applications.[111]

Domestic producers primarily sold ceramic abrasive grains through *** in 2023, while importers primarily sold their abrasive grains almost exclusively through short-term contracts, with some spot sales.[112] Domestic producers reported setting prices using ***, and importers reported setting prices using transaction-by-transaction negotiations and price lists.[113] Domestic producers reported that *** percent of their commercial shipments of ceramic abrasive grains during the POI were produced to order, with lead times averaging *** days.[114] Subject importers reported that *** percent of their commercial shipments were sourced from U.S. inventories, with lead times averaging five days, *** percent of their commercial shipments were produced to order, with lead times averaging 30 days, and the remaining *** percent were sold from foreign inventories, with lead times averaging 14 days.[115]

[110] CR/PR at Tables 2.9 & 2.10. Comparing subject imports and the domestic like product specifically, one domestic producer and five importers reported that differences other than price are sometimes significant, while one domestic producer reported that there are never significant differences other than price. *Id.*

[111] CR/PR at 2.10.

[112] CR/PR at Table 5.2. Specifically, *** percent of domestic producers' sales were through annual contracts, and *** percent were through long-term contracts of a typical duration of ***. *Id.* at 5.2 & Table 5.2. *** percent of U.S. importers' sales were through short-term contracts less than a year in duration, and *** percent were through spot sales. *Id.* at Table 5.2. One importer reported using annual contracts for a de minimis number of sales in 2023 and stated that it does not renegotiate prices. *Id.* at 5.2. In any final phase of these investigations, we will further explore whether and to what extent these differences affect competition between the domestic like product and subject imports.

[113] CR/PR at 5.1 & Table 5.1.

[114] CR/PR at 2.9.

[115] CR/PR at 2.9.

The primary raw material used in the production of ceramic abrasive grains by U.S. producers is boehmite.[116] Raw material costs represented the *** component of the domestic industry's COGS in 2021 and the *** for the remainder of the POI, with a share of COGS fluctuating between a range of *** to *** percent annually from 2021 to 2023.[117] No U.S. producer or importer reported indexing contracts to raw material prices, regardless of contract length.[118]

Effective September 1, 2019, subject imports from China became subject to an additional 15 percent *ad valorem* duty under section 301 of the Trade Act of 1974, which was reduced to 7.5 percent, effective February 14, 2020.[119]

C. Volume of Subject Imports

Section 771(7)(C)(i) of the Tariff Act provides that the "Commission shall consider whether the volume of imports of the merchandise, or any increase in that volume, either in absolute terms or relative to production or consumption in the United States, is significant."[120]

The volume of subject imports increased from *** pounds in 2021 to *** pounds in 2022 and *** pounds in 2023, for an increase of *** percent from 2021 to 2023.[121] Subject

[116] The petitions listed aluminum oxide (Al_2O_3) as the primary raw material; however, boehmite is the primary and starting input used by U.S. producers, with aluminum oxide being the intermediary chemical created during the sol gel production process. CR/PR at 6.17 & Table 6.6.

[117] CR/PR at Table 6.1. Raw materials' share of COGS decreased from *** percent in 2021 to *** percent in 2022 and *** percent in 2023; their *** percent share in interim 2024 was higher than the *** percent share in interim 2023. *Id.* In the merchant market, raw materials' share of COGS decreased from *** percent in 2021 to *** percent in 2022 and *** percent in 2023; their *** percent share in interim 2024 was higher than the *** percent share in interim 2023. *Id.* at Table 6.3.

[118] CR/PR at 5.2.

[119] CR/PR at 1.6.

[120] 19 U.S.C. § 1677(7)(C)(i).

[121] CR/PR at Tables 4.2 & 4.3. The volume of subject imports increased by *** percent from 2021 to 2022 and *** percent from 2022 to 2023. *Id.*

imports of *** pounds in interim 2024 were *** percent higher than the *** pounds in interim 2023.[122] Subject imports' share of apparent U.S. consumption in the total market increased from *** percent in 2021 to *** percent in 2022 and *** percent in 2023, for an increase of *** percentage points from 2021 to 2023.[123] Subject imports' *** percent share of apparent U.S. consumption in the total market in interim 2024 was *** percentage points higher than their *** percent share in interim 2023.[124]

Based on the record in the preliminary phase of these investigations, we find that the volume of subject imports and the increase in that volume are significant, both in absolute terms and relative to U.S. consumption.

D. Price Effects of the Subject Imports

Section 771(7)(C)(ii) of the Tariff Act provides that, in evaluating the price effects of subject imports, the Commission shall consider whether –

> (I) there has been significant price underselling by the imported merchandise as compared with the price of domestic like products of the United States, and
>
> (II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.[125]

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[122] CR/PR at Tables 4.2 & 4.3.

[123] CR/PR at Tables 4.7 & C.1. Subject imports' share of apparent U.S. consumption in the merchant market increased from *** percent in 2021 to *** percent in 2022 and *** percent in 2023, for an increase of *** percentage points from 2021 to 2023. *Id.* at Tables 4.8 & C.2.

U.S. importers' U.S. shipments of subject imports increased from *** pounds in 2021 to *** pounds in 2022 and *** pounds in 2023, for an increase of *** percent from 2021 to 2023. *Id.* at Tables 4.7, 4.8, C.1 & C.2. These volumes represent an increase of *** percent from 2021 to 2022 and an increase of *** percent from 2022 to 2023. *Id.* U.S. importers' U.S. shipments of *** pounds of subject imports in interim 2024 were *** percent higher than the *** pounds in interim 2023. *Id.*

[124] CR/PR at Tables 4.7 & C.1. Subject imports' *** percent share of apparent U.S. consumption in the merchant market in interim 2024 was *** percentage points higher than their *** percent share in interim 2023. *Id.* at Tables 4.8 & C.2.

[125] 19 U.S.C. § 1677(7)(C)(ii).

As discussed in section V.B.3. above, we find that there is a high degree of substitutability between subject imports and the domestic like product and that price is an important factor in purchasing decisions.

The Commission collected quarterly pricing data from the U.S. producers and importers for two pricing products shipped to unrelated customers during the POI.[126] Both domestic producers and two U.S. importers provided usable pricing data for sales of the requested products, although not all firms reported pricing for all products for all quarters.[127] Pricing data reported by these firms accounted for *** percent of domestic producers' commercial U.S. shipments of domestically produced ceramic abrasive grains and *** percent of subject imports in 2023.[128]

Subject imports undersold the domestic like product in all six available quarterly comparisons at margins ranging from *** to *** percent and averaging *** percent.[129] There were *** pounds of subject import sales in quarters of underselling.[130] Underselling became

[126] The two pricing products are as follows:

Product 1.-- Sol gel alumina-based ceramic abrasive grains, Form: blue or white translucent to off-white/opaque, with a predominant chemical composition of $Al_2O_3 \geq 95\%$, possessing a weak and splintery shape

Product 2.-- Sol gel alumina-based ceramic abrasive grains, Form: blue or white translucent to off-white/opaque, with a predominant chemical composition of $Al_2O_3 \geq 94\%$, possessing an extruded rod shape

CR/PR at 5.3, Tables 5.3 & 5.4.

[127] CR/PR at 5.3. For pricing product 1, there were sales of domestic product in every quarter of the POI, but there were sales of subject imports in only six quarters. *Id.* at Table 5.3. For pricing product 2, there were sales of domestic product in nine quarters and subject imports in one quarter, but the competing products were not sold in the same quarters. *Id.* at Table 5.4. Thus, there are no price comparisons available for pricing product 2.

[128] CR/PR at 5.3.

[129] CR/PR at Table 5.9.

[130] CR/PR at Table 5.9.

more prevalent in 2023 and interim 2024, occurring in five quarters and accounting for *** pounds of subject imports.[131]

The Commission also collected import purchase cost data from firms that imported these products for their own use.[132] Three importers reported usable import purchase cost data for pricing product 1 on a landed duty-paid ("LDP") basis.[133] Purchase cost data reported by these firms accounted for *** percent of subject imports from China in 2023.[134] LDP costs for subject imports were lower than prices for the domestic product in all 15 quarterly comparisons, at price-cost differentials ranging from *** to *** percent and averaging *** percent, for a total of *** pounds of subject imports.[135] Import quantity and average price-cost differentials were higher in 2023 and interim 2024 than the first half of the POI.[136]

We recognize that import purchase cost data may not reflect the total cost of importing. Therefore, we requested that importers provide additional information regarding the costs and benefits of directly importing ceramic abrasive grains.[137] One of three responding importers reported that they incurred additional costs beyond LDP costs by importing these abrasive grains themselves rather than purchasing from a U.S. producer or U.S. importer.[138] That

[131] CR/PR at Table 5.9. On an annual basis, subject imports undersold the domestic product in one quarterly comparison in 2022, four quarterly comparisons in 2023, and one quarterly comparison in interim 2024. *Id.* There were *** pounds of subject import sales in 2022, *** pounds in 2023, and *** pounds in interim 2024. *Id.* There were no subject import sales in 2021. *Id.*

[132] CR/PR at 5.3.

[133] CR/PR at 5.8. No importers reported purchase cost data for pricing product 2. *Id.* at 5.8 n.9.

[134] CR/PR at 5.8.

[135] CR/PR at Table 5.10.

[136] CR/PR at Table 5.10. Subject importers reporting LDP costs imported *** pounds of subject merchandise in 2021, *** pounds in 2022, *** in 2023, and *** in 2024. *Id.* The average price-cost differential was *** percent in 2021, *** percent in 2022, *** percent in 2023, and *** percent in interim 2024. *Id.*

[137] CR/PR at 5.8.

[138] CR/PR at 5.8.

importer, ***, estimated the total additional cost incurred at *** percent of the LDP value, which it attributed to increased inventory costs due to longer-lead times for imports.[139]

Two of three importers reported that they compare costs of importing to the costs of purchasing from a U.S. producer in determining whether to import subject merchandise, and one reported that it also compares costs of importing to the costs of purchasing from another U.S. importer. The third importer reported that it did not compare costs of importing to costs of purchasing from either U.S. producers or importers.[140]

Three importers identified benefits from importing subject merchandise themselves instead of purchasing from U.S. producers or importers, with two listing lower costs.[141] Two importers estimated that they saved between *** percent of the purchase price by importing ceramic abrasive grains rather than purchasing from a U.S. producer, and one estimated that it saved *** percent compared to purchasing from another U.S. importer.[142]

Thus, firms generally reported that there were cost benefits associated with importing subject imports directly rather than purchasing from a domestic source, and the price-cost differentials between domestic prices and import costs generally exceeded any reported savings associated with such importing, although there is also evidence that the price-cost differentials were less than reported additional costs associated with such importing. In any

[139] CR/PR at 5.8. ***. CR/PR at Table 3.14. We intend to investigate these additional costs further in any final phase of the investigations.

[140] CR/PR at 5.8.

[141] CR/PR at 5.8; U.S. Importers' Questionnaires at III-3e. One importer, ***, reported that it imports subject merchandise from a related producer in China and that this integrated supply chain has resulted in better quality products and lower costs. CR/PR at 5.16 & n.11. Another importer appears to tout the quality, effectiveness, and reliability of the subject merchandise. ***'s U.S. Importers' Questionnaire at III-3e.

[142] CR/PR at 5.8.

final phase of these investigations, we will further explore additional costs and any cost benefits associated with importing subject merchandise directly.

We have also considered purchasers' responses to the Commission's lost sales/lost revenue survey. Commission staff contacted 11 purchasers identified by domestic producers and received responses to the lost sales/lost revenue survey from two, who reported purchasing or importing *** pounds of ceramic abrasive grains during the POI, including *** pounds of subject imports.[143] Only one purchaser, ***, reported purchasing subject imports instead of the domestic like product.[144] *** also reported that the imports were priced lower, but stated that its decision to purchase imports was not based on price.[145]

Based on the foregoing, including the high degree of substitutability of subject imports and the domestic like product, the importance of price in purchasing decisions, pricing and purchase cost data, and the lost sales response indicating that subject imports were priced lower than the domestic like product, we find that there has been significant underselling by subject imports. The underselling enabled subject imports to gain sales and market share at the expense of the domestic industry. We observe that in 2023 and interim 2024, when subject import underselling was most frequent, subject imports gained the most market share from the domestic industry during the POI.[146]

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[143] CR/PR at 5.15 & Table 5.11.

[144] CR/PR at 5.16. The second purchaser, ***, reported purchasing less of the domestic like product over the course of the POI due to competitive pricing pressures, but it ***. *Id.*

[145] As mentioned previously, *** reported shifting its purchases to a related producer in China before the POI for production efficiency, product quality, and cost competition. CR/PR at 5.16 & n.11.

[146] Subject imports gained *** percentage points of market share from 2021 to 2022 and *** percentage points from 2022 to 2023. CR/PR at Tables 4.7 & C.1. Subject imports' market share was *** percentage points higher in interim 2024 than in interim 2023. *Id.* at Tables 4.7 & C.1. In the merchant market, subject imports gained *** percentage points of market share from 2021 to 2022 and (Continued…)

We have also examined price trends during the POI. Domestic prices for pricing product 1 generally increased until the fourth quarter of 2023 and then declined for the remainder of the POI, for an overall increase over the POI, while prices for pricing product 2 increased slightly throughout the POI.[147] Prices for subject imports of pricing product 1 decreased overall during the POI.[148] From the fourth quarter of 2023 to the third quarter of 2024, domestic prices for pricing product 1 dropped by *** percent,[149] despite apparent U.S. consumption being *** percent higher in interim 2024 than in interim 2023.[150] The domestic industry's total net sales average unit value ("AUV") was also down during interim 2024.[151] Additionally, both domestic producers reported that they reduced prices to compete with lower-priced subject imports.[152] We also observe that these price declines occurred as there was a substantial influx of subject imports in interim 2024, and, as noted above, that during this period apparent U.S.

*** percentage points from 2022 to 2023. *Id.* at Tables 4.8 & C.2. Subject imports' market share was *** percentage points higher in interim 2024 than in interim 2023. *Id.*

[147] CR/PR at Tables 5.3–5.4 & Figures 5.1–5.2. Over the POI, domestic prices increased by *** percent for pricing product 1 and by *** percent for pricing product 2. *Id.* at Table 5.7. Domestic producers did not report sales of pricing product 2 in six of the 15 quarters. *Id.*

[148] CR/PR at Table 5.3 & Figure 5.1. Subject imports reported sales of pricing product 1 in only six consecutive quarters from the fourth quarter of 2022 through the first quarter of 2024. *Id.* Subject import prices for pricing product 1 dropped at the beginning of 2023, increased slightly, and then generally remained stagnant with little fluctuation until increasing at the beginning of 2024. *Id.* Overall, subject import prices for pricing product 1 decreased by *** percent. *Id.* at Table 5.3 & Figure 5.1. Subject importers reported sales of pricing product 2 in only one quarter during the POI. *Id.* at Table 5.4 & Figure 5.2.

[149] Domestic prices for pricing product 1 decreased from $*** per pound in the fourth quarter of 2023 to $*** per pound in the third quarter of 2024. CR/PR at Tables 5.3 & 5.5, Figures 5.1 & 5.3.

[150] CR/PR at Tables 4.7 & C.1. In the merchant market, apparent U.S. consumption was *** percent higher in interim 2024 than in interim 2023. *Id.* at Tables 4.8 & C.2.

[151] Net sales AUV of $*** per pound in interim 2024 was *** percent lower than the $*** per pound in interim 2023. CR/PR at Tables 6.1–6.2 & C.1. In the merchant market, net sales AUV of $*** per pound in interim 2024 was *** percent lower than the $*** per pound in interim 2023. *Id.* at Tables 6.3–6.4 & C.2.

[152] CR/PR at 5.15. We recognize that purchasers responding to the lost sales/lost revenue survey reported that domestic producers *** reduce prices to compete with lower-priced subject imports. *Id.* at 5.16 & Table 5.13.

consumption was higher.[153] Accordingly, we find there is some evidence that subject imports depressed domestic producer prices based on interim 2024 data.

We have also examined whether subject imports prevented price increases which otherwise would have occurred to a significant degree. The domestic producers' ratio of COGS to net sales increased from *** percent in 2021 to *** percent in 2022 and then declined to *** percent in 2023, for an increase of *** percentage points from 2021 to 2023.[154] The domestic producers' total net sales AUV increased by $*** per pound (*** percent) from 2021 to 2023, increasing by $*** per pound (*** percent) from 2021 to 2022 and by $*** per pound (*** percent) from 2022 to 2023.[155] The domestic producers' unit COGS increased by $*** per pound (*** percent) from 2021 to 2023, increasing by $*** per pound (*** percent) from 2021

[153] In interim 2024, U.S. shipments of subject imports were *** pounds, which was higher than the *** pounds of U.S. shipments of subject imports in interim 2023 and on par with *** pounds of U.S. shipments of subject imports in full year 2023. CR/PR at Tables 4.7, 4.8, C.1 & C.2. Apparent U.S. consumption in the total market was higher in interim 2024 at *** pounds than in interim 2023 at *** pounds. *Id.* at Tables 4.7 & C.1. Apparent U.S. consumption in the merchant market was higher in interim 2024 at *** pounds than in interim 2023 at *** pounds. *Id.* at Tables 4.8 & C.2. We recognize, however, that in the merchant market, raw materials costs were lower in interim 2024 at $*** than in interim 2023 at $***. *Id.* at Table 6.3.

[154] CR/PR at Tables 6.1 & C.1. The domestic producers' *** percent ratio of COGS to net sales in interim 2024 was *** percentage points higher than their *** percent ratio in interim 2023. *Id.* In the merchant market, the domestic producers' ratio of COGS to net sales increased from *** percent in 2021 to *** percent in 2022 and then declined to *** percent in 2023, for an increase of *** percentage points from 2021 to 2023. *Id.* at Tables 6.3 & C.2. The domestic producers' *** percent ratio of COGS to net sales in interim 2024 was *** percentage points higher than their *** percent ratio in interim 2023. *Id.*

[155] CR/PR at Tables 6.2 & C.1. The domestic producers' net sales AUVs in interim 2024 were $*** per pound (*** percent) lower than in interim 2023. *Id.* In the merchant market, the domestic producers' total net sales AUVs increased by $*** per pound (*** percent) from 2021 to 2023, decreasing by $*** per pound (*** percent) from 2021 to 2022 and increasing by $*** per pound (*** percent) from 2022 to 2023. *Id.* at Tables 6.4 & C.2. The domestic producers' net sales AUVs in the merchant market in interim 2024 were $*** per pound (*** percent) lower than in interim 2023. *Id.*

to 2022 and by $*** per pound (*** percent) in 2023.[156] The increase in unit COGS was primarily driven by increasing other factory costs, which increased by $*** per pound from 2021 to 2023, and to a lesser degree by direct labor costs, which increased by $*** per pound during that time.[157] Overall apparent U.S. consumption decreased by *** percent from 2021 to 2023 and was *** percent higher in interim 2024 than in interim 2023.[158]

In sum, based on the record of the preliminary phase of these investigations, we find that subject imports significantly undersold the domestic like product and gained sales and market share at the expense of the domestic industry. We also find, for purposes of these preliminary determinations, that there is some evidence that subject imports depressed domestic prices based on interim 2024 data. We therefore find that subject imports had significant price effects.

E. Impact of the Subject Imports[159]

Section 771(7)(C)(iii) of the Tariff Act provides that the Commission, in examining the impact of the subject imports on the domestic industry, "shall evaluate all relevant economic

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[156] CR/PR at Tables 6.2 & C-1. The domestic producers' unit COGS in interim 2024 was $*** per pound (*** percent) lower than its unit COGS in interim 2023. *Id.* In the merchant market, the domestic producers' unit COGS increased by $*** per pound (*** percent) from 2021 to 2023, increasing by $*** per pound (*** percent) from 2021 to 2022 and by $*** per pound (*** percent) in 2023. *Id.* at Tables 6.4 & C.2. The domestic producers' unit COGS in the merchant market in interim 2024 was $*** per pound (*** percent) lower than their unit COGS in interim 2023. *Id.*

[157] CR/PR at Table 6.2. In contrast, raw materials decreased by $*** per pound from 2021 to 2023. *Id.* In the merchant market, unit COGS increased by $*** per pound from 2021 to 2023, other factory costs increased by $*** per pound, direct labor increased by $*** per pound, and raw materials decreased by $*** per pound. *Id.* at Table 6.4.

[158] CR/PR at Tables 4.7 & C.1. In the merchant market, apparent U.S. consumption decreased by *** percent from 2021 to 2023 and was *** percent higher in interim 2024 than in interim 2023. *Id.* at Tables 4.8 & C.2.

[159] Commerce initiated an antidumping duty investigation for subject imports from China based on estimated dumping margins ranging from 81.98 to 88.32 percent. *Sol Gel Alumina-Based Ceramic* (Continued…)

factors which have a bearing on the state of the industry." These factors include output, sales, inventories, capacity utilization, market share, employment, wages, productivity, gross profits, net profits, operating profits, cash flow, return on investment, return on capital, ability to raise capital, ability to service debt, research and development ("R&D"), and factors affecting domestic prices. No single factor is dispositive, and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[160]

As apparent U.S. consumption decreased and the domestic industry lost market share, its output, employment, and financial indicia generally deteriorated. The domestic producers' practical capacity and end-of-period inventories declined from 2021 to 2023 and were lower in interim 2024 than in interim 2023.[161] Production and capacity utilization also declined from 2021 to 2023, but were higher in interim 2024 than in interim 2023.[162] The ratio of end-of-period inventories to total shipments increased from 2021 to 2023, but the ratio was lower in

Abrasive Grains from the People's Republic of China: Initiation of Less-Than-Fair-Value Investigation, 90 Fed. Reg. 3179 (Jan. 14, 2025).

[160] 19 U.S.C. § 1677(7)(C)(iii).

[161] Practical capacity decreased from *** pounds in 2021 to *** pounds in 2022 and *** pounds in 2023; practical capacity of *** pounds in interim 2024 was lower than the *** pounds reported in interim 2023. CR/PR at Tables 3.4 & C.1. End-of-period inventories decreased from *** pounds in 2021 to *** pounds in 2022 and *** pounds in 2023; end-of-period inventories of *** pounds in interim 2024 were lower than the *** pounds reported in interim 2023. *Id.* at Tables 3.12 & C.1.

[162] Production decreased from *** pounds in 2021 to *** pounds in 2022 and *** pounds in 2023; production of *** pounds in interim 2024 was higher than the *** pounds reported in interim 2023. CR/PR at Table 3.4 & C.1. Capacity utilization declined from *** percent in 2021 to *** percent in 2022 and *** percent in 2023; capacity utilization of *** percent in interim 2024 was higher than the *** percent reported in interim 2023. *Id.*

interim 2024 than in interim 2023.[163] U.S. shipments and exports also declined from 2021 to 2023, but were higher in interim 2024 than in interim 2023.[164]

Most of the domestic industry's employment indicia declined from 2021 to 2023, but were higher in interim 2024 than in interim 2023, including total hours worked, wages paid, hourly wages, and productivity.[165] The number of production and related workers ("PRWs") decreased from 2021 to 2023 and was lower in interim 2024 than in interim 2023.[166] Hours worked per PRW and unit labor costs increased from 2021 to 2023 and were higher in interim 2024 than in interim 2023.[167]

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[163] As a ratio to total shipments, end-of-period inventories increased by *** percentage points from 2021 to 2023, increasing from *** percent in 2021 to *** percent in 2022 and *** percent in 2023; the ratio of inventories to total shipments of *** percent in interim 2024 was lower than the ratio of *** percent in interim 2023. CR/PR at Tables 3.12 & C.1.

[164] U.S. shipments decreased from *** pounds in 2021 to *** pounds in 2022 and *** pounds in 2023; U.S. shipments of *** pounds in interim 2024 were higher than the *** pounds reported in interim 2023. CR/PR at Tables 3.8 & C.1. Exports decreased from *** pounds in 2021 to *** pounds in 2022 and *** pounds in 2023; exports of *** pounds in interim 2024 were higher than the *** pounds reported in interim 2023. *Id.* at Tables 3.6 & C.1. In the merchant market, commercial U.S. shipments increased from *** pounds in 2021 to *** pounds in 2022 and decreased to *** pounds in 2023; commercial U.S. shipments of *** pounds in interim 2024 were higher than the *** pounds reported in interim 2023. *Id.* at Tables 3.9 & C.2.

[165] Total hours worked decreased from *** in 2021 to *** in 2022 and *** in 2023; the *** total hours worked in interim 2024 were higher than the *** hours reported in interim 2023. CR/PR at Tables 3.15 & C.1. Wages paid decreased from $*** in 2021 to $*** in 2022 and $*** in 2023; the $*** in wages paid in interim 2024 were higher than the $*** paid in interim 2023. *Id.* Hourly wages decreased from $*** in 2021 to $*** in 2022, and then increased to $*** in 2023; hourly wages of $*** in interim 2024 were higher than the $*** reported in interim 2023. *Id.* Productivity decreased from *** pounds per hour in 2021 to *** pounds per hour in 2022 and *** pounds per hour in 2023; productivity of *** pounds per hour in interim 2024 was higher than the productivity of *** pounds per hour in interim 2023. *Id.*

[166] The number of PRWs decreased from *** in 2021 to *** in 2022 and *** in 2023; the *** PRWs in interim 2024 were fewer than the *** PRWs reported in interim 2023. CR/PR at Tables 3.15 & C.1.

[167] Hours worked per PRW decreased from *** in 2021 to *** in 2022, and then increased to *** in 2023; the *** hours worked per PRW in interim 2024 were higher than the *** hours worked per PRW reported in interim 2023. CR/PR at Tables 3.15 & C.1. Unit labor costs increased from $*** per pound in 2021 to $*** per pound in 2022 and $*** per pound in 2023; unit labor costs of $*** per pound in interim 2024 were higher than the $*** per pound reported in interim 2023. *Id.*

Most of the domestic industry's overall financial performance indicia worsened from 2021 to 2023, but showed some improvement in interim 2024, including net sales value, gross profits, and operating and net income.[168] The domestic producers' operating and net income margins also declined from 2021 to 2023, but both were higher in interim 2024 than in interim 2023.[169] Their capital expenditures increased from 2021 to 2023, while their R&D expenses

[168] Similarly, most of the domestic industry's financial performance indicia for merchant market sales worsened from 2021 to 2023, but they also continued to decline in interim 2024.

Overall net sales value decreased from $*** in 2021 to $*** in 2022 and $*** in 2023, for a decrease of *** percent from 2021 to 2023; net sales of $*** in interim 2024 were *** percent higher than the $*** in interim 2023. CR/PR at Tables 6.1 & C.1. In the merchant market, net sales value decreased from $*** in 2021 to $*** in 2022 and $*** in 2023, for a decrease of *** percent from 2021 to 2023; net sales of $*** in interim 2024 were *** percent lower than the $*** in interim 2023. *Id.* at Tables 6.3 & C.2.

Overall gross profits decreased from $*** in 2021 to $*** in 2022 and $*** in 2023, for a decrease of *** percent from 2021 to 2023; gross profits of $*** in interim 2024 were *** percent higher than the $*** in interim 2023. *Id.* at Tables 6.1 & C.1. In the merchant market, gross profits decreased from $*** in 2021 to $*** in 2022 and $*** in 2023, for a decrease of *** percent from 2021 to 2023; gross profits of $*** in interim 2024 were *** percent lower than the $*** in interim 2023. *Id.* at Tables 6.3 & C.2.

Overall operating income decreased from $*** in 2021 to $*** in 2022 and $*** in 2023, for a decrease of *** percent from 2021 to 2023; operating income of $*** in interim 2024 was *** percent higher than the $*** in interim 2023. *Id.* at Tables 6.1 & C.1. In the merchant market, operating income decreased from $*** in 2021 to $*** in 2022 and $*** in 2023, for a decrease of *** percent from 2021 to 2023; operating income of $*** in interim 2024 was *** percent lower than the $*** in interim 2023. *Id.* at Tables 6.3 & C.2.

Overall net income decreased from $*** in 2021 to $*** in 2022 and $*** in 2023, for a decrease of *** percent from 2021 to 2023; net income of $*** in interim 2024 was *** percent higher than the $*** in interim 2023. *Id*. at Tables 6.1 & C.1. In the merchant market, net income decreased from $*** in 2021 to $*** in 2022 and $*** in 2023, for a decrease of *** percent from 2021 to 2023; net income of $*** in interim 2024 was *** percent lower than the $*** in interim 2023. *Id*. at Tables 6.3 & C.2.

[169] Likewise, in the merchant market, the operating and net income margins declined from 2021 to 2023, but both metrics were lower in interim 2024 than in interim 2023.

Overall operating income as a ratio to net sales value declined from *** percent in 2021 to *** percent in 2022 and then increased to *** percent in 2023, for a decrease of *** percentage points from 2021 to 2023; the operating income margin of *** percent in interim 2024 was *** percentage points higher than the margin of *** percent in interim 2023. CR/PR at Tables 6.1 & C.1. In the merchant market, operating income as a ratio to net sales declined from *** percent in 2021 to *** percent in 2022 and then increased to *** percent in 2023, for a decrease of *** percentage points (Continued…)

decreased over that time; both metrics were lower in interim 2024 than in interim 2023.[170] The domestic industry's total assets and operating return on assets ("ROA") declined from 2021 to 2023.[171]

Based on the record in the preliminary phase of these investigations, we have found that the significant volume of subject imports undersold the domestic like product to a significant degree and took sales and market share from the domestic industry throughout the POI, and that there is some evidence that subject imports depressed domestic prices based on interim 2024 data. Subject imports gained *** percentage points of market share from 2021 to 2023, with a share *** percentage points higher in interim 2024 than in interim 2023, largely at the direct expense of the domestic industry.[172] As a result, the domestic industry's output,

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from 2021 to 2023; the operating income margin of *** percent in interim 2024 was *** percentage points lower than the margin of *** percent in interim 2023. *Id.* at Tables 6.3 & C.2.

Overall net income as a ratio to net sales value declined from *** percent in 2021 to *** percent in 2022 and then increased to *** percent in 2023, for a decrease of *** percentage points from 2021 to 2023; the net income margin of *** percent in interim 2024 was *** percentage points higher than the margin of *** percent in interim 2023. *Id.* at Tables 6.1 & C.1. In the merchant market, net income as a ratio to net sales declined from *** percent in 2021 to *** percent in 2022 and then increased to *** percent in 2023, for a decrease of *** percentage points from 2021 to 2023; the net income margin of *** percent in interim 2024 was *** percentage points lower than the margin of *** percent in interim 2023. *Id.* at Tables 6.3 & C.2.

[170] Capital expenditures decreased from $*** in 2021 to $*** in 2022 and then increased to $*** in 2023, for an increase of *** percent from 2021 to 2023; capital expenditures of $*** in interim 2024 were *** percent lower than the $*** in interim 2023. CR/PR at Tables 6.8 & C.1. R&D expenses decreased from $*** in 2021 to $*** in 2022 and $*** in 2023, for a decrease of *** percent from 2021 to 2023; R&D expenses of $*** in interim 2024 were *** percent lower than the $*** in interim 2023. *Id.* at Tables 6.10 & C.1.

[171] Net assets decreased from $*** in 2021 to $*** in 2022 and $*** in 2023, for a decrease of *** percent from 2021 to 2023. CR/PR at Tables 6.12 & C.1. ROA declined from *** percent in 2021 to *** percent in 2022 and then increased to *** percent in 2023. *Id.* at Table 6.13.

[172] *** of the *** percentage points of subject imports' market share gain from 2021 to 2023 and all of the gain in interim 2024 were at the expense of the domestic industry. CR/PR at Tables 4.7 & C.1. Similarly, in the merchant market, subject imports gained *** percentage points of market share from 2021 to 2023, with *** percentage points of that gain at the expense of the domestic industry. *Id.* at Tables 4.8 & C.2. Their share was *** percentage points higher in interim 2024 than in interim 2023, also at the expense of the domestic industry. *Id.*

employment, and financial metrics generally declined over the POI at rates that generally exceeded the declines in apparent U.S. consumption. Additionally, although several performance indicators were higher in interim 2024 than in interim 2023, concurrent with higher demand, the industry nonetheless continued to lose market share to low-priced subject imports and suffered a decline in prices, and therefore its performance was worse than it otherwise would have been. Consequently, we find that subject imports had a significant impact on the domestic industry.

We have also considered whether there are other factors that may have had an impact on the domestic industry, such as nonsubject imports and demand, to ensure that we are not attributing injury from such other factors to subject imports. Nonsubject imports were the *** source of supply to the U.S. market throughout the POI.[173] Their share of apparent U.S. consumption decreased steadily from 2021 to 2023 before increasing slightly in interim 2024.[174] The volume of nonsubject imports decreased and was substantially smaller than the volume of subject imports for most of the POI. Shipments of nonsubject imports decreased from 2021 to 2023, while shipments of subject imports increased during the same period. Although shipments of nonsubject imports were higher in interim 2024 than in interim 2023, that increase was substantially smaller than the increase in shipments of subject imports.

[173] CR/PR at Tables 4.7, 4.8, C.1 & C.2.

[174] Nonsubject imports' share of apparent U.S. consumption decreased from *** percent in 2021 to *** percent in 2022 and *** percent in 2023; their share of *** percent in interim 2024 was *** higher than their *** percent share in interim 2023. CR/PR at Tables 4.7 & C.1. In the merchant market, nonsubject imports' share of apparent U.S. consumption decreased from *** percent in 2021 to *** percent in 2022 and *** percent in 2023; their share of *** percent in interim 2024 was higher than their *** percent share in interim 2023. *Id.* at Tables 4.8 & C.2.

Accordingly, we find that nonsubject imports do not explain the extent of the domestic industry's declines in performance and market share.[175]

Nor do trends in demand explain the injury experienced by the domestic industry. In particular, these trends do not account for subject imports gaining market share at the direct expense of the domestic industry throughout the POI. Moreover, as discussed above, declines in many of the domestic industry's performance indicia exceeded the *** percentage point decline in apparent U.S. consumption between 2021 and 2023. For example, as the domestic industry lost market share to subject imports, its decline in U.S. shipments from 2021 to 2023 exceeded the decline in apparent U.S. consumption.[176] Although apparent U.S. consumption was *** percentage points higher in interim 2024 than in interim 2023, the domestic industry's U.S. shipments were only *** percent higher as it continued to lose market share to subject imports.[177]

We observe that a significant portion of the domestic industry's commercial sales were exports, and these exports declined throughout most of the POI.[178] However, these declines in exports cannot explain the underselling and shift in market share from the domestic industry to

[175] The volume of U.S. shipments of nonsubject imports decreased from *** pounds in 2021 to *** pounds in 2022 and *** pounds in 2023; shipments were higher in interim 2024 at *** pounds than in interim 2023 at *** pounds. CR/PR at Tables 4.7 & C.1. In comparison, the volume of U.S. shipments of subject imports increased from *** pounds in 2021 to *** pounds in 2022 and *** pounds in 2023; shipments of *** pounds in interim 2024 were higher than the *** pounds in interim 2023. *Id*.

[176] The domestic industry's U.S. shipments declined by *** percent from 2021 to 2023, while apparent U.S. consumption declined by *** percent. CR/PR at Tables 4.7 & C.1. In the merchant market, the domestic industry's *** percent decline in commercial U.S. shipments from 2021 to 2023 exceeded the *** percent decline in apparent U.S. consumption over the same period. *Id.* at Tables 4.8 & C.2.

[177] CR/PR at Tables 4.7 & C.1. In the merchant market, apparent U.S. consumption was *** percent higher in interim 2024 than in interim 2023, while the domestic industry's commercial U.S. shipments were *** percent higher. *Id.* at Tables 4.8 & C.2.

[178] *See* CR/PR at Tables 3.6 & C.1.

subject imports in the U.S. market. Further, as we discussed above, a significant portion of the domestic industry's U.S. shipments and exports were internal transfers or sales to related parties.[179] In any final phase of the investigations, we will further investigate the extent to which these transactions affected the domestic industry's performance.

In sum, based on the record in the preliminary phase of these investigations, we find that subject imports had a significant impact on the domestic industry. Consequently, we determine that there is a reasonable indication that an industry in the United States is materially injured by reason of subject imports from China.

VII. Conclusion

For the reasons stated above, we determine that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of ceramic abrasive grains from China that are allegedly sold in the United States at LTFV and that are allegedly subsidized by the government of China.

[179] *See, e.g.*, CR/PR at 3.5–3.8.

Part 1: Introduction

Background

These investigations result from petitions filed with the U.S. Department of Commerce ("Commerce") and the U.S. International Trade Commission ("USITC" or "Commission") by Saint-Gobain Ceramics & Plastics, Inc., Malvern, Pennsylvania, on November 25, 2024, alleging that an industry in the United States is materially injured and threatened with material injury by reason of subsidized and less-than-fair-value ("LTFV") imports of sol gel alumina-based ceramic abrasive grains ("abrasive grains")[1] from China. Table 1.1 presents information relating to the background of these investigations.[2] [3]

Table 1.1 Abrasive grains: Information relating to the background and schedule of this proceeding

Effective date	Action
November 25, 2024	Petitions filed with Commerce and the Commission; institution of the Commission investigations (89 FR 95235, December 2, 2024)
December 6, 2024	Commerce's notice of extended deadline for its initiation determination; (89 FR 100465, December 12, 2024)
December 13, 2024	Commission's notice of revised schedule (89 FR 102953, December 18, 2024)
December 16, 2024	Commission's conference
January 6, 2025	Commerce's notice of initiation
January 22, 2025	Commission's vote
January 29, 2025	Commission's determinations
February 5, 2025	Commission's views

Statutory criteria

Section 771(7)(B) of the Tariff Act of 1930 (the "Act") (19 U.S.C. § 1677(7)(B)) provides that in making its determinations of injury to an industry in the United States, the Commission--

> *shall consider (I) the volume of imports of the subject merchandise, (II) the effect of imports of that merchandise on prices in the United States for domestic like products, and (III) the impact of imports of such merchandise on domestic producers of domestic like products, but only in*

[1] See the section entitled "The subject merchandise" in Part 1 of this report for a complete description of the merchandise subject in this proceeding.

[2] Pertinent Federal Register notices are referenced in appendix A, and may be found at the Commission's website (www.usitc.gov).

[3] A list of witnesses appearing at the conference is presented in appendix B of this report.

the context of production operations within the United States; and. . . may consider such other economic factors as are relevant to the determination regarding whether there is material injury by reason of imports.

Section 771(7)(C) of the Act (19 U.S.C. § 1677(7)(C)) further provides that--[4]

In evaluating the volume of imports of merchandise, the Commission shall consider whether the volume of imports of the merchandise, or any increase in that volume, either in absolute terms or relative to production or consumption in the United States is significant.. . .In evaluating the effect of imports of such merchandise on prices, the Commission shall consider whether. . .(I) there has been significant price underselling by the imported merchandise as compared with the price of domestic like products of the United States, and (II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.. . . In examining the impact required to be considered under subparagraph (B)(i)(III), the Commission shall evaluate (within the context of the business cycle and conditions of competition that are distinctive to the affected industry) all relevant economic factors which have a bearing on the state of the industry in the United States, including, but not limited to. . . (I) actual and potential decline in output, sales, market share, gross profits, operating profits, net profits, ability to service debt, productivity, return on investments, return on assets, and utilization of capacity, (II) factors affecting domestic prices, (III) actual and potential negative effects on cash flow, inventories, employment, wages, growth, ability to raise capital, and investment, (IV) 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 domestic like product, and (V) in {an antidumping investigation}, the magnitude of the margin of dumping.

In addition, Section 771(7)(J) of the Act (19 U.S.C. § 1677(7)(J)) provides that—[5]

(J) EFFECT OF PROFITABILITY.—The Commission may not determine that there is no material injury or threat of material injury to an industry in the United States merely because that industry is profitable or because the performance of that industry has recently improved.

[4] Amended by PL 114-27 (as signed, June 29, 2015), Trade Preferences Extension Act of 2015.
[5] Amended by PL 114-27 (as signed, June 29, 2015), Trade Preferences Extension Act of 2015.

Organization of report

Part 1 of this report presents information on the subject merchandise, alleged subsidy rates/dumping margins, and domestic like product. Part 2 of this report presents information on conditions of competition and other relevant economic factors. Part 3 presents information on the condition of the U.S. industry, including data on capacity, production, shipments, inventories, and employment. Parts 4 and 5 present the volume of subject imports and pricing of domestic and imported products, respectively. Part 6 presents information on the financial experience of U.S. producers. Part 7 presents the statutory requirements and information obtained for use in the Commission's consideration of the question of threat of material injury as well as information regarding nonsubject countries.

Market summary

Abrasive grains are generally used in applications where extremely hard abrasives for the grinding or dressing of difficult materials are required.[6] The U.S. producers of abrasive grains are Saint-Gobain Ceramics & Plastics, Inc. ("Saint-Gobain Ceramics") and 3M Company ("3M"), while leading producers of abrasive grains outside the United States include Shandong Imerys Mount Tai Co., Ltd. ("Shandong Imerys") of China. The leading U.S. importers of abrasive grains from China are ***. The leading importers of abrasive grains from nonsubject sources (primarily Europe) include ***. Purchasers of abrasive grains *** were the only two purchasers to reply to the Commission's questionnaire.

Apparent U.S. consumption of abrasive grains totaled approximately *** pounds ($***) in 2023. Currently, two firms are known to produce abrasive grains in the United States. U.S. producers' U.S. shipments of abrasive grains totaled *** pounds ($***) in 2023, and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value. U.S. shipments of imports from China totaled *** pounds ($***) in 2023 and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value. U.S. imports from nonsubject sources totaled *** pounds ($***) in 2023 and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value.

[6] Petition, p. 1.8.

Summary data and data sources

A summary of data collected in these investigations is presented in appendix C, tables C.1 and C.2. The Commission's questionnaires collected data for the years 2021 to 2023 and interim periods January to September of 2023 ("interim 2023") and January to September of 2024 ("interim 2024"). Except as noted, U.S. industry data are based on questionnaire responses of two firms that accounted for all known U.S. production of abrasive grains during 2023. U.S. imports are based on the importer questionnaires of six firms. Foreign industry data are based on the questionnaire response of one firm.

Previous and related investigations

Abrasive grains have not been the subject of any prior countervailing and antidumping duty investigations in the United States. However, in November 2002, the Commission instituted an antidumping duty investigation regarding imports of out-of-scope refined brown aluminum oxide ("RBAO") from China; Investigation No. 731-TA-1022. On November 10, 2003, the Commission found that an industry in the United States was materially injured by reason of less than fair value imports of RBAO from China. On November 19, 2003, Commerce issued an antidumping duty order on imports of RBAO from China.[7] Following a third five-year review, Commerce continued the antidumping duty order, effective March 6, 2020.[8] The fourth review of the antidumping duty order is scheduled to be instituted by Commerce and the Commission in February 2025.

Nature and extent of alleged subsidies and sales at LTFV

Alleged subsidies

Effective January 6, 2025, Commerce gave notice of the initiation of its countervailing duty investigation on abrasive grains from China.[9]

[7] Refined Brown Aluminum Oxide from China, Investigation No. 731-TA-1022 (Third Review), USITC Publication 5020, February 2020, p. 3.

[8] 85 FR 13138, March 6, 2020.

[9] Commerce's notice is scheduled to be published in the Federal Register on January 14, 2025. See Sol Gel Alumina-Based Ceramic Abrasive Grains from the People's Republic of China: Initiation of Countervailing Duty Investigation, Federal Register Public Inspection Issue, January 13, 2025. For further information on the alleged subsidy programs see Commerce's notice of initiation and related CVD Initiation Checklist.

Alleged sales at LTFV

Effective January 6, 2025, Commerce gave notice of the initiation of its antidumping duty investigation on abrasive grains from China.[10] Commerce has initiated an antidumping duty investigation based on estimated dumping margins of 81.98 to 88.32 percent.

The subject merchandise

Commerce's scope

In the current proceeding, Commerce has defined the scope as follows:[11]

> *The merchandise covered by this investigation is sol gel alumina-based ceramic abrasive grains which are comprised of minimum 94% aluminum oxide (Al_2O_3), and may contain other compounds, including, but not limited to, titanium dioxide, silicon dioxide, calcium oxide, sodium superoxide, ferric oxide, magnesium oxide, di-aluminum magnesium tetroxide, lanthanum oxide, lanthanum magnesium oxide, zirconium dioxide, or zirconium carbonate. Grain sizes of sol gel alumina-based ceramic abrasive grains range from 0.85 mm to 0.0395 mm (which corresponds to American National Standards Institute (ANSI) grit sizes from 20 to 280).*
>
> *Shapes include but are not limited to angular, sharp, extra sharp, blocky, splintery, round stripped, triangular or shaped like extruded rods or stars.*
>
> *Ceramic abrasive grains have unique crystalline structures that impart certain advanced properties, such as their extreme hardness and strength ranging between 16 and 22 gigapascals by the Vickers Diamond Indent Method, high melting point (2050°C), and a single- or multi-phase microstructure, which may contain multiple phases, having crystalline sizes ranging from 0.05 to 30µm. These ceramic abrasive grains include but are not limited to blue, white, white-translucent, or off-white opaque colors.*

[10] Commerce's notice is scheduled to be published in the Federal Register on January 14, 2025. See Sol Gel Alumina-Based Ceramic Abrasive Grains from the People's Republic of China: Initiation of Less-Than-Fair-Value Investigation, Federal Register Public Inspection Issue, January 13, 2025.

[11] Sol Gel Alumina-Based Ceramic Abrasive Grains from the People's Republic of China: Initiation of Countervailing Duty Investigation and Sol Gel Alumina-Based Ceramic Abrasive Grains from the People's Republic of China: Initiation of Less-Than-Fair-Value Investigation, Federal Register Public Inspection Issue, January 13, 2025.

Sol gel alumina-based ceramic abrasive grains are covered by the scope of this investigation, whether or not incorporated into downstream articles, including but not limited to, abrasive papers, grinding wheels, grinding cylinders, and grinding discs. When incorporated into downstream articles, only the sol gel alumina-based ceramic abrasive grains component of such articles is covered by the product scope, and not the downstream product as a whole.

Tariff treatment

Based upon the scope set forth by Commerce, information available to the Commission indicates that the merchandise subject to these investigations are imported under the provisions 2818.10.2090 and 2818.10.2010 of the Harmonized Tariff Schedule of the United States ("HTS").[12] [13] The 2024 general rate of duty for HTS subheading 2818.10.20 is 1.3 percent *ad valorem*. Decisions on the tariff classification and treatment of imported goods are within the authority of U.S. Customs and Border Protection. Effective September 1, 2019, abrasive grains originating in China were subject to an additional 15 percent ad valorem duty under section 301 of the Trade Act of 1974. Effective February 14, 2020, the section 301 duty for abrasive grains was reduced to 7.5 percent ad valorem duty.[14]

[12] USITC, HTS (2024) Basic Revision 10, Publication 5569, November 2024, p. 28.10. It is worth noting that the subject merchandise does not include pink or red abrasive grains as denoted in the article description for provision 2818.10.2010. Conference transcript, p. 37 (Leonard).

[13] The merchandise subject to these investigations may be incorporated into downstream articles provided under HTS statistical reporting numbers 2818.10.1000, 2818.20.0000, 2818.30.0000, 3824.99.1100, 3824.99.1900, 6804.22.1000, 6804.22.4000, 6804.22.6000, 8204.12.0000, 8474.90.0010, 8474.90.0020, 8474.90.0050, and 8474.90.0090. Petitioner states that for classifications 2818.10.1000, 2818.20.0000, 2818.30.0000, 3824.99.1100, 3824.99.1900 subject goods, if classified correctly would not enter under these statistical reporting numbers. Conference transcript, pp. 38 to 39 (Schaefer). For subject product entering under HTS statistical reporting numbers 6804.22.1000, 6804.22.4000, 6804.22.6000, 8204.12.0000, 8474.90.0010, 8474.90.0020, 8474.90.0050, and 8474.90.0090 there is no material change to the subject goods (i.e., ceramic abrasive grains produced via the sol-gel method) when they are included in the downstream products as described. Conference transcript, p. 41 (Leonard).

[14] See HTS heading 9903.88.15 and U.S. notes 20(r) and 20(s)(i) to subchapter 3 of chapter 99. USITC, HTS (2025 Basic Edition) USITC Publication 5575, January 2025, p. 99.3.88.

The product

Description and applications

Sol-gel alumina-based ceramic abrasive grains (abrasive grains) are a solid inorganic chemical produced via the sol-gel method.[15] This chemical is a processed form of aluminum oxide (Al_2O_3), often referred to as corundum, isolated from mined bauxites.[16] Abrasive grains produced via the sol-gel method have extreme hardness and strength, resistance to abrasion and chemicals, a high melting point, high thermal conductivity, a high degree of refractoriness, high dielectric strength, and high electrical resistivity at elevated temperatures when compared to traditional aluminum oxide grains (i.e., conventional fused grains, such as white fused alumina) (table 1.2).[17] The color may range from white translucent to off-white opaque.[18]

[15] This product may be described in shorthand or otherwise referred to by the industry as "Seeded Gel Abrasive," "Non-Seeded Sol-gel Abrasive," "Sol-gel Abrasive, "Sol-gel," "BCA for Coated Abrasives," "BCA Ceramic Abrasive," "Blue Ceramic Abrasive," "Ceramic Abrasive Grains," "Ceramic Grains," as well as, in some instances by "Ceramic Abrasive," or "Ceramic Alumina Abrasive," though the latter two descriptors more aptly describe the end-product abrasives that the subject merchandise is used with, such as grinding wheels or sandpaper belts. Petition, vol. 1, p. 9.

[16] According to the petitioner the in scope abrasive grains are largely slightly opaque to white, although 3M produces in-scope abrasive grains that are blue when cobalt is introduced during the manufacturing process. Petitioner uses magnesium oxide (MgO) and zirconium dioxide (ZrO_2, zirconia) as dopants. Pink and "other colors" (e.g., red) come from the conventional (i.e., fused) process. Conference transcript, pp. 46 to 47 (Mydlarz); Petitioner's postconference brief, p. 7. The grains may include the presence of other compounds such as titanium dioxide, silicon dioxide, calcium oxide, sodium superoxide, ferric oxide, magnesium oxide, di-aluminum magnesium tetroxide, zirconium dioxide, or zirconium carbonate. The presence of these compounds may impact the color of the abrasive grains, and contribute to the underlying chemistries/properties of the abrasive grains in question. Conference transcript, pp. 46 to 47 (Schaeffer). As described in the scope, covered products in the petition contain a minimum of 94 percent aluminum oxide. Petition, vol. 1, p. 9.

[17] In industry the term "CTQ" (Critical to Quality) is term that is used to describe and identify parameters that allow the product to function. Conference transcript, p. 36 (Leonard). The differences in properties between sol-gel and conventional grains are attributed to the differences in the crystalline structures of the grains produced via the different methods. Petition, vol. 1, p. 9.

[18] Petition, vol. 1, p. 23.

Table 1.2 Comparison of Properties of Ceramic Abrasive Grains and White Fused Alumina

g/cc = grams per cubic centimeter; µm = micrometer; GPa = gigapascal

Parameter	Ceramic Abrasive Grains (*in scope*)	White Fused Alumina (*out of scope*)
Primary Process	Sintering in kiln at ~1100–1500°C	Fusion in electric arc furnace at ~2000°C
Typical Specific Gravity	3.8–4.0 g/cc	3.9–4.1 g/cc
Typical Hardness	16–22 GPa	~16 GPa
Typical Purity	95.0–99.5% Al_2O_3	≥99.0% Al_2O_3
Microstructure/ Crystalline size	0.1–30 µm	2500 µm
Commercially Available Sizes	4.0–1850 µm	~1.0–1850 µm
Melting Point	2050°C	2050°C
Dielectric Strength	High	Moderate
Refractoriness	Higher	High

Source: Adapted from petition, vol.1, pp. 10 to 11; Huang, et al., "Advances in Fabrication Of Ceramic Corundum Abrasives Based on Sol–Gel Process," Chinese Journal of Aeronautics, 34(6), June 2021, https://doi.org/10.1016/j.cja.2020.07.004; Satyendra, "Refractories and Classification of Refractories," April 30, 2017, https://www.ispatguru.com/refractories-and-classification-of-refractories/; Bhatia, "Overview of Refractory Materials," 2020, pp. 6, 14, https://www.pdhonline.com/courses/m158/m158content.pdf.

Note: Parameters here are noted to be "typical," ranges are provided, or general descriptors are given (e.g., higher). Hardness of other common "hard" abrasives are as follows: cubic boron nitride (CBN)=42-54 GPa; diamond=70-80 GPa; silicon carbide (SiC)=24-30 GPa. Refractoriness is the ability of a material to withstand the action of heat without appreciable deformation. The softening of a refractory's multiphase to reach a specific softening degree at high temperature without load measured with a pyrometric cone equivalent (PCE) test. The 99 percent alumina class of refractories is called corundum—these refractories comprise single phase, polycrystalline, and alpha-alumina (α-Al_2O_3). The description of higher and high were supplied by the petitioner.

The performance distinction between ceramic abrasive grains and conventional fused grains is due to the ceramic's unique crystalline structure, which makes ceramics more durable and less prone to cracks during grinding compared with conventional fused grains.[19] All of the ceramic abrasive grains covered by the scope of these investigations share similar physical characteristics and uses. They are comprised of a minimum of 94 percent aluminum oxide (Al_2O_3) by weight, with other trace chemical constituents present.[20]

Abrasive grains are predominantly used in industrial applications, as well as consumer products; examples include grinding, dressing, and deburring applications in the automotive, aerospace, foundry, woodworking, electronics and semiconductor, and metal and metal-matrix composite fabrication industries.[21] Additionally abrasive grains have consumer applications for construction and home improvement projects.[22] Abrasive grains can be used in a variety of products, such as bonded abrasives (e.g., grinding wheels for high tensile materials), coated abrasives (e.g., paper, discs, and belts for wood and metalworking), and surface preparation products (e.g., blast media, ceramic deburring tools, and cutting tools to roughen, shape, buff, polish, or finish a work piece) produced for bonded or coated consumer applications.[23] [24]

[19] The crystalline structure of abrasive grains limits large fracturing of the grain, preventing potential metal damage that would result if large fracturing were to occur during abrasive operations. Petition, vol. 1, p. 9.

[20] Grain sizes of ceramic abrasive grains generally range from 0.85–0.0395 mm (which corresponds to ANSI grit sizes from 20 to 280) and have a crystalline size of 0.1–30 µm. They have a generally irregular shape, including angular, sharp, extra sharp, or extruded rods, as well as other useful shapes. The hardness generally ranges between 16–22 gigapascals by the Vickers Diamond Indent Method. Petition, vol. 3, p. 23. Petitioner states that the most popular grain size is *** representing *** percent of their ceramic grain sales. Petitioner's postconference brief, p. 2.

[21] Petition, vol. 1, pp. 9 to 10.

[22] Petition, vol. 1, pp. 9 to 10.

[23] When incorporated into downstream articles, only the sol-gel alumina-based ceramic abrasive grains component of such articles is covered by the scope and not the downstream product as a whole. Petition, vol. 1, p. 13.

[24] Bonded abrasive applications (and corresponding markets) include: outside diameter (OD)/cylindrical grinding (automotive/metal working), inside diameter (ID) grinding (bearing/automotive), mounted wheels (primary metals/do-it yourself (DIY)), surface grinding (overall maintenance repair/metalworking), double disc (automotive components/foundry), tool grinding/re-grinding (overall maintenance repair/metalworking), bearing OD (bearing/automotive), gear grinding (automotive/wind/heavy equipment), creepfeed high metal removal (aerospace/ land-based turbine). Petitioner's postconference brief, p. 8

Abrasive grains manufactured via the sol-gel method are used primarily by bonded and coated abrasive manufacturers.[25] These grains are commonly incorporated through bonding (such as vitrified or resinoid)[26] or coating to grinding media (i.e., sandpapers, grinding wheels, grinding cylinders, and grinding discs), which are used primarily in industrial (but also in consumer) applications that require extremely hard abrasives for the grinding or dressing of difficult materials.[27] Bonded abrasives contain grains that are held tightly together by agents such as binders, fillers, or other forming agents into defined forms, typically a wheel, stone, or grinding segment to perform a grinding operation.[28] These can, for example, be mounted on a tool for cutting or grinding operations or used in segments by hand to sharpen knives. Coated abrasives contain abrasive grains bound, via adhesives, to a flexible substrate base material that is either cloth- or paper-based, often taking the form of flexible grinding belts or sheets for use in sanding or die grinding operations.[29]

[25] Petition, vol. 1, p. 13.

[26] Vitrified bonds are fired in a kiln to create a hard, porous structure are made from a mixture of clay, feldspar and quartz. Resinoid bonds are cured to form a solid bond, made from synthetic resins (e.g., phenolic or polyester). Action Superabrasive, "Vitrified Bond vs. Resinoid Bond Grinding Wheels," accessed December 18, 2024, https://actionsuper.com/vitrified-bond-vs-resinoid-bond-grinding-wheels/.

[27] Petition, vol. 1, p. 10.

[28] Bonded abrasives are made by combining premium grains with functional filler materials and bonding agents. This mixture is compressed into a final shape (e.g. grinding wheels/discs or sharpening stone. Customers of bonded abrasives incorporate the grain into glass/vitrified or resinoid bonds. Petition, vol. 1, pp. 9, 13; Saint Gobain, "Bonded Abrasives: A Brief Selection Guide," February 11, 2021, https://www.abrasivematerials.saint-gobain.com/articles/bonded-abrasives-brief-selection-guide. Bonded abrasive grains sizes range from 20 to 200 and follow ANSI or Fepa F sizing (both results in the same values/sizes). Petitioner's postconference brief, p. 8.

[29] Coated abrasives are engineered by depositing one or more layers of abrasive on a flexible substrate like a sheet or a belt (i.e., sandpaper). Customers of coated abrasives apply various organic coatings to the grain. Petition, vol. 1, p. 13; Saint Gobain, "Bonded Abrasives: A Brief Selection Guide," February 11, 2021, https://www.abrasivematerials.saint-gobain.com/articles/bonded-abrasives-brief-selection-guide. Coated abrasive grains sizes range from 24 to 220 and follow Fepa P sizing. Petitioner's postconference brief, p. 8.

Manufacturing processes

The sol-gel process[30] has been adopted commercially over the past couple of decades in order to produce materials that possess both mechanical and thermal properties that exceed the properties of abrasive grains produced via traditional methods.[31] Generally the sol-gel method allows for more precision and uniformity for composition, microstructure, and purity.[32] According to petitioner, minor variations in the production processes to produce ceramic abrasive grains may occur; these variations do not impact the fundamental properties or applications of the product.[33] The sol-gel process involves the following steps: 1) solution preparation, 2) sol formation, 3) gelation, 4) drying, 5) calcination, and 6) crushing or shaping and sintering (figure 1.1). After sintering, the abrasive grains are screened to size and specifications (sizing and grading), and packed into supersacks, drums, or small bags.[34]

[30] Petitioner states that both U.S. and Chinese ceramic abrasive grains are produced using virtually identical processes. Petitioner's postconference brief, p. 4.

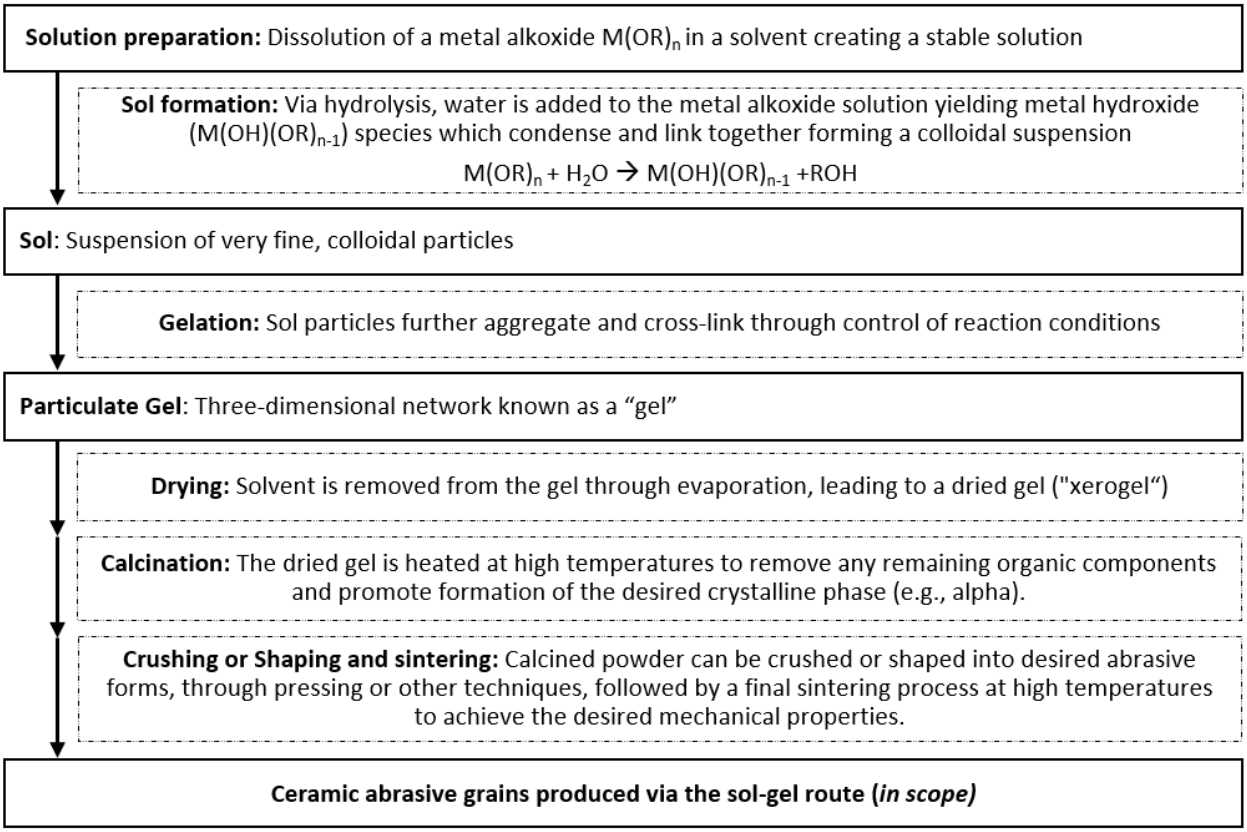
[31] Sol-gel manufacturing was first developed in the 1950s with the purpose of producing ceramics and glass advance properties, both mechanical and thermal. USITC, "Industry, Trade, and Technology Review," p. 13, https://www.usitc.gov/publications/ittr/ittr2942.pdf. The core innovations that were established in the commercialization of ceramic abrasive grains produced via the sol-gel method expired in 2005. Current innovations covered under intellectual property are more specific, and build upon the earlier initial patent this includes innovations ranging from the microstructure to the macrostructure and the shape of the abrasive grains—all of Petitioner's ceramic abrasive grain products that are protected by IP are used in bonded and sandpaper applications. Conference transcript, pp. 55 to 56 (Mydlarz); Petitioner's postconference brief, pp. 3, 6.

[32] Compared to traditional methods the sol-gel process often utilizes lower temperatures and reduced energy costs. Production of conventional grains involve smelting calcined bauxite and alumina in electric arc furnaces by electrothermal fusion at temperatures of around 2000°C. USITC, "Industry, Trade, and Technology Review," p. 13, https://www.usitc.gov/publications/ittr/ittr2942.pdf; Petition, vol. 1, p. 11.

[33] Petitioner reaffirms postconference that the difference between ceramic abrasive grains and conventional grains is the unique crystalline microstructure and crystalline size. Conventional grains may have tens of crystals, ceramic abrasive grains have billions of crystals, which in turn creates exponentially more self-sharpening points. Petitioner's postconference brief, p. 3.

[34] Petitioner's postconference brief, p. 7.

Figure 1.1 General steps for production of ceramic abrasive grain via the sol-gel method



Source: Compiled by staff based on information provided in Petition, vol. 1, p. 9, Science Direct, "Sol-Gel Processing," https://www.sciencedirect.com/topics/chemistry/sol-gel-processing#definition; Science Direct, "Sol-gel," https://www.sciencedirect.com/topics/materials-science/sol-gel#definition; Marques, "Sol-gel Process: An Overview Gel Process," June 22, 2007, https://www.lehigh.edu/imi/teched/LecBasic/Marques_Sol_gel.pdf; Conference transcript, pp. 57 to 58 (Mydlarz); Petitioner's postconference brief, 6.

Note: Calcination temperatures are usually anywhere between 400–800°C; the dried gel is kept at this temperature until both free water and more than 90 percent, by weight, of bound water is removed. Calcined material is sintered to temperatures of approximately 1200–1650°C (on average around 1300°C). Shaping is reportedly more costly, but customers may require specific shapes (i.e., not crushed) depending on end-use application for the abrasive grain in question.

The production of ceramic abrasive grains differs in both scale and time when compared to the production of conventional fused grains.[35] Ceramic abrasive grains batches on the scale of 2,000 kilograms (kg) and are produced and packaged over a period of time amounting to a little over three weeks, while traditional fused grains are produced on a scale that is an order of magnitude large (20,000 kg) and are produced and packaged in a little over a week.[36] Specifically, the production of ceramic abrasive grains usually follows this timeline:[37]

1. Mixing and reacting (2,000 kg/batch): 2 days
2. Drying: 2 days
3. Shaping (through crushing, molding or forming): 1 week
4. Sintering (through high temperature kilns) and Quality Control Checks: 1 week
5. Sizing and grading (screening to size and specifications): 3 days
6. Packaging (supersacks, drums, and small bags): 1 day

More specifically, the sol-gel process for the production of in scope abrasive grains involves forming a gel[38] from an aluminum oxide monohydrate (AlOOH, "boehmite")[39] solution, which is subsequently extruded, dried, sintered, then crushed.[40] This process forms a grain with a unique nano-structure, made up of unvarying sub-micron crystals which continuously microfracture and create new cutting edges when stressed.[41] In nature, aluminum is primarily

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[35] Petitioner's postconference brief, p. 7.

[36] Petitioner's postconference brief, p. 7.

[37] By comparison the timing for the production of conventional fused is as follows: 1) Fusion (20,000 kg/batch): 2 days; 2) Crushing: 1 day; 3) Sizing and grading (screening to size and specifications): 3 days; 4) Packaging (supersacks, drums, and small bags): 1 day. Petitioner's postconference brief, p. 7.

[38] Gel: a colloid in which a liquid contains a solid arranged in fine network extending throughout the system to produce a viscous, jelly-like product. Colloid: a state in which small particles of solid, liquid, or gas are distributed in a gas, liquid, or solid. The dispersed particles are small and do not form an obviously separate phase, but they are not so small that they can be said to be in true solution. USITC, "Industry, Trade, and Technology Review," p. 26, https://www.usitc.gov/publications/ittr/ittr2942.pdf.

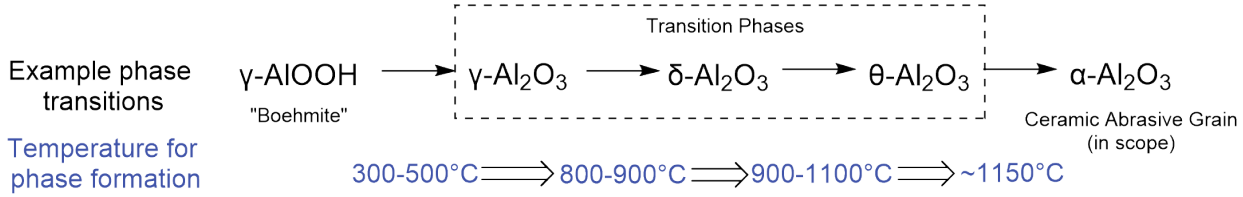
[39] Conversely, the production of out-of-scope conventional fused grains are produced via electrothermal fusion from the smelting of bauxite and alumina in electric arc furnace at high temperature. Petitioner's postconference brief, p. 5. See also, table 1.2 above.

[40] Sintering is a heat treatment process where loose material is subjected to high temperature and pressure in order to compact it into a solid piece. TWI Global, "What is Sintering," accessed December 17, 2024, https://www.twi-global.com/technical-knowledge/faqs/what-is-sintering#:~:text=Sintering%2C%20which%20is%20also%20called,fusing%20together%20into%20one%20piece; USITC, "Industry, Trade, and Technology Review," p. 13, https://www.usitc.gov/publications/ittr/ittr2942.pdf. See e.g., U.S. Patent No. 5,453,104 (Sep. 26, 1995), Petition, vol. 1, Exhibit 3.

[41] Saint Gobain, "Understanding Seeded Gel Micro Abrasive Technology," June 11, 2021, https://www.abrasivematerials.saint-gobain.com/articles/understanding-seeded-gel-micro-abrasive-technology.

found in the form of one of the following types of compounds: boehmite (AlOOH), alumina trihydrate ($Al(OH)_3$), and alumina (Al_2O_3).[42] When heated, these compounds will ultimately form α-Al_2O_3, a stable thermodynamic state, the controlled heating of boehmite, produces transition alumina phases as a function of temperature.[43] Eventually the sequential controlled heating transforms boehmite into α-Al_2O_3 (figure 1.2).[44]

Figure 1.2 Phase changes that boehmite undergoes to yield ceramic alumina abrasive grains



Source: Adapted from Petition, vol. 1, 12 and Kaunsito, et al. "Evolution of Alumina Phase Structure in Thermal Plasma Processing," Ceramics International, 49(13), https://doi.org/10.1016/j.ceramint.2023.03.263 .

Note: Alumina transformation depends on the heating rate and precursors used in the synthesis, so only temperature range for each transition can be provided. Sintering, referring to figure 1.1, is what yields the stable, desired α-Al_2O_3.

[42] Chemical abstract services numbers (CAS No.) are as follows: AlOOH CAS No. 24623-77-6; $Al(OH)_3$ CAS No. 8064-00-4; Al_2O_3 CAS No. 1344-28-1. Other materials used in the production of ceramic abrasive grains via the sol-gel method are deionized water, "seeds," and nitric acid. Additionally, dopants or metal oxide salts may be introduced during the process, to yield certain desired properties. Petition, vol. 1, p. 12. During the staff conference petitioner indicated that their manufacturing process starts with boehmite not further upstream, in the production of in scope abrasive grains. They are not aware if the other domestic producer, 3M, starts the manufacturing process further upstream (e.g., manufacturing boehmite). Conference transcript, pp. 31 to 33 (Mydlarz).

[43] The metastable transition phases, such as γ (gamma), δ (delta), and θ (theta) are typically utilized, for example, as catalysts and catalysis support materials due to their lower surface energy and high specific surface area, respectively. Kaunsito, et al., "Evolution of Alumina Phase Structure in Thermal Plasma Processing," Ceramics International, 49(13), https://doi.org/10.1016/j.ceramint.2023.03.263.

[44] Alumina ceramics have a variety of crystal phases, in addition to the α-phase of thermodynamic stability; more than a dozen transition crystal phases have thermodynamic instability (e.g., γ-, δ-, and θ-phase). Huang, et al., "Advances in Fabrication of Ceramic Corundum Abrasives Based on Sol–Gel Process," Chinese Journal of Aeronautics, 34(6), June 2021, p. 3, https://doi.org/10.1016/j.cja.2020.07.004; Petition, vol. 1, p. 12.

The standard production method for ceramic abrasive grains after sintering involves "crushing methods" which yields sharp, blocky, or splintery shapes. Abrasive grains that are produced via the crushing method typically yield in coarser sizes (20–40 grits) for ceramic abrasive grains.[45] At times, multiple crushing processes are required to produce the very fine grit sizes.[46] Petitioner states that certain customers request "shape-to-size" ceramic abrasive grains such as rod-shaped or other shaped grains (e.g., Cerpass TGE)[47] that require the application of shaping methods (e.g., extrusion method).[48] Petitioner states that customers generally have a cost-benefit analysis for using shape-to-size ceramic abrasive grains.[49] In Petitioner's opinion any application requiring high metal removal with difficult to grind materials is an ideal choice for shape-to-size abrasive grains.[50]

Ultimately, raw material and production methods can be and are adjusted to alter the microstructure of the ceramic abrasive grain. Very fine crystal sizes require high purity raw materials and processing, which may include high temperature sintering to achieve the final microstructure properties.[51] Finally, the microstructure of the abrasive grain can be controlled during production through the conditions applied during the mixing and sintering steps.[52] Specifically, the uniformity of the mixture, as well as the final time and temperature of sintering impacts the abrasive grains microstructure.[53]

[45] Yield decreases significantly however as grit sizes move finer toward 80, 100, and 120 grits. Petitioner's postconference brief, pp. 5 to 6.

[46] Petitioner's postconference brief, p. 6.

[47] See, Saint Gobain "Cerpass TGE," accessed December 20, 2024, https://www.abrasivematerials.saint-gobain.com/products/cerpass-ceramic-grains/cerpass-tge-seeded-gel-abrasive-grains.

[48] Petitioner's postconference brief, p. 6.

[49] Petitioner's postconference brief, p. 6.

[50] Petitioner's postconference brief, p. 6.

[51] Microstructure is influenced by the boehmite (crystallite size, dispersibility, and dispersion size), seeds (size and amount), impurities (e.g., silicon dioxide (SiO_2) can cause sintering issues, overfiring leads to larger microstructure), and dopants (e.g., magnesium oxide (MgO) is a sintering aid and zirconium dioxide (ZrO_2, zirconia) "pins" the microstructure). Petitioner's postconference brief, p. 6.

[52] Petitioner's postconference brief, p. 6.

[53] Petitioner's postconference brief, p. 6.

Domestic like product issues

Information was collected from responding firms in these investigations to explore whether out-of-scope non-sol gel alumina-based abrasive grains ("conventional abrasive grains") should be included in the definition of the domestic like product. The petitioner proposes a single domestic like product coextensive with the scope of the subject merchandise.[54]

The Commission's decision regarding the appropriate domestic product(s) that are "like" the subject imported product is based on a number of factors including: (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) common manufacturing facilities, production processes, and production employees; (5) customer and producer perceptions; and (6) price. Comparability ratings for each of these factors are presented in table 1.3 for in-scope sol gel versus out-of-scope conventional abrasive grains. Responding firms' narrative explanations of their rankings are presented in appendix D.

Table 1.3 Abrasive grains: U.S. producers' and importers' comparability of in-scope sol gel vs. out-of-scope conventional abrasive grains, 2023

Count in number of firms reporting

Item	Firm type	Fully	Mostly	Somewhat	Never
Physical characteristics	U.S. producers	***	***	***	***
Interchangeability	U.S. producers	***	***	***	***
Manufacturing	U.S. producers	***	***	***	***
Channels	U.S. producers	***	***	***	***
Perceptions	U.S. producers	***	***	***	***
Price	U.S. producers	***	***	***	***
Physical characteristics	Importers	0	1	2	2
Interchangeability	Importers	0	0	1	4
Manufacturing	Importers	3	0	1	1
Channels	Importers	0	0	0	3
Perceptions	Importers	1	0	1	3
Price	Importers	0	0	1	4

Source: Compiled from data submitted in response to Commission questionnaires.

[54] Petitioner's postconference brief, p. 2.

Part 2: Conditions of competition in the U.S. market

U.S. market characteristics

Sol gel alumina-based ceramic abrasive grains (abrasive grains)[1] are commonly incorporated through bonding or coating to grinding media into end use products (i.e., sandpapers, grinding wheels, grinding cylinders, and grinding discs). Abrasive grains are comprised of a minimum 94 percent aluminum oxide (Al_2O_3) and may contain other compounds with colors that may range from white translucent to off-white opaque.[2] Grain sizes range from 0.85–0.0395 mm[3] and come in and are sold as a variety of shapes including irregular, angular, sharp, extra sharp, blocky, rods, splintery, round strip, triangles, and star. The hardness of abrasive grains ranges between 16 and 22 gigapascals.[4]

The end use products that abrasive grains partially make up, are used in a variety of industrial manufacturing processes including automotive, aerospace, foundry, woodworking, electronics and semiconductors.[5] In the consumer market, abrasive grains are contained in products used in construction and home improvement.[6]

U.S. producers *** and the majority of importers (5 of 6) indicated that the market was *** to distinctive conditions of competition. U.S. producer *** reported that the abrasive grain market was subject to distinctive conditions of competition because Chinese suppliers sell below its variable costs. Importer *** reported that the abrasive grains market was subject to distinctive conditions of competition because products made in China are deemed lower quality and lower price.

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[1] This product may be described in shorthand or otherwise referred to by the industry as "Seeded Gel Abrasive," "Non-Seeded Sol-gel Abrasive," "Sol-gel Abrasive, "Sol-gel," "BCA for Coated Abrasives," "BCA Ceramic Abrasive," "Blue Ceramic Abrasive," "Ceramic Abrasive Grains," "Ceramic Grains," as well as, in some instances by "Ceramic Abrasive," or "Ceramic Alumina Abrasive," though the latter two descriptors more aptly describe the end-product abrasives that the subject merchandise is used with, such as grinding wheels or sandpaper belts. Petition, vol. 1, p. 9.

[2] Petition, vol. 1, p. 9. According to the petitioner the in scope abrasive grains are largely slightly opaque to white, although 3M produces in-scope abrasive grains that are blue by introducing cobalt during the manufacturing process. Conference transcript, pp. 46-47 (Mydlarz). The grains may include the presence of other compounds such as titanium dioxide, silicon dioxide, calcium oxide, sodium superoxide, ferric oxide, magnesium oxide, di-aluminum magnesium tetroxide, zirconium dioxide, or zirconium carbonate. The presence of these compounds may impact the color of the abrasive grains, and contribute to the underlying chemistries/properties of the abrasive grains in question. Conference transcript, pp. 46-47 (Schaeffer).

[3] Corresponds to ANSI grit sizes from 20 to 280. The crystalline size of ceramic abrasive grains generally ranges from 0.1–30 µm. Petition, vol. 3, p. 23.

[4] Per the Vickers Diamond Indent Method. Petition, vol. 3, p. 23.

[5] Conference transcript, p. 9.

[6] Conference transcript, p. 9.

Apparent U.S. consumption of abrasive grains decreased in both quantity and value from 2021 to 2023. Apparent U.S. consumption was higher in interim 2024 compared to interim 2023 in terms of quantity and value.

Impact of section 301 tariffs and 232 tariffs

U.S. producers and importers were asked to report the impact of section 301 tariffs and 232 tariffs (table 2.1). *** responding U.S. producers reported that section 232 tariffs *** on the U.S. market for abrasive grains while two responding importers reported that section 232 tariffs had no impact on the U.S. market; the remaining three importers reported that they did not know if there was an impact. *** responding U.S. producers and half of importers reported that section 301 tariffs *** on the U.S. market for abrasive grains.

Table 2.1 Abrasive grains: Count of firms' responses regarding if there was any impact of the 232 measures and 301 tariffs

Count in number of firms reporting

Item	Firm type	Yes	No	Don't know
232 measures	U.S. producers	***	***	***
232 measures	Importers	0	3	3
301 tariffs	U.S. producers	***	***	***
301 tariffs	Importers	1	4	2

Source: Compiled from data submitted in response to Commission questionnaires.

Channels of distribution

U.S. producers and importers sold mainly to end users, as shown in table 2.2.

Table 2.2 Abrasive grains: Share of U.S. shipments by source, channel of distribution, and period

Shares in percent; interim is January to September

Source	Channel	2021	2022	2023	Interim 2023	Interim 2024
United States	Distributors	***	***	***	***	***
United States	End users	***	***	***	***	***
China	Distributors	***	***	***	***	***
China	End users	***	***	***	***	***
Nonsubject	Distributors	***	***	***	***	***
Nonsubject	End users	***	***	***	***	***
All imports	Distributors	***	***	***	***	***
All imports	End users	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Geographic distribution

U.S. producers reported selling abrasive grains to the *** regions of the United States (table 2.3). Importers reported selling to all regions of the United States. For U.S. producers, *** percent of sales were between 101 and 1,000 miles, and *** percent were over 1,000 miles. Importers sold *** percent between 101 and 1,000 miles, and *** percent over 1,000 miles.

Table 2.3 Abrasive grains: Count of U.S. producers' and U.S. importers' geographic markets

Count in number of firms reporting

Region	U.S. producers	China
Northeast	***	1
Midwest	***	3
Southeast	***	1
Central Southwest	***	1
Mountain	***	1
Pacific Coast	***	2
Other	***	1
All regions (except Other)	***	1
Reporting firms	2	4

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Other U.S. markets include AK, HI, PR, and VI.

Supply and demand considerations

U.S. supply

Table 2.4 provides a summary of the supply factors regarding abrasive grains from U.S. producers and from subject countries.

Table 2.4: Abrasive grains: Supply factors that affect the ability to increase shipments to the U.S. market, by country

Quantity in 1,000 pounds; ratios and shares in percent; count in number of firms reporting

Factor	Measure	United States	China
Capacity 2021	Quantity	***	***
Capacity 2023	Quantity	***	***
Capacity utilization 2021	Ratio	***	***
Capacity utilization 2023	Ratio	***	***
Inventories to total shipments 2021	Ratio	***	***
Inventories to total shipments 2023	Ratio	***	***
Home market shipments 2023	Share	***	***
Non-US export market shipments 2023	Share	***	***
Ability to shift production	Count	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Responding U.S. producers accounted for all known U.S. production of abrasive grains in 2023. The responding foreign producer/exporter accounted for *** percent of U.S. imports of abrasive grains from China during 2023. For additional data on the number of responding firms and their share of U.S. production and of U.S. imports from each subject country, please refer to Part I, "Summary Data and Data Sources."

Domestic production

Based on available information, U.S. producers of abrasive grains have the ability to respond to changes in demand with large changes in the quantity of shipments of U.S.-produced abrasive grains to the U.S. market. The main contributing factors to this degree of responsiveness of supply are the availability of unused capacity, the availability of inventories, and the ability to shift products from alternate markets. Factors mitigating the responsiveness of supply include the inability to shift production to or from alternate products.

U.S. producers reported decreased production and production capacity from 2021 to 2023. Production decreased more than production capacity leading to a decrease in capacity utilization over the period. U.S. producers' inventories increased from 2021 to 2023. Inventories increased to *** percent of total shipments in 2023. U.S. producers reported selling nearly *** percent or more of total shipments to markets other than the United States in each period. *** responding U.S. producers reported that they were *** to produce other products on the same equipment used to produce abrasive grains.

Subject imports from China

Based on available information, producers of abrasive grains from China have the ability to respond to changes in demand with large changes in the quantity of shipments of abrasive grains to the U.S. market. The main contributing factors to this degree of responsiveness of supply are the availability of unused capacity, the availability of inventories, and the ability to shift products from alternate markets. Factors mitigating the responsiveness of supply include the inability to shift production to or from alternate products.

The sole responding Chinese producer reported that production capacity remained constant from 2021 to 2023 while capacity utilization increased over the same period. The Chinese producer's inventories decreased over the period but remained just below *** of total shipments in 2023. The Chinese producer reported selling *** percent of total shipments to markets other than the United States in 2023. The sole responding Chinese producer reported that it was *** to produce other products on the same equipment used to produce abrasive grains.

Imports from nonsubject sources

Nonsubject imports accounted for *** percent of the total value of U.S. imports in 2023. Based on official import statistics, the largest sources of nonsubject imports in 2023 were Austria, Japan, and Brazil. Combined, these countries accounted for *** percent of nonsubject imports in 2023.

Supply constraints

*** U.S. producers and the majority of responding importers (5 of 6) reported that they had not experienced supply constraints since January 1, 2021. Producer *** reported that there were supply constraints in every year, and that that there were long lead times on specific products and grit sizes during the second and third quarters every year. U.S. producers reported that the production process produces a variety of abrasive grain sizes but that the process produces smaller quantities of the smallest and largest sized abrasive grains relative to medium sized abrasive grains. Producers can take steps to alter the sizes of abrasive grains produced during the process but cannot dramatically impact the distribution of the sizes of abrasive grains created.[7] Producers can directly shape the size of the abrasive grain but this process is much more costly way to process abrasive grains.[8]

[7] Conference transcript, p. 29 (Mydlarz).
[8] Conference transcript, p. 29 (Mydlarz).

U.S. demand

Based on available information, the overall demand for abrasive grains is likely to experience small changes in response to changes in price. The main contributing factors are the lack of substitute products, the small to moderate cost share of abrasive grains in most of its end-use products, and the small share of the manufacturing costs that the end-use products represent.

End uses and cost share

U.S. demand for abrasive grains typically depends on the demand for U.S.-produced downstream products. Reported end uses include coated abrasives, bonded abrasives, grinding wheels, and nonwoven abrasives. Abrasive grains can also be used in sandblasting to smooth or clean surfaces.

The cost share of abrasive grains of end use products ranges from 5 percent for nonwoven abrasives to 40 percent for grinding wheels. Therefore, abrasive grains vary from a small to moderate share of the costs of end-use products. Abrasive grains make up 100 percent of the costs of sandblasting operations.

Business cycles

*** U.S. producers *** and the majority of importers (4 to 7) indicated that the market was subject to business cycles. Specifically, importer *** reported that there are three-year business cycles during which demand increases and decreases, adding that demand is typically slower in the fourth quarter of each year and stronger in the first quarter which aligns with the production cycles of the major end users. Importer *** reported that the business cycles are caused by demand for manufacturing that uses metal as a raw material (namely aerospace, automotive, infrastructure, transportation, and defense manufacturing).

Demand trends

*** reported domestic demand for abrasive grains had *** while foreign demand for abrasive grain had *** since January 1, 2021 (table 2.5). Half of responding importers reported that domestic demand for abrasive grains had fluctuated down or steadily decreased since January 1, 2021. The remainder of the responding importers reported that domestic demand had fluctuated up or remained constant since January 1, 2021.

Table 2.5 Abrasive grains: Count of firms' responses regarding overall domestic and foreign demand, by firm type

Count in number of firms reporting

Market	Firm type	Steadily increase	Fluctuate up	No change	Fluctuate down	Steadily decrease
Domestic demand	U.S. producers	***	***	***	***	***
Domestic demand	Importers	0	1	2	1	2
Foreign demand	U.S. producers	***	***	***	***	***
Foreign demand	Importers	1	0	1	2	0

Source: Compiled from data submitted in response to Commission questionnaires.

Importer *** reported domestic demand fluctuated higher as domestic companies continue to embrace higher costs for higher performing abrasive grains. Importer *** reported that domestic demand fluctuated down as it is receiving less orders from its customers. Producer *** reported that domestic demand had steadily decreased as a result of technical shrinkage and lower cost alternatives. The majority of importers reported that foreign demand had fluctuated down or steadily decreased since January 1, 2021 (table 2.5). Importer *** reported that demand had generally decreased in the European market and increased in the Chinese market.

Substitute products

All responding U.S. producers and importers reported that there are no substitutes for abrasive grains.

Substitutability issues

This section assesses the degree to which U.S.-produced abrasive grains and imports of abrasive grains from subject countries can be substituted for one another by examining the importance of certain purchasing factors and the comparability of abrasive grains from domestic and imported sources based on those factors. Based on available data, staff believes that there is a high degree of substitutability between domestically produced abrasive grains and abrasive grains imported from China.[9] Factors contributing to this level of substitutability

[9] The degree of substitution between domestic and imported abrasive grains depends upon the extent of product differentiation between the domestic and imported products and reflects how easily purchasers can switch from domestically produced abrasive grains to the abrasive grains imported from subject countries (or vice versa) when prices change. The degree of substitution may include such factors as quality differences (e.g., grade standards, defect rates, etc.), and differences in sales

(*continued*...)

include similar quality, availability, and lead times for abrasive grains, little preference for particular country of origin or producers, limited differences between domestically produced abrasive grains and abrasive grains imported from subject countries across multiple purchase factors, interchangeability between domestic and subject sources, and limited significant factors other than price. Although U.S. producers reported that they can adjust the shape and properties of abrasive grains for different applications, there is limited customization of abrasive grains.[10]

Factors affecting purchasing decisions

Most important purchase factors

Purchasers responding to lost sales lost revenue allegations[11] were asked to identify the main purchasing factors their firm considered in their purchasing decisions for abrasive grains.

The most often cited top three factors firms consider in their purchasing decisions for abrasive grains were price/cost and quality (2 firms each) and availability/supply (1 firm) as shown in table 2.6. Price/cost and quality were the most frequently cited first-most important factor (cited by one firm each). Availability/supply was the most frequently reported second-most important factor (1 firm); and price/cost and quality was the most frequently reported third-most important factor (1 firm each).

conditions (e.g., lead times between order and delivery dates, reliability of supply, product services, etc.).

[10] Conference transcript, p. 30 (Leonard).

[11] This information is compiled from responses by purchasers identified by Petitioner to the lost sales lost revenue allegations. See Part 5 for additional information.

Table 2.6 Abrasive grains: Count of ranking of factors used in purchasing decisions as reported by purchasers, by factor

Count in number of firms reporting

Factor	First	Second	Third	Total
Price / Cost	1	0	1	2
Quality	1	0	1	2
Availability / Supply	0	1	0	1
All other factors	0	1	0	NA

Source: Compiled from data submitted in response to Commission questionnaires.
Note: Other factors include performance.

Lead times

U.S. producers reported that *** percent of their commercial shipments of abrasive grains were produced-to-order, with lead times averaging *** days. Importers reported that *** percent of their commercial shipments were sold from U.S. inventories with lead times averaging 5 days and *** percent of their commercial shipments of abrasive grains were produced-to-order with lead times of 30 days. Importers reported that only *** percent of their commercial shipments of abrasive grains were sourced from foreign inventories with lead times averaging 14 days.

Comparison of U.S.-produced and imported abrasive grains

In order to determine whether U.S.-produced abrasive grains can generally be used in the same applications as imports from China, U.S. producers and importers were asked whether the products can always, frequently, sometimes, or never be used interchangeably. As shown in tables 2.7 and 2.8, *** U.S. producers reported that abrasive grains from the United States, China, and nonsubject countries are *** interchangeable. The majority of importers reported that abrasive grains from the United States, China, and nonsubject countries are sometimes interchangeable while the remaining half reported that they are always interchangeable. Importer *** reported abrasive grains from the United States, China, and nonsubject countries are only sometimes interchangeable because manufacturers outside of the United States “cut corners”. Importer *** reported that abrasive grains from the United States, China, and nonsubject countries are only sometimes interchangeable due to differences in bulk density specifications, grain shape, color, and performance.

Table 2.7 Abrasive grains: Count of U.S. producers reporting the interchangeability between product produced in the United States and in other countries, by country pair

Count in number of firms reporting

Country pair	Always	Frequently	Sometimes	Never
U.S. vs. China	***	***	***	***
U.S. vs. Other	***	***	***	***
China vs. Other	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Table 2.8 Abrasive grains: Count of importers reporting the interchangeability between product produced in the United States and in other countries, by country pair

Count in number of firms reporting

Country pair	Always	Frequently	Sometimes	Never
U.S. vs. China	2	0	3	0
U.S. vs. Other	1	0	2	0
China vs. Other	1	0	2	0

Source: Compiled from data submitted in response to Commission questionnaires.

In addition, U.S. producers and importers were asked to assess how often differences other than price were significant in sales of abrasive grains from the United States, China, or nonsubject countries. As seen in tables 2.9 and 2.10, U.S. producers report there are *** differences other than price between abrasive grains from the United States, China, and nonsubject countries. The majority of importers reported that there are sometimes differences other than price between abrasive grains from the United States, China, and nonsubject countries, including testing for specific applications.

Table 2.9 Abrasive grains: Count of U.S. producers reporting the significance of differences other than price between product produced in the United States and in other countries, by country pair

Count in number of firms reporting

Country pair	Always	Frequently	Sometimes	Never
U.S. vs. China	***	***	***	***
U.S. vs. other	***	***	***	***
China vs. Other	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Table 2.10 Abrasive grains: Count of importers reporting the significance of differences between product produced in the United States and in other countries, by country pair

Count in number of firms reporting

Country pair	Always	Frequently	Sometimes	Never
U.S. vs. China	0	1	5	0
U.S. vs. other	0	0	3	0
China vs. Other	0	0	3	1

Source: Compiled from data submitted in response to Commission questionnaires.

Part 3: U.S. producers' production, shipments, and employment

The Commission analyzes a number of factors in making injury determinations (see 19 U.S.C. §§ 1677(7)(B) and 1677(7)(C)). Information on the subsidies and dumping margins was presented in Part 1 of this report and information on the volume and pricing of imports of the subject merchandise is presented in Part 4 and Part 5. Information on the other factors specified is presented in this section and/or Part 6 and (except as noted) is based on the questionnaire responses of two firms that accounted for all known U.S. production of abrasive grains during 2023.

U.S. producers

The Commission issued a U.S. producer questionnaire to two firms based on information contained in the petitions. Both firms provided usable data on their operations. Table 3.1 lists U.S. producers of abrasive grains, their production locations, positions on the petitions, and shares of total production.

Table 3.1 Abrasive grains: U.S. producers, their positions on the petitions, production locations, and shares of reported production, 2023

Share in percent

Firm	Position on petitions	Production location(s)	Share of production
3M	***	Cottage Grove, MN	***
Saint-Gobain Ceramics	Petitioner	Niagara Falls, NY	***
All firms	Various	Various	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

Table 3.2 presents information on U.S. producers' ownership, related and/or affiliated firms. As indicated in table 3.2, U.S. producer *** is related to a foreign producer of the subject merchandise as well as a U.S. importer of the subject merchandise.[1] In addition, as discussed in greater detail below, no U.S. producer directly imports the subject merchandise or purchases the subject merchandise from U.S. importers.

[1] ***. Staff correspondence with ***, December 29, 2024. See also staff correspondence with ***, December 13, 2024.

Table 3.2 Abrasive grains: U.S. producers' ownership, related and/or affiliated firms

Reporting firm	Relationship type and related firm	Details of relationship
***	***	***
***	***	***
***	***	***
***	***	***
***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Producers in the United States were asked to report any change in the character of their operations or organization relating to the production of abrasive grains since January 1, 2021. Both producers indicated in their questionnaires that they had experienced such changes. Table 3.3 presents the changes identified by these producers.

Table 3.3 Abrasive grains: U.S. producers' reported changes in operations, since January 1, 2021

Item	Firm name and narrative response on changes in operations
***	***
***	***
***	***

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. production, capacity, and capacity utilization

Table 3.4 and figure 3.1 present U.S. producers' production, capacity, and capacity utilization. Abrasive grains capacity and production decreased between 2021 and 2023, by *** percent and *** percent respectively. Capacity was *** percent lower in interim 2024 than in interim 2023, while production was *** percent higher during the same period. Capacity utilization decreased by *** percentage points during 2021 to 2023, from *** percent to *** percent, but was *** percentage points higher in interim 2024 than in interim 2023. U.S. producer Saint-Gobain Ceramics reported that many operations in ceramic grain production are continuous due to the high temperature processing of ceramics and that lower production volumes result in higher maintenance costs and decrease the life of high-temperature equipment.[2]

Table 3.4 Abrasive grains: U.S. producers' output, by firm and period

Practical capacity

Capacity in 1,000 pounds; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 3.4 (Continued) Abrasive grains: U.S. producers' output, by firm and period

Production

Production in 1,000 pounds; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

[2] Petitioner's postconference brief, p. 5; and conference transcript, p. 28 (Mydlarz). U.S. producers reported installed capacity of *** pounds in each year and *** pounds in each interim period. U.S. producers' questionnaire responses, 2.3a.

Table 3.4 (Continued) Abrasive grains: U.S. producers' output, by firm and period

Capacity utilization

Capacity utilization in percent; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Note: Capacity utilization ratio represents the ratio of the U.S. producer's production to its production capacity.

Table continued.

Table 3.4 (Continued) Abrasive grains: U.S. producers' output, by firm and period

Share of production

Share in percent; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	100.0	100.0	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

Figure 3.1 Abrasive grains: U.S. producers' output, by period

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Alternative products

No U.S. producers reported producing alternative products using the same equipment, machinery, or employees as used to produce abrasive grains. Both U.S. producers reported that they are unable to switch production of abrasive grains to alternative products. Saint-Gobain Ceramics reported that ***.[3]

Constraints on capacity

Table 3.5 presents U.S. producers' reported narratives regarding practical capacity constraints. U.S. producers generally cite product mix, equipment maintenance, and availability of skilled labor as constraints on production capacity.

Table 3.5 Abrasive grains: U.S. producers' reported capacity constraints since January 1, 2021

Item	Firm name and narrative response on constraints to practical overall capacity
Production bottlenecks	***
Production bottlenecks	***
Existing labor force	***
Existing labor force	***

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. producers' U.S. shipments and exports

Table 3.6 presents U.S. producers' U.S. shipments, export shipments, and total shipments. U.S. producers' U.S. shipments decreased by *** percent between 2021 and 2023 but were *** percent higher in interim 2024 than in interim 2023. Similarly, export shipments decreased by *** percent between 2021 and 2023 but were *** percent higher in interim 2024 than in interim 2023. The average unit value ("AUV") per pound of U.S. shipments and exports increased during 2021 to 2023, by *** percent and *** percent, respectively, but were lower in interim 2024 than in interim 2023.

[3] U.S. producers' questionnaire responses, 2.4a and Saint-Gobain Ceramic's U.S. producer questionnaire, 2.4b.

U.S. shipments as a share of total shipments increased by *** percentage points during 2021 to 2023, from *** percent to *** percent and was *** percent in each interim period. Conversely, export shipments as a share of total shipments decreased by *** percentage points during 2021 to 2023, from *** percent to *** percent, and was *** percent in each interim period. U.S. producers reported exporting to ***.[4]

Table 3.6 Abrasive grains: U.S. producers' shipments, by destination and period

Quantity in 1,000 pounds; value in 1,000 dollars; unit value in dollars per 1,000 pounds; share in percent; interim is January to September

Item	Measure	2021	2022	2023	Interim 2023	Interim 2024
U.S. shipments	Quantity	***	***	***	***	***
Export shipments	Quantity	***	***	***	***	***
Total shipments	Quantity	***	***	***	***	***
U.S. shipments	Value	***	***	***	***	***
Export shipments	Value	***	***	***	***	***
Total shipments	Value	***	***	***	***	***
U.S. shipments	Unit value	***	***	***	***	***
Export shipments	Unit value	***	***	***	***	***
Total shipments	Unit value	***	***	***	***	***
U.S. shipments	Share of quantity	***	***	***	***	***
Export shipments	Share of quantity	***	***	***	***	***
Total shipments	Share of quantity	100.0	100.0	100.0	100.0	100.0
U.S. shipments	Share of value	***	***	***	***	***
Export shipments	Share of value	***	***	***	***	***
Total shipments	Share of value	100.0	100.0	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

[4] 3M reported that ***. The firm also reported that ***. Staff correspondence with ***, January 2, 2025. Saint-Gobain Ceramics reported that ***. Staff correspondence with ***, December 30, 2024.

Table 3.7 presents U.S. producers' U.S. shipments by type. The vast majority of U.S. producers' U.S. shipments consisted of internal consumption and transfers to related firms (over *** percent combined in each period). U.S. producers' abrasive grains production, whether internally consumed or sold to affiliated and unaffiliated customers, is incorporated in various downstream products, primarily for industrial applications as well as some consumer products.[5] Specifically, U.S. producers' U.S. shipments were internally consumed in the production of out-of-scope downstream products by ***.

[5] Conference transcript, pp. 8 to 9 (Mydlarz). After production, abrasive grains are typically bonded or coated to grinding media or "backings" (i.e., sandpapers, grinding wheels, grinding cylinders, grinding discs, etc.) for end use in high-precision manufacturing tools across a variety of industries. Petition, p. 1.4.

Table 3.7 Abrasive grains: U.S. producers' U.S. shipments, by type and period

Quantity in 1,000 pounds; value in 1,000 dollars; unit value in dollars per 1,000 pounds; share in percent; interim is January to September

Item	Measure	2021	2022	2023	Interim 2023	Interim 2024
Commercial U.S. shipments	Quantity	***	***	***	***	***
Internal consumption	Quantity	***	***	***	***	***
Transfers to related firms	Quantity	***	***	***	***	***
U.S. shipments	Quantity	***	***	***	***	***
Commercial U.S. shipments	Value	***	***	***	***	***
Internal consumption	Value	***	***	***	***	***
Transfers to related firms	Value	***	***	***	***	***
U.S. shipments	Value	***	***	***	***	***
Commercial U.S. shipments	Unit value	***	***	***	***	***
Internal consumption	Unit value	***	***	***	***	***
Transfers to related firms	Unit value	***	***	***	***	***
U.S. shipments	Unit value	***	***	***	***	***
Commercial U.S. shipments	Share of quantity	***	***	***	***	***
Internal consumption	Share of quantity	***	***	***	***	***
Transfers to related firms	Share of quantity	***	***	***	***	***
U.S. shipments	Share of quantity	100.0	100.0	100.0	100.0	100.0
Commercial U.S. shipments	Share of value	***	***	***	***	***
Internal consumption	Share of value	***	***	***	***	***
Transfers to related firms	Share of value	***	***	***	***	***
U.S. shipments	Share of value	100.0	100.0	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

Tables 3.8 and 3.9 present U.S. producers' U.S. shipments for use in total and merchant market apparent U.S. consumption, respectively, including ***.[6]

[6] ***. *** U.S. importer questionnaire response, 2.9.

Table 3.8 Abrasive grains: U.S. producers' shipments for use in total apparent U.S. consumption, by source and period

Quantity in 1,000 pounds; value in 1,000 dollars; interim is January to September

Item	Measure	2021	2022	2023	Interim 2023	Interim 2024
U.S. shipments	Quantity	***	***	***	***	***
*** U.S. shipments of imports of U.S.-produced abrasive grains incorporated in downstream products	Quantity	***	***	***	***	***
U.S. shipments for use in total market consumption	Quantity	***	***	***	***	***
U.S. shipments	Value	***	***	***	***	***
*** U.S. shipments of imports of U.S.-produced abrasive grains incorporated in downstream products	Value	***	***	***	***	***
U.S. shipments for use in total market consumption	Value	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Table 3.9 Abrasive grains: U.S. producers' shipments for use in merchant market apparent U.S. consumption, by source and period

Quantity in 1,000 pounds; value in 1,000 dollars; interim is January to September

Item	Measure	2021	2022	2023	Interim 2023	Interim 2024
Commercial U.S. shipments	Quantity	***	***	***	***	***
*** commercial U.S. shipments of imports of U.S.-produced abrasive grains incorporated in downstream products	Quantity	***	***	***	***	***
Commercial U.S. shipments for use in merchant market consumption	Quantity	***	***	***	***	***
Commercial U.S. shipments	Value	***	***	***	***	***
*** commercial U.S. shipments of imports of U.S.-produced abrasive grains incorporated in downstream products	Value	***	***	***	***	***
Commercial U.S. shipments for use in merchant market consumption	Value	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Captive consumption

Section 771(7)(C)(iv) of the Act states that–[7]

> *If domestic producers internally transfer significant production of the domestic like product for the production of a downstream article and sell significant production of the domestic like product in the merchant market, and the Commission finds that–*
>
> *(I) the domestic like product produced that is internally transferred for processing into that downstream article does not enter the merchant market for the domestic like product, and*
> *(II) the domestic like product is the predominant material input in the production of that downstream article,*
>
> *then the Commission, in determining market share and the factors affecting financial performance . . ., shall focus primarily on the merchant market for the domestic like product.*

Transfers and sales

As reported in table 3.7 above, internal consumption accounted for between *** and *** percent of U.S. producers' U.S. shipments of abrasive grains during 2021 to September 2024, while transfers to related firms accounted for between *** and *** percent during the same period.

First statutory criterion in captive consumption

The first requirement for application of the captive consumption provision is that the domestic like product that is internally transferred for processing into that downstream article not enter the merchant market for the domestic like product. Table 3.10 presents U.S. producers' production used in downstream products by type of consumption. U.S. producer *** reported internal consumption of abrasive grains for the production of downstream ***.[8] U.S. producer *** reported transfers to its affiliate ***, which internally consumes the abrasive grains in the production of downstream ***

[7] Amended by PL 114-27 (as signed, June 29, 2015), Trade Preferences Extension Act of 2015.
[8] ***'s U.S. producer questionnaire response, 2.10.

***.[9] No U.S. producer, however, reported diverting abrasive grains intended for internal consumption to the merchant market.

Table 3.10 Abrasive grains: U.S. producers' production used in downstream products, by type of consumption and period

Quantity in 1,000 pounds; interim is January to September

Shipment and consumption type	2021	2022	2023	Interim 2023	Interim 2024
Internal consumption: ***'s sold as is	***	***	***	***	***
Internal consumption: ***'s processed into downstream products	***	***	***	***	***
Transfers: ***'s sold as is	***	***	***	***	***
Transfers: ***'s processed into downstream products	***	***	***	***	***
Internal consumption and transfers: Sold as is	***	***	***	***	***
Internal consumption and transfers: Processed into downstream products	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Second statutory criterion in captive consumption

The second criterion of the captive consumption provision concerns whether the domestic like product is the predominant material input in the production of the downstream article that is captively produced. Table 3.11 presents U.S. producers' abrasive grains contribution to downstream products. With respect to the downstream articles resulting from captive production, abrasive grains reportedly comprise *** percent of the finished cost of downstream product.[10]

[9] Staff correspondence with ***, December 13, 2024; and staff correspondence with ***, December 19, 2024. Regarding its transfers to related firms, *** reported: ***. *** U.S. producer questionnaire response, 2.13.

[10] Specifically, *** reported that abrasive grains accounted for *** percent of its downstream products by quantity and *** percent by value. *** reported that abrasive grains accounted for *** percent of its downstream products by quantity and *** percent by value. ***'s U.S. producer questionnaire response, 2.11; and staff correspondence with ***, December 19, 2024.

Table 3.11 Abrasive grains: U.S. producers' abrasive grains contribution to downstream product

Share in percent

Item	Share of value	Share of quantity
Abrasive grains	***	***
All other material inputs	***	***
All material inputs	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. producers' inventories

Table 3.12 presents U.S. producers' end-of-period inventories and the ratio of these inventories to U.S. producers' production, U.S. shipments, and total shipments. U.S. producers' ending inventories decreased by *** percent between 2021 and 2023 and were *** percent lower in interim 2024 than in interim 2023. The ratio of inventories to U.S. production increased by *** percentage points during 2021 to 2023, from *** percent to *** percent but was *** percentage points lower in interim 2024 than in interim 2023. The ratio of inventories to U.S. shipments fluctuated and decreased overall by *** percentage points during 2021 to 2023, ranging between *** percent in 2023 and *** percent in 2022, and was *** percentage points lower in interim 2024 than in interim 2023. The ratio of inventories to total shipments increased by *** percentage points during 2021 to 2023, from *** percent to *** percent but was *** percentage points lower in interim 2024 than in interim 2023.

Table 3.12 Abrasive grains: U.S. producers' inventories and their ratio to select items, by period

Quantity in 1,000 pounds; share in percent; interim is January to September

Item	2021	2022	2023	Interim 2023	Interim 2024
End-of-period inventory quantity	***	***	***	***	***
Inventory ratio to U.S. production	***	***	***	***	***
Inventory ratio to U.S. shipments	***	***	***	***	***
Inventory ratio to total shipments	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. producers' imports from subject sources

U.S. producer *** affiliate *** reported importing abrasive grains from China. Table 3.13 presents U.S. producer *** U.S. production, its affiliate's U.S. imports from China, and ratio of subject imports to production. Table 3.14 presents each firm's reasons for importing.

Table 3.13 Abrasive grains: * U.S. production, affiliate *** subject imports, and ratio of subject imports to production, by period**

Quantity in 1,000 pounds; ratio in percent; interim is January to September

Item	Measure	2021	2022	2023	Interim 2023	Interim 2024
U.S. production	Quantity	***	***	***	***	***
***'s imports from China	Quantity	***	***	***	***	***
***'s imports from China	Quantity	***	***	***	***	***
***'s imports from China	Quantity	***	***	***	***	***
Ratio to production: ***'s imports from China	Ratio	***	***	***	***	***
Ratio to production: ***'s imports from China	Ratio	***	***	***	***	***
Ratio to production: ***'s imports from China	Ratio	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Table 3.14 Abrasive grains: U.S. producers' reasons for importing

Item	Narrative response on reasons for importing
***'s reason for importing	***
***'s reason for importing	***

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. producers' purchases of imports from subject sources

No responding U.S. producer reported purchases of abrasive grains from 2021 to September 2024.

U.S. employment, wages, and productivity

Table 3.15 shows U.S. producers' employment-related data. All employment-related indicators declined overall between 2021 and 2023, except hours worked per worker and unit labor costs. All employment-related indicators were higher in interim 2024 than in interim 2023, except the number of production and related workers ("PRWs"). The number of PRWs decreased by *** percent during 2021 to 2023 and were *** percent lower in interim 2024

than in interim 2023.[11] Total hours worked decreased by *** percent during 2021 to 2023 but were *** percent higher in interim 2024 than in interim 2023.[12] Similarly, wages paid decreased by *** percent during 2021 to 2023 but were *** percent higher in interim 2024 than in interim 2023.[13] Productivity decreased by *** percent during 2021 to 2023 but was *** percent higher in interim 2024 than in interim 2023.[14] Conversely, unit labor costs increased by *** percent between 2021 and 2023 and were *** percent higher in interim 2024 than in interim 2023.

Table 3.15 Abrasive grains: U.S. producers' employment related information, by period

Item	2021	2022	2023	Interim 2023	Interim 2024
Production and related workers (PRWs) (number)	***	***	***	***	***
Total hours worked (1,000 hours)	***	***	***	***	***
Hours worked per PRW (hours)	***	***	***	***	***
Wages paid ($1,000)	***	***	***	***	***
Hourly wages (dollars per hour)	***	***	***	***	***
Productivity (pounds per hour)	***	***	***	***	***
Unit labor costs (dollars per pound)	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

[11] 3M reported that ***. Saint-Gobain Ceramics similarly reported that ***. ***. U.S. producers' questionnaire responses, 2.12.

[12] 3M reported that ***.

[13] ***.

[14] ***.

Part 4: U.S. imports, apparent U.S. consumption, and market shares

U.S. importers

The Commission issued importer questionnaires to 31 firms believed to be importers of subject abrasive grains, as well as to all U.S. producers of abrasive grains.[1] Usable questionnaire responses were received from six companies, representing *** percent of U.S. imports from China and *** percent of U.S. imports from nonsubject sources in 2023 under HTS statistical reporting number 2818.10.2090, a "basket" category.[2] [3] Unless stated otherwise, imports presented in this report are based on questionnaire data.

[1] The Commission issued questionnaires to those firms identified in the petitions; staff research; and proprietary, Census-edited Customs import records.

[2] Two of six responding firms (***) reported importing out-of-scope merchandise under HTS statistical reporting number 2818.10.2090 from China and nonsubject sources. A seventh firm (***) provided a U.S. importer questionnaire response but reported that ***. ***'s importer questionnaire response is not included in the import dataset presented in this report. However, ***.

An additional nine firms certified that they had not imported abrasive grains from any source since January 1, 2021. Eight of those nine firms appeared as importers of record under HTS statistical reporting number 2818.10.2090. These firms reported importing out-of-scope non sol-gel products such as ***. Staff correspondence with representatives from ***, December 12, 2024; ***, December 13, 2024; ***, December 16, 2024; and ***, December 17, 2024.

[3] The coverage estimates presented were calculated based on proprietary Customs records using HTS statistical reporting number 2818.10.2090 (quantity of imports accounted by firms that responded to the Commission's questionnaire divided by total quantity of imports). One firm (***) reported imports from subject and nonsubject sources under another HTS statistical reporting number, 2818.10.2010, which are not included in the coverage estimates.

According to proprietary Customs records, ***, were the largest importers of record from China and nonsubject sources, respectively, during 2021 to September 2024 under HTS statistical reporting number 2818.10.2090. Neither firm provided a U.S. importer questionnaire response in these preliminary phase investigations. Staff believes that such imports from *** consist primarily of out-of-scope products as the firm did not list subject abrasive grains on its website. ***, accessed January 6, 2025.

Table 4.1 lists all responding U.S. importers of abrasive grains from China and other sources, their locations, and their shares of reported U.S. imports, in 2023.

Table 4.1 Abrasive grains: U.S. importers, their headquarters, and share of reported imports within each source, 2023

Share in percent

Firm	Headquarters	China	Nonsubject sources	All import sources
Ashine	New York, NY	***	***	***
Genesis	Davenport, IA	***	***	***
GNPGraystar	Bluffton, SC	***	***	***
Radiac	Oswego, IL	***	***	***
Saint-Gobain Abrasives	Worcester, MA	***	***	***
Saint-Gobain Ceramics	Worcester, MA	***	***	***
All firms	Various	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent. Zeroes, null values, and undefined calculations are suppressed and shown as "—".

U.S. imports

Tables 4.2 and 4.3 and figure 4.1 present data for U.S. imports of abrasive grains from China and all other sources. During 2021 to 2023, subject imports more than *** and were *** percent higher in interim 2024 than in interim 2023. Nonsubject imports decreased by *** percent between 2021 and 2023 but were more than *** higher in interim 2024 than interim 2023.[4]

Subject average unit values decreased by *** percent from 2021 to 2022 then increased by *** percent from 2022 to 2023, for an overall decrease of *** percent during 2021 to 2023, from $*** per pound to $*** per pound and were *** percent lower in interim 2024 than in interim 2023 ($*** per pound compared to $*** per pound). Nonsubject average unit values increased by *** percent between 2021 and 2023, from $*** per pound to $*** per pound but were *** percent lower in interim 2024 than in interim 2023 ($*** per pound compared to $*** per pound).

[4] Responding firms reported nonsubject imports from ***. According to official import statistics for HTS statistical reporting number 2818.10.2090, the leading nonsubject sources of imports include Austria and Japan.

As a share of total imports, subject imports increased by *** percentage points from *** percent in 2021 to *** percent in 2023 but was *** percentage points lower in interim 2024 than in interim 2023. The ratio of subject imports to U.S. production increased by *** percentage points from 2021 to 2023 to *** percent and was *** percentage points higher in interim 2024 (*** percent) compared to interim 2023 (*** percent).

Table 4.2 Abrasive grains: U.S. imports by source and period

Quantity in 1,000 pounds; value in 1,000 dollars; unit value in dollars per pound; share and ratio in percent; interim is January to September

Source	Measure	2021	2022	2023	Interim 2023	Interim 2024
China	Quantity	***	***	***	***	***
Nonsubject sources	Quantity	***	***	***	***	***
All import sources	Quantity	***	***	***	***	***
China	Value	***	***	***	***	***
Nonsubject sources	Value	***	***	***	***	***
All import sources	Value	***	***	***	***	***
China	Unit value	***	***	***	***	***
Nonsubject sources	Unit value	***	***	***	***	***
All import sources	Unit value	***	***	***	***	***
China	Share of quantity	***	***	***	***	***
Nonsubject sources	Share of quantity	***	***	***	***	***
All import sources	Share of quantity	100.0	100.0	100.0	100.0	100.0
China	Share of value	***	***	***	***	***
Nonsubject sources	Share of value	***	***	***	***	***
All import sources	Share of value	100.0	100.0	100.0	100.0	100.0
China	Ratio	***	***	***	***	***
Nonsubject sources	Ratio	***	***	***	***	***
All import sources	Ratio	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Share of quantity is the share of U.S. imports by quantity; share of value is the share of U.S. imports by value; ratio are U.S. imports to production.

Table 4.3 Abrasive grains: Changes in U.S. imports, by source and period

Changes (Δ) in percent (%) or percentage point (ppt)

Source	Measure	2021 to 2023	2021 to 2022	2022 to 2023	Interim 2023 to 2024
China	%Δ Quantity	▲***	▲***	▲***	▲***
Nonsubject sources	%Δ Quantity	▼***	▼***	▼***	▲***
All import sources	%Δ Quantity	▲***	▲***	▲***	▲***
China	%Δ Value	▲***	▲***	▲***	▼***
Nonsubject sources	%Δ Value	▼***	▼***	▼***	▲***
All import sources	%Δ Value	▲***	▲***	▲***	▲***
China	%Δ Unit value	▼***	▼***	▲***	▼***
Nonsubject sources	%Δ Unit value	▲***	▲***	▲***	▼***
All import sources	%Δ Unit value	▼***	▼***	▼***	▼***
China	ppt Δ Quantity	▲***	▲***	▲***	▼***
Nonsubject sources	ppt Δ Quantity	▼***	▼***	▼***	▲***
All import sources	ppt Δ Quantity	***	***	***	***
China	ppt Δ Value	▲***	▲***	▲***	▼***
Nonsubject sources	ppt Δ Value	▼***	▼***	▼***	▲***
All import sources	ppt Δ Value	***	***	***	***
China	ppt Δ Ratio	▲***	▲***	▲***	▲***
Nonsubject sources	ppt Δ Ratio	▼***	▼***	▼***	▲***
All import sources	ppt Δ Ratio	▲***	▲***	▲***	▲***

Note: Shares and ratios shown as “0.0” percent represent non-zero values less than “0.05” percent (if positive) and greater than “(0.05)” percent (if negative). Zeroes, null values, and undefined calculations are suppressed and shown as “—“. Period changes preceded by a “▲” represent an increase, while period changes preceded by a “▼” represent a decrease.

Figure 4.1 Abrasive grains: U.S. import quantities and average unit values, by source and period

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Table 4.4 presents U.S. producers and their affiliates' U.S. imports.

Table 4.4 Abrasive grains: U.S. producers' and affiliates' imports, by source and period

Quantity in 1,000 pounds; share and ratio in percent; interim period is January through September

Source	Measure	2021	2022	2023	Interim 2023	Interim 2024
China	Quantity	***	***	***	***	***
Nonsubject sources	Quantity	***	***	***	***	***
All import sources	Quantity	***	***	***	***	***
China	Share	***	***	***	***	***
Nonsubject sources	Share	***	***	***	***	***
All import sources	Share	***	***	***	***	***
China	Ratio	***	***	***	***	***
Nonsubject sources	Ratio	***	***	***	***	***
All import sources	Ratio	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Ratio represents the ratio of imports either directly imported by U.S. producers or imported by affiliated firms to U.S. producers. Ratios are to imports by labeled source presented in table 4.2.

Table 4.5 presents U.S. importers' U.S. shipments by product form, whether free flowing or attached to out-of-scope merchandise, and source. The majority of U.S. importers' U.S. shipments from China and all other sources in 2023 consisted of free flowing (or loose) grains.[5]

Table 4.5 Abrasive grains: U.S. imports by product form and source

Quantity in 1,000 pounds; value in 1,000 dollars; unit value in dollars per pound; share in percent; interim period is January through September

Source: Product form	Measure	2021	2022	2023	Interim 2023	Interim 2024
China: Free flowing	Quantity	***	***	***	***	***
China: Attached to out-of-scope merchandise	Quantity	***	***	***	***	***
China: All product forms	Quantity	***	***	***	***	***
China: Free flowing	Value	***	***	***	***	***
China: Attached to out-of-scope merchandise	Value	***	***	***	***	***
China: All product forms	Value	***	***	***	***	***
China: Free flowing	Unit value	***	***	***	***	***
China: Attached to out-of-scope merchandise	Unit value	***	***	***	***	***
China: All product forms	Unit value	***	***	***	***	***
China: Free flowing	Share of quantity	***	***	***	***	***
China: Attached to out-of-scope merchandise	Share of quantity	***	***	***	***	***
China: All product forms	Share of quantity	***	***	***	***	***
China: Free flowing	Share of value	***	***	***	***	***
China: Attached to out-of-scope merchandise	Share of value	***	***	***	***	***
China: All product forms	Share of value	***	***	***	***	***

Table continued.

[5] This is consistent with petitioner Saint-Gobain Ceramics' assertion that the majority of subject merchandise is of loose/free-flowing abrasive grains rather than abrasive grains incorporated in downstream, out-of-scope products. Conference transcript, pp. 18 to 19 (Schaefer).

Table 4.5 (Continued) Abrasive grains: U.S. imports by product form and source

Quantity in 1,000 pounds; value in 1,000 dollars; unit value in dollars per pound; share in percent; interim period is January through September

Source: Product form	Measure	2021	2022	2023	Interim 2023	Interim 2024
Nonsubject sources: Free flowing	Quantity	***	***	***	***	***
Nonsubject sources: Attached to out-of-scope merchandise	Quantity	***	***	***	***	***
Nonsubject sources: All product forms	Quantity	***	***	***	***	***
Nonsubject sources: Free flowing	Value	***	***	***	***	***
Nonsubject sources: Attached to out-of-scope merchandise	Value	***	***	***	***	***
Nonsubject sources: All product forms	Value	***	***	***	***	***
Nonsubject sources: Free flowing	Unit value	***	***	***	***	***
Nonsubject sources: Attached to out-of-scope merchandise	Unit value	***	***	***	***	***
Nonsubject sources: All product forms	Unit value	***	***	***	***	***
Nonsubject sources: Free flowing	Share of quantity	***	***	***	***	***
Nonsubject sources: Attached to out-of-scope merchandise	Share of quantity	***	***	***	***	***
Nonsubject sources: All product forms	Share of quantity	***	***	***	***	***
Nonsubject sources: Free flowing	Share of value	***	***	***	***	***
Nonsubject sources: Attached to out-of-scope merchandise	Share of value	***	***	***	***	***
Nonsubject sources: All product forms	Share of value	***	***	***	***	***

Table continued.

Table 4.5 (Continued) Abrasive grains: U.S. imports by product form and source

Quantity in 1,000 pounds; Value in 1,000 dollars; Unit values in dollars per pound; Share and ratio in percent; Ratio represents the ratio to U.S. production; Interim period is January through September

Source: Product form	Measure	2021	2022	2023	Interim 2023	Interim 2024
All import sources: Free flowing	Quantity	***	***	***	***	***
All import sources: Attached to out-of-scope merchandise	Quantity	***	***	***	***	***
All import sources: All product forms	Quantity	***	***	***	***	***
All import sources: Free flowing	Value	***	***	***	***	***
All import sources: Attached to out-of-scope merchandise	Value	***	***	***	***	***
All import sources: All product forms	Value	***	***	***	***	***
All import sources: Free flowing	Unit value	***	***	***	***	***
All import sources: Attached to out-of-scope merchandise	Unit value	***	***	***	***	***
All import sources: All product forms	Unit value	***	***	***	***	***
All import sources: Free flowing	Share of quantity	***	***	***	***	***
All import sources: Attached to out-of-scope merchandise	Share of quantity	***	***	***	***	***
All import sources: All product forms	Share of quantity	***	***	***	***	***
All import sources: Free flowing	Share of value	***	***	***	***	***
All import sources: Attached to out-of-scope merchandise	Share of value	***	***	***	***	***
All import sources: All product forms	Share of value	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Ratios are to imports by labeled source presented in table 4.2.

Negligibility

The statute requires that an investigation be terminated without an injury determination if imports of the subject merchandise are found to be negligible.[6] Negligible imports are generally defined in the Act, as amended, as imports from a country of merchandise corresponding to a domestic like product where such imports account for less than 3 percent of the volume of all such merchandise imported into the United States in the most recent 12-month period for which data are available that precedes the filing of the petition or the initiation of the investigation. However, if there are imports of such merchandise from a number of countries subject to investigations initiated on the same day that individually

[6] Sections 703(a)(1), 705(b)(1), 733(a)(1), and 735(b)(1) of the Act (19 U.S.C. §§ 1671b(a)(1), 1671d(b)(1), 1673b(a)(1), and 1673d(b)(1)).

account for less than 3 percent of the total volume of the subject merchandise, and if the imports from those countries collectively account for more than 7 percent of the volume of all such merchandise imported into the United States during the applicable 12-month period, then imports from such countries are deemed not to be negligible.[7] Table 4.6 presents the individual shares of total imports by source during November 2023 to October 2024.

Table 4.6 Abrasive grains: U.S. imports in the twelve-month period preceding the filing of the petition, November 2023 through October 2024

Quantity in 1,000 pounds; share in percent

Source of imports	Quantity	Share of quantity
China	***	***
Nonsubject sources	***	***
All import sources	***	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

Apparent U.S. consumption and market shares

Quantity

Total market

Table 4.7 and figure 4.2 present data on apparent U.S. total market consumption and U.S. market shares by quantity for abrasive grains. The quantity of apparent U.S. total market consumption decreased by *** percent during 2021 to 2023 but was *** percent higher in interim 2024 than in interim 2023. U.S. producers' market share decreased by *** percentage points from *** percent in 2021 to *** percent in 2023 and was *** percentage points lower in interim 2024 than in interim 2023. Subject import market share increased by *** percentage points from *** percent in 2021 to *** percent in 2023 and was *** percentage points higher in interim 2024 than in interim 2023. Nonsubject import market share decreased by *** percentage points from *** percent in 2021 to *** percent in 2023 but was *** percentage points higher in interim 2024 than in interim 2023.

[7] Section 771 (24) of the Act (19 U.S.C § 1677(24)).

Table 4.7 Abrasive grains: Apparent U.S. total market consumption and market shares based on quantity, by source and period

Quantity in 1,000 pounds; share in percent; interim is January to September

Source	Measure	2021	2022	2023	Interim 2023	Interim 2024
U.S. producers	Quantity	***	***	***	***	***
China	Quantity	***	***	***	***	***
Nonsubject sources	Quantity	***	***	***	***	***
All import sources	Quantity	***	***	***	***	***
All sources	Quantity	***	***	***	***	***
U.S. producers	Share	***	***	***	***	***
China	Share	***	***	***	***	***
Nonsubject sources	Share	***	***	***	***	***
All import sources	Share	***	***	***	***	***
All sources	Share	100.0	100.0	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

Figure 4.2 Abrasive grains: Apparent U.S. total market consumption based on quantity, by source and period

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Merchant market

Table 4.8 and figure 4.3 present data on apparent U.S. merchant market consumption and U.S. market shares by quantity for abrasive grains. The quantity of apparent U.S. merchant market consumption increased by *** percent from 2021 to 2022, then decreased by *** percent from 2022 to 2023, for an overall decrease of *** percent from 2021 to 2023. Apparent U.S. merchant market consumption was *** percent higher in interim 2024 than in interim 2023. U.S. producers' share of the merchant market decreased irregularly by *** percentage points from *** percent in 2021 to *** percent in 2023 and was *** percentage points lower in interim 2024 than in interim 2023. Subject imports' share of the merchant market increased by *** percentage points from *** percent in 2021 to *** percent in 2023 and was *** percentage points higher in interim 2024 than in interim 2023. The share of the merchant market held by nonsubject imports decreased by *** percentage points from *** percent in 2021 to *** percent in 2023 but was *** percentage points higher in interim 2024 than in interim 2023.

Table 4.8 Abrasive grains: Apparent U.S. merchant market consumption and market shares based on quantity, by source and period

Quantity in 1,000 pounds; shares in percent; interim is January to September

Source	Measure	2021	2022	2023	Interim 2023	Interim 2024
U.S. producers	Quantity	***	***	***	***	***
China	Quantity	***	***	***	***	***
Nonsubject sources	Quantity	***	***	***	***	***
All import sources	Quantity	***	***	***	***	***
All sources	Quantity	***	***	***	***	***
U.S. producers	Share	***	***	***	***	***
China	Share	***	***	***	***	***
Nonsubject sources	Share	***	***	***	***	***
All import sources	Share	***	***	***	***	***
All sources	Share	100.0	100.0	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

Figure 4.3 Abrasive grains: Apparent U.S. merchant market consumption based on quantity, by source and period

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Value

Total market

Table 4.9 and figure 4.4 present data on apparent U.S. total market consumption and U.S. market shares by value for abrasive grains. The value of apparent U.S. total market consumption decreased by *** percent from 2021 to 2022 then increased by *** percent from 2022 to 2023, for an overall decrease of *** percent from 2021 to 2023, but was *** percent higher in interim 2024 than in interim 2023. U.S. producers' market share decreased by *** percentage points from *** percent in 2021 to *** percent in 2023 and was *** percentage points lower in interim 2024 than in interim 2023. Subject import market share increased by *** percentage points from *** percent in 2021 to *** percent in 2023 and was *** percentage points higher in interim 2024 than in interim 2023. Nonsubject import market share decreased by *** percentage points from *** percent in 2021 to *** percent in 2023 but was *** higher in interim 2024 than in interim 2023.

Table 4.9 Abrasive grains: Apparent U.S. total market consumption and market shares based on value, by source and period

Value in 1,000 dollars; shares in percent; interim is January to September

Source	Measure	2021	2022	2023	Interim 2023	Interim 2024
U.S. producers	Value	***	***	***	***	***
China	Value	***	***	***	***	***
Nonsubject sources	Value	***	***	***	***	***
All import sources	Value	***	***	***	***	***
All sources	Value	***	***	***	***	***
U.S. producers	Share	***	***	***	***	***
China	Share	***	***	***	***	***
Nonsubject sources	Share	***	***	***	***	***
All import sources	Share	***	***	***	***	***
All sources	Share	100.0	100.0	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

Figure 4.4 Abrasive grains: Apparent U.S. total market consumption based on value, by source and period

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Merchant market

Table 4.10 and figure 4.5 present data on apparent U.S. merchant market consumption and U.S. market shares by value for abrasive grains. The value of apparent U.S. merchant market consumption decreased by *** percent from 2021 to 2022 then increased by *** percent from 2022 to 2023, for an overall increase of *** percent from 2021 to 2023 and was *** percent higher in interim 2024 than in interim 2023. U.S. producers' share of the merchant market decreased by *** percentage points from *** percent in 2021 to *** percent in 2023 and was *** percentage points lower in interim 2024 than in interim 2023. Subject imports' share of the merchant market increased by *** percentage points from *** percent in 2021 to *** percent in 2023 and was *** percentage points higher in interim 2024 than in interim 2023. The share of the merchant market held by nonsubject imports decreased by *** percentage points from *** percent in 2021 to *** percent in 2023 but was *** percentage points higher in interim 2024 than in interim 2023.

Table 4.10 Abrasive grains: Apparent U.S. merchant market consumption and market shares based on value, by source and period

Value in 1,000 dollars; shares in percent; interim is January to September

Source	Measure	2021	2022	2023	Interim 2023	Interim 2024
U.S. producers	Value	***	***	***	***	***
China	Value	***	***	***	***	***
Nonsubject sources	Value	***	***	***	***	***
All import sources	Value	***	***	***	***	***
All sources	Value	***	***	***	***	***
U.S. producers	Share	***	***	***	***	***
China	Share	***	***	***	***	***
Nonsubject sources	Share	***	***	***	***	***
All import sources	Share	***	***	***	***	***
All sources	Share	100.0	100.0	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

Figure 4.5 Abrasive grains: Apparent U.S. merchant market consumption based on value, by source and period

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Part 5: Pricing data

Factors affecting prices

Raw material costs

Abrasive grains are primarily comprised of aluminum oxide (Al_2O_3). There is no publicly available data on the cost of aluminum oxide. U.S. producers reported that their raw material costs decreased from *** percent of the total cost of goods sold in 2021 to *** percent in 2023; however, raw materials costs were *** percentage points higher in January through September 2024 than in the same period in 2023.

Transportation costs to the U.S. market

Transportation costs for abrasive grains shipped from China to the United States averaged 3.0 percent during 2023. These estimates were derived from official import data and represent the transportation and other charges on imports.[1]

U.S. inland transportation costs

*** responding U.S. producers reported that purchasers typically arrange transportation while the majority of responding importers reported that they typically arrange transportation to their customers. Importers reported transportation costs of 4.0 to 8.0 percent.

Pricing practices

Pricing methods

U.S. producers reported setting prices using *** while importers reported setting prices using transaction-by-transaction negotiations and price lists (table 5.1).

[1] The estimated transportation costs were obtained by subtracting the customs value from the c.i.f. value of the imports for 2023 and then dividing by the customs value based on the HTS statistical reporting number 2818.10.2090.

Table 5.1 Abrasive grains: Count of U.S. producers' and importers' reported price setting methods

Count in number of firms reporting

Method	U.S. producers	Importers
Transaction-by-transaction	***	2
Contract	***	0
Set price list	***	2
Other	***	0
Total	2	4

Source: Compiled from data submitted in response to Commission questionnaires.

Note: The sum of responses down may not add up to the total number of responding firms as each firm was instructed to check all applicable price setting methods employed.

U.S. producers reported selling *** their abrasive grains ***.[2] Importers reported selling virtually all of their abrasive grains under short-term contracts (table 5.2).

Table 5.2 Abrasive grains: U.S. producers' and importers' shares of commercial U.S. shipments by type of sale, 2023

Share in percent

Type of sale	U.S. producers	Subject importers
Long-term contracts	***	***
Annual contracts	***	***
Short-term contracts	***	***
Spot sales	***	***
Total	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Because of rounding, figures may not add to the totals shown.

*** U.S. producers reported *** during annual contracts. *** U.S. producers reported *** during annual contracts and the *** reported fixing both prices and quantities during annual contracts. *** U.S. producer reported fixing prices to raw material costs in annual contracts. *** U.S. producer that reported using ***. It reported that ***.

The sole responding importer that reported using annual contracts reported that it did not renegotiate prices, fixed prices and quantities, and did not index prices to raw materials.

[2] U.S. producer *** reported that it sold *** of its abrasive grains under annual contracts and U.S. producer *** reported that it sold the majority of its abrasive grains under ***.

Sales terms and discounts

*** U.S. producers reported typically quoting prices on *** basis and the majority of importers typically quote prices on an f.o.b. basis. U.S. producer 3M reported *** discounts while U.S. producer Saint-Gobain Ceramics reported that *** discount policy. A plurality of responding importers reported that they had no discount policy. However, one importer (***) reported offering total volume discounts while another importer (***) reported offering channel discounts.

Price and purchase cost data

The Commission requested U.S. producers and importers provide quarterly data for the total quantity and f.o.b. value of the following abrasive grain products shipped to unrelated U.S. customers during January 2021 to September 2024. Firms that imported these products from China for their own use were requested to provide import purchase cost data.

Product 1.-- Sol gel alumina-based ceramic abrasive grains, Form: blue or white translucent to off-white/opaque, with a predominant chemical composition of Al2O3 ≥ 95%, possessing a weak and splintery shape

Product 2.-- Sol gel alumina-based ceramic abrasive grains, Form: blue or white translucent to off-white/opaque, with a predominant chemical composition of Al2O3 ≥ 94%, possessing an extruded rod shape

Price data

Two U.S. producers and two importers provided usable pricing data for sales of the requested products, although not all firms reported pricing for all products for all quarters.[3] [4] [5] Pricing data reported by these firms accounted for approximately *** percent of U.S. producers' commercial U.S. shipments of abrasive grains, and *** percent of imports from

[3] Per-unit pricing data are calculated from total quantity and total value data provided by U.S. producers and importers. The precision and variation of these figures may be affected by rounding, limited quantities, and producer or importer estimates.

[4] Importer *** provided pricing data that fell outside of the normal range of the pricing products and reported these were low quality samples and not representative of the market. As such, *** responses on pricing data were not included in the report.

[5] The Commission gathered transfer pricing from U.S. producers in the event that there were insufficient pricing data from U.S. producers to present a description of the price competition market. The Commission received pricing data for a majority of periods in the investigation. The transfer data that the Commission received was different enough from pricing data to indicate that these transactions were not on the same level of trade. Staff did not present this transfer pricing in the report.

China in 2023.[6] Price data for products 1 and 2 are presented in tables 5.3 to 5.4 and figures 5.1 to 5.2.

Table 5.3 Abrasive grains: Weighted-average f.o.b. prices and quantities of domestic and imported product 1 and margins of underselling/(overselling), by source and quarter

Quantity in pounds; prices in dollars per pound; margins in percent

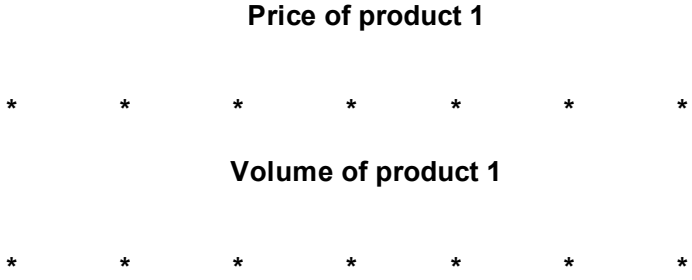
Period	U.S. price	U.S. quantity	China price	China quantity	China margin
2021 Q1	***	***	***	***	***
2021 Q2	***	***	***	***	***
2021 Q3	***	***	***	***	***
2021 Q4	***	***	***	***	***
2022 Q1	***	***	***	***	***
2022 Q2	***	***	***	***	***
2022 Q3	***	***	***	***	***
2022 Q4	***	***	***	***	***
2023 Q1	***	***	***	***	***
2023 Q2	***	***	***	***	***
2023 Q3	***	***	***	***	***
2023 Q4	***	***	***	***	***
2024 Q1	***	***	***	***	***
2024 Q2	***	***	***	***	***
2024 Q3	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Product 1: Sol gel alumina-based ceramic abrasive grains, Form: blue or white translucent to off-white/opaque, with a predominant chemical composition of Al2O3 ≥ 95%, possessing a weak and splintery shape.

[6] Pricing coverage is based on imports reported in questionnaires.

Figure 5.1 Abrasive grains: Weighted-average f.o.b. prices and quantities of domestic and imported product 1, by source and quarter



Source: Compiled from data submitted in response to Commission questionnaires.

Note: Product 1: Sol gel alumina-based ceramic abrasive grains, Form: blue or white translucent to off-white/opaque, with a predominant chemical composition of Al2O3 ≥ 95%,possessing a weak and splintery shape.

Table 5.4 Abrasive grains: Weighted-average f.o.b. prices and quantities of domestic and imported product 2 and margins of underselling/(overselling), by source and quarter

Quantity in pounds; Prices in dollars per pound; Margins in percent

Period	U.S. price	U.S. quantity	China price	China quantity	China margin
2021 Q1	***	***	***	***	***
2021 Q2	***	***	***	***	***
2021 Q3	***	***	***	***	***
2021 Q4	***	***	***	***	***
2022 Q1	***	***	***	***	***
2022 Q2	***	***	***	***	***
2022 Q3	***	***	***	***	***
2022 Q4	***	***	***	***	***
2023 Q1	***	***	***	***	***
2023 Q2	***	***	***	***	***
2023 Q3	***	***	***	***	***
2023 Q4	***	***	***	***	***
2024 Q1	***	***	***	***	***
2024 Q2	***	***	***	***	***
2024 Q3	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Product 2: Sol gel alumina-based ceramic abrasive grains, Form: blue or white translucent to off-white/opaque, with a predominant chemical composition of $Al_2O_3 \geq 94\%$, possessing an extruded rod shape.

Figure 5.2 Abrasive grains: Weighted-average f.o.b. prices and quantities of domestic and imported product 2, by source and quarter

Price of product 2

* * * * * * *

Volume of product 2

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Product 2: Sol gel alumina-based ceramic abrasive grains, Form: blue or white translucent to off-white/opaque, with a predominant chemical composition of $Al_2O_3 \geq 94\%$, possessing an extruded rod shape.

Import purchase cost data

Three importers reported usable import purchase cost data for products 1 and 2. Purchase cost data reported by these firms accounted for *** percent of imports from China in 2023.[7] Landed duty-paid purchase cost data for imports from China are presented in table 5.5 and figure 5.3, along with U.S. producers' sales prices.[8] [9]

Importers reporting import purchase cost data were asked to provide additional information regarding the costs and benefits of importing abrasive grains themselves. One of the three importers reported that they incurred additional costs beyond landed duty-paid costs by importing abrasive grains themselves rather than purchasing from a U.S. producer or U.S. importer. Importer *** estimated the total additional costs incurred were *** percent compared to the landed duty-paid value due to the additional inventory costs because of the longer lead-times associated with importing.

Two of three importers reported that they compare costs of importing to the cost of purchasing from a U.S. producer in determining whether to import abrasive grains. One importer compared costs to purchasing from another U.S. importer, and one importer did not compare costs of purchasing from either U.S. producers or importers.

Three importers identified benefits from importing abrasive grains themselves instead of purchasing from U.S. producers or importers, including lower prices and the benefits of having an integrated supply chain with production facilities in multiple countries.

Firms were also asked whether the import cost (both excluding and including additional costs) of abrasive grains they imported are lower than the price of purchasing abrasive grains from a U.S. producer or importer. One importer estimated that it saved *** percent of the purchase price by importing abrasive grains rather than purchasing from another U.S. importer. Two importers estimated that they saved between *** percent compared to purchasing the product from a U.S. producer.[10]

[7] Importer *** reported importing for its own use a small quantity of abrasive grains (***) in one quarter of the investigation.

[8] LDP import value does not include any potential additional costs that a purchaser may incur by importing rather than purchasing from another importer or U.S. producer. Price-cost differences are based on LDP import values whereas margins of underselling/overselling are based on importer sales price.

[9] No importers reported purchase cost data for product 2.

[10] Two firms reported that they based their estimates on previous company transactions.

Table 5.5 Abrasive grains: Import landed duty-paid purchase costs and domestic prices, quantities of product 1, and price-cost differentials, by quarter

Price and LDP value in dollars per pound, quantity in pound, margin and price-cost differential in percent.

Period	U.S. price	U.S. quantity	China LDP unit cost	China quantity	China Price-cost differential
2021 Q1	***	***	***	***	***
2021 Q2	***	***	***	***	***
2021 Q3	***	***	***	***	***
2021 Q4	***	***	***	***	***
2022 Q1	***	***	***	***	***
2022 Q2	***	***	***	***	***
2022 Q3	***	***	***	***	***
2022 Q4	***	***	***	***	***
2023 Q1	***	***	***	***	***
2023 Q2	***	***	***	***	***
2023 Q3	***	***	***	***	***
2023 Q4	***	***	***	***	***
2024 Q1	***	***	***	***	***
2024 Q2	***	***	***	***	***
2024 Q3	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Product 1: Sol gel alumina-based ceramic abrasive grains, Form: blue or white translucent to off-white/opaque, with a predominant chemical composition of Al2O3 ≥ 95%, possessing a weak and splintery shape.

Note: U.S. producer price data is the same as that presented in table 5.3**.**

Figure 5.3 Abrasive grains: U.S. producer prices and import purchase costs, and quantities, of product 1, by quarter

U.S. price and import purchase cost of product 1

* * * * * * *

Volume of product 1

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Product 1: Sol gel alumina-based ceramic abrasive grains, Form: blue or white translucent to off-white/opaque, with a predominant chemical composition of $Al_2O_3 \geq 95\%$, possessing a weak and splintery shape.

Price and purchase cost trends

Table 5.6 summarizes the price trends, by country and by product. As shown in the table, the domestic price for product 1 increased by *** percent during January 2021 to September 2024 and the landed duty-paid costs for product 1 decreased by *** percent over the same period.

Table 5.6 Abrasive grains: Summary of price and cost data, by product and source

Prices and unit LDP values in dollars per pound; quantity in 1,000 pounds; change in percent

Product	Source and type	Number of quarters	Volume of shipments	Low price/cost	High price/cost	First quarter price/cost	Last quarter price/cost	Percent change in price/cost over period
Product 1	United States	15	***	***	***	***	***	***
Product 1	China 1 price	6	***	***	***	***	***	***
Product 1	China 1 cost	15	***	***	***	***	***	***
Product 2	United States	9	***	***	***	***	***	***
Product 2	China price	1	***	***	***	***	***	***
Product 2	China cost	—	***	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Percentage change from the first quarter in which data were available in 2021 to the last quarter in which data were available in 2024.

Table 5.7 Abrasive grains: Indexed U.S. producer prices, by quarter

Indices in percent based on 2021 Q1 = 100.0 and 2021 Q2 = 100.0 for product 2

Period	Product 1 2021 Q1=100.0	Product 2 2021 Q2=100.0
2021 Q1	100.0	—
2021 Q2	***	100.0
2021 Q3	***	***
2021 Q4	***	***
2022 Q1	***	***
2022 Q2	***	***
2022 Q3	***	***
2022 Q4	***	***
2023 Q1	***	***
2023 Q2	***	***
2023 Q3	***	***
2023 Q4	***	***
2024 Q1	***	***
2024 Q2	***	***
2024 Q3	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent. Zeroes, null values, and undefined calculations are suppressed and shown as "---". Price and purchase cost comparisons.

Figure 5.4 Abrasive grains: Indexed U.S. producer prices, by quarter

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Table 5.8 Abrasive grains: Indexed importer prices and purchase costs, by quarter

Indexed prices in percent; 2021 Q1=100.0

Period	Product 1 - price	Product 2 - price	Product 1 - cost	Product 2 - cost
2021 Q1	—	—	100.0	—
2021 Q2	***	***	***	***
2021 Q3	***	***	***	***
2021 Q4	***	***	***	***
2022 Q1	***	***	***	***
2022 Q2	***	***	***	***
2022 Q3	***	***	***	***
2022 Q4	***	***	***	***
2023 Q1	***	***	***	***
2023 Q2	***	***	***	***
2023 Q3	***	***	***	***
2023 Q4	***	***	***	***
2024 Q1	***	***	***	***
2024 Q2	***	***	***	***
2024 Q3	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent. Zeroes, null values, and undefined calculations are suppressed and shown as "---". Price and purchase cost comparisons.

Figure 5.5 Abrasive grains: Indexed importer prices and purchase costs, by quarter

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Price comparisons

As shown in table 5.9, prices for product imported from China were below those for U.S.-produced product in all six instances (*** pounds); margins of underselling ranged from *** to *** percent. Comparisons were only available for pricing product 1. The majority of instances and volumes of underselling occurred in 2023, when underselling margins were the highest.

Table 5.9 Abrasive grains: Instances of underselling and overselling and the range and average of margins, by year

Quantity in pounds; margin in percent

Year	Type	Number of quarters	Quantity	Average margin	Min margin	Max margin
2021	Underselling	—	***	***	***	***
2022	Underselling	1	***	***	***	***
2023	Underselling	4	***	***	***	***
January through September 2024	Underselling	1	***	***	***	***
All periods	Underselling	6	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: These data include only quarters in which there is a comparison between the U.S. and subject product.

Price-cost comparisons

As shown in table 5.10, landed duty-paid costs for abrasive grains imported from China were below the sales price for U.S.-produced product in all 15 instances (*** pounds); price-cost differentials ranged from *** to *** percent. Comparisons were only available for pricing product 1. Instances of landed duty-paid costs for abrasive grains imported from China being below the sales price of U.S.-produced product were evenly distributed throughout the period of investigation. However, the maximum margins generally increased throughout the period.

Table 5.10 Abrasive grains: Instances of lower and higher import purchase costs and the range and average of price-cost differentials, by year

Quantity in pounds; margin in percent

Year	Type	Number of quarters	Quantity	Average price-cost differential	Min price-cost differential	Max price-cost differential
2021	Lower than US	4	***	***	***	***
2022	Lower than US	4	***	***	***	***
2023	Lower than US	4	***	***	***	***
January through September 2024	Lower than US	3	***	***	***	***
All periods	Lower than US	15	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: These data include only quarters in which there is a comparison between the U.S. and subject product.

Lost sales and lost revenue

The Commission requested that U.S. producers of abrasive grains report purchasers with which they experienced instances of lost sales or revenue due to competition from imports of abrasive grains from China since January 1, 2021. Both responding U.S. producers reported that they had to reduce prices, had to roll back announced price increases, and had lost sales. One U.S. producer (***) submitted lost sales and lost revenue allegations. U.S. producer *** identified six firms with which they lost both sales and revenue.

Staff contacted 11 purchasers and received responses from 2 purchasers. Responding purchasers reported purchasing *** pounds of abrasive grains during January 2021 to September 2024 (table 5.11).

Table 5.11 Abrasive grains: Purchasers' reported purchases and imports, by firm and source

Quantity in 1,000 pounds; change in shares in percentage points

Firm	Domestic quantity	Subject quantity	All other quantity	Change in domestic share	Change in subject country share
***	***	***	***	***	***
***	***	***	***	***	***
Total	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: All other includes all other sources and unknown sources. Change is the percentage point change in the share of the firm's total purchases of domestic and/or subject country imports between first and last years.

During 2023, responding purchasers purchased *** percent from U.S. producers, *** percent from China, and *** percent from nonsubject countries. Purchasers were asked about changes in their purchasing patterns from different sources since January 1, 2021. Of the responding purchasers, one purchaser (***) reported that purchases from domestic producers *** and one purchaser (***) reported ***. Purchaser *** reported that it ***, and that it ***. The other purchaser (***) reported that its purchases of abrasive grains from China had ***.

Purchaser *** reported that, since January 1, 2021, it had ***. It reported that subject import prices were *** than U.S.-produced product but reported that price *** for the decision to purchase imported product rather than U.S.-produced product (table 5.12). It identified the benefits of a *** for purchasing imported rather than U.S.-produced product.

*** of the responding purchasers reported that U.S. producers had reduced prices in order to compete with lower-priced imports from China (table 5.13).

Table 5.12 Abrasive grains: Purchasers' responses to purchasing subject imports instead of domestic product, by firm

Quantity in 1,000 pounds

Firm	Purchased subject imports instead of domestic	Imports priced lower	Choice based on price	Quantity	Explanation
***	***	***	***	***	See note[11]
***	***	***	***	***	***
All firms	Yes--1; No--1	Yes--1; No--0	Yes--0; No--1	***	NA

Source: Compiled from data submitted in response to Commission questionnaires.

[11] Purchaser *** reported it purchased subject imports instead of domestic product because it "***."

Table 5.13 Abrasive grains: Purchasers' responses to U.S. producer price reductions, by firm

Firm	Reported producers lowered prices	Estimated percent of U.S. price reduction	Explanation
***	***	***	***
***	***	***	***
All firms	Yes--0; No--2	***	NA

Source: Compiled from data submitted in response to Commission questionnaires.

Part 6: Financial experience of U.S. producers

Background[1]

Two U.S. producers provided usable financial results on their abrasive grains operations. Both U.S. producers reported financial data for a fiscal year ending December 31st. *** provided its financial data on the basis of GAAP while *** used IFRS to report its financial data.

Figures 6.1 and 6.2 present each responding firm's share of net sales quantity in 2023 for the total market (includes commercial sales, internal consumption, and transfers to related firms) and merchant market (includes commercial sales only), respectively. Commercial sales were the smallest share of net sales for U.S. producers.[2] Internal consumption and transfers to related firms accounted for the majority of net sales throughout the period examined.[3] The reported data are believed to account for all known sales by U.S. producers of abrasive grains.[4]

[1] The following abbreviations are used in the tables and/or text of this section: fiscal year ("FY"), generally accepted accounting principles ("GAAP"), International Financial Reporting Standards ("IFRS"), January 2021 to September 2024 ("period examined"), January to September 2023 ("interim 2023"), January to September 2024 ("interim 2024"), net sales ("NS"), commercial sales ("CS"), SKUs ("stock keeping units"), cost of goods sold ("COGS"), selling, general, and administrative expenses ("SG&A expenses"), average unit values ("AUVs"), research and development expenses ("R&D expenses"), and return on assets ("ROA").

[2] ***. Calculated from *** U.S. producer questionnaire, III-9a.

[3] *** reported internal consumption and/or transfers to related firms to *** but differed in how these items were classified. ***. As a result, internal consumption and transfers to related firms in part 3 of this report do not match those reported in this section. U.S. producer questionnaires, III-9c, emails from ***, December 23, 2024, and emails from ***, December 23 and 26, 2024 and January 6, 2025.

[4] Petitioning firm Saint-Gobain Ceramics notes that there are only two U.S. producers of abrasive grains using the sol-gel technology. Conference transcript, p. 5 (Schaefer).

Figure 6.1 Abrasive grains: U.S. producers' share of total market net sales quantity in 2023, by firm

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Figure 6.2 Abrasive grains: U.S. producers' share of commercial sales quantity in 2023, by firm

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Operations on abrasive grains

Tables 6.1 and 6.3 present aggregated data on U.S. producers' total and merchant market abrasive grains operations, respectively. Tables 6.2 and 6.4 present corresponding changes in AUVs for U.S. producers' total and merchant markets, respectively. Table 6.5 presents selected company-specific financial data for the total market.

Table 6.1 Abrasive grains: U.S. producers' results of total market operations, by item and period

Quantity in 1,000 pounds; value in 1,000 dollars; ratios in percent; interim is January to September

Item	Measure	2021	2022	2023	Interim 2023	Interim 2024
Commercial sales	Quantity	***	***	***	***	***
Internal consumption	Quantity	***	***	***	***	***
Transfers to related firms	Quantity	***	***	***	***	***
Total net sales	Quantity	***	***	***	***	***
Commercial sales	Value	***	***	***	***	***
Internal consumption	Value	***	***	***	***	***
Transfers to related firms	Value	***	***	***	***	***
Total net sales	Value	***	***	***	***	***
COGS: Raw materials	Value	***	***	***	***	***
COGS: Direct labor	Value	***	***	***	***	***
COGS: Other factory	Value	***	***	***	***	***
COGS: Total	Value	***	***	***	***	***
Gross profit or (loss)	Value	***	***	***	***	***
SG&A expenses	Value	***	***	***	***	***
Operating income or (loss)	Value	***	***	***	***	***
All other expense / (income), net	Value	***	***	***	***	***
Net income or (loss)	Value	***	***	***	***	***
Depreciation/amortization	Value	***	***	***	***	***
Cash flow	Value	***	***	***	***	***
COGS: Raw materials	Ratio to NS	***	***	***	***	***
COGS: Direct labor	Ratio to NS	***	***	***	***	***
COGS: Other factory	Ratio to NS	***	***	***	***	***
COGS: Total	Ratio to NS	***	***	***	***	***
Gross profit	Ratio to NS	***	***	***	***	***
SG&A expense	Ratio to NS	***	***	***	***	***
Operating income or (loss)	Ratio to NS	***	***	***	***	***
Net income or (loss)	Ratio to NS	***	***	***	***	***

Table continued.

Table 6.1 (Continued) Abrasive grains: U.S. producers' results of total market operations, by item and period

Shares in percent; unit values in dollars per pound; count in number of firms reporting; interim is January to September

Item	Measure	2021	2022	2023	Interim 2023	Interim 2024
COGS: Raw materials	Share	***	***	***	***	***
COGS: Direct labor	Share	***	***	***	***	***
COGS: Other factory	Share	***	***	***	***	***
COGS: Total	Share	***	***	***	***	***
Commercial sales	Unit value	***	***	***	***	***
Internal consumption	Unit value	***	***	***	***	***
Transfers to related firms	Unit value	***	***	***	***	***
Total net sales	Unit value	***	***	***	***	***
COGS: Raw materials	Unit value	***	***	***	***	***
COGS: Direct labor	Unit value	***	***	***	***	***
COGS: Other factory	Unit value	***	***	***	***	***
COGS: Total	Unit value	***	***	***	***	***
Gross profit or (loss)	Unit value	***	***	***	***	***
SG&A expenses	Unit value	***	***	***	***	***
Operating income or (loss)	Unit value	***	***	***	***	***
Net income or (loss)	Unit value	***	***	***	***	***
Operating losses	Count	***	***	***	***	***
Net losses	Count	***	***	***	***	***
Data	Count	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Shares represent the share of COGS.

Table 6.2 Abrasive grains: Changes in AUVs between comparison periods of the total market

Changes in percent; interim is January to September

Item	2021 to 2023	2021 to 2022	2022 to 2023	Interim 2023 to 2024
Commercial sales	▲***	▼***	▲***	▼***
Internal consumption	▲***	▲***	▲***	▼***
Transfers to related firms	▲***	▲***	▲***	▲***
Total net sales	▲***	▲***	▲***	▼***
COGS: Raw materials	▼***	▼***	▼***	▲***
COGS: Direct labor	▲***	▲***	▼***	▲***
COGS: Other factory	▲***	▲***	▲***	▼***
COGS: Total	▲***	▲***	▲***	▼***

Table continued.

Table 6.2 (Continued) Abrasive grains: Changes in AUVs between comparison periods of the total market

Changes in dollars per pound; interim is January to September

Item	2021 to 2023	2021 to 2022	2022 to 2023	Interim 2023 to 2024
Commercial sales	▲***	▼***	▲***	▼***
Internal consumption	▲***	▲***	▲***	▼***
Transfers to related firms	▲***	▲***	▲***	▲***
Total net sales	▲***	▲***	▲***	▼***
COGS: Raw materials	▼***	▼***	▼***	▲***
COGS: Direct labor	▲***	▲***	▼***	▲***
COGS: Other factory	▲***	▲***	▲***	▼***
COGS: Total	▲***	▲***	▲***	▼***
Gross profit or (loss)	▼***	▼***	▲***	▼***
SG&A expense	▲***	▲***	▼***	▼***
Operating income or (loss)	▼***	▼***	▲***	▲***
Net income or (loss)	▼***	▼***	▲***	▲***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Period changes preceded by a "▲" represent an increase, while period changes preceded by a "▼" represent a decrease.

Table 6.3 Abrasive grains: U.S. producers' results of merchant market operations, by item and period

Quantity in 1,000 pounds; value in 1,000 dollars; ratios in percent; interim is January to September

Item	Measure	2021	2022	2023	Interim 2023	Interim 2024
Commercial sales	Quantity	***	***	***	***	***
Commercial sales	Value	***	***	***	***	***
COGS: Raw materials	Value	***	***	***	***	***
COGS: Direct labor	Value	***	***	***	***	***
COGS: Other factory	Value	***	***	***	***	***
COGS: Total	Value	***	***	***	***	***
Gross profit or (loss)	Value	***	***	***	***	***
SG&A expenses	Value	***	***	***	***	***
Operating income or (loss)	Value	***	***	***	***	***
All other expense / (income), net	Value	***	***	***	***	***
Net income or (loss)	Value	***	***	***	***	***
Depreciation/amortization	Value	***	***	***	***	***
Cash flow	Value	***	***	***	***	***
COGS: Raw materials	Ratio to CS	***	***	***	***	***
COGS: Direct labor	Ratio to CS	***	***	***	***	***
COGS: Other factory	Ratio to CS	***	***	***	***	***
COGS: Total	Ratio to CS	***	***	***	***	***
Gross profit	Ratio to CS	***	***	***	***	***
SG&A expense	Ratio to CS	***	***	***	***	***
Operating income or (loss)	Ratio to CS	***	***	***	***	***
Net income or (loss)	Ratio to CS	***	***	***	***	***

Table continued.

Table 6.3 (Continued) Abrasive grains: U.S. producers' results of merchant market operations, by item and period

Shares in percent; unit values in dollars per pound; count in number of firms reporting; interim is January to September

Item	Measure	2021	2022	2023	Interim 2023	Interim 2024
COGS: Raw materials	Share	***	***	***	***	***
COGS: Direct labor	Share	***	***	***	***	***
COGS: Other factory	Share	***	***	***	***	***
COGS: Total	Share	***	***	***	***	***
Commercial sales	Unit value	***	***	***	***	***
COGS: Raw materials	Unit value	***	***	***	***	***
COGS: Direct labor	Unit value	***	***	***	***	***
COGS: Other factory	Unit value	***	***	***	***	***
COGS: Total	Unit value	***	***	***	***	***
Gross profit or (loss)	Unit value	***	***	***	***	***
SG&A expenses	Unit value	***	***	***	***	***
Operating income or (loss)	Unit value	***	***	***	***	***
Net income or (loss)	Unit value	***	***	***	***	***
Operating losses	Count	***	***	***	***	***
Net losses	Count	***	***	***	***	***
Data	Count	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Shares represent the share of COGS.

Table 6.4 Abrasive grains: Changes in AUVs between comparison periods of the merchant market

Changes in percent; interim is January to September

Item	2021 to 2023	2021 to 2022	2022 to 2023	Interim 2023 to 2024
Commercial sales	▲***	▼***	▲***	▼***
COGS: Raw materials	▼***	▼***	▲***	▼***
COGS: Direct labor	▲***	▲***	▼***	▲***
COGS: Other factory	▲***	▲***	▲***	▼***
COGS: Total	▲***	▲***	▲***	▼***

Table continued.

Table 6.4 (Continued) Abrasive grains: Changes in AUVs between comparison periods of the merchant market

Changes in dollars per pound; interim is January to September

Item	2021 to 2023	2021 to 2022	2022 to 2023	Interim 2023 to 2024
Commercial sales	▲***	▼***	▲***	▼***
COGS: Raw materials	▼***	▼***	▲***	▼***
COGS: Direct labor	▲***	▲***	▼***	▲***
COGS: Other factory	▲***	▲***	▲***	▼***
COGS: Total	▲***	▲***	▲***	▼***
Gross profit or (loss)	▼***	▼***	▲***	▼***
SG&A expense	▼***	▼***	▲***	▼***
Operating income or (loss)	▼***	▼***	▲***	▼***
Net income or (loss)	▼***	▼***	▲***	▼***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Period changes preceded by a "▲" represent an increase, while period changes preceded by a "▼" represent a decrease.

Table 6.5 Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Net sales quantity

Quantity in 1,000 pounds; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Net sales value

Value in 1,000 dollars; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

COGS

Value in 1,000 dollars; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Gross profit or (loss)

Value in 1,000 dollars; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.3 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

SG&A expenses

Value in 1,000 dollars; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Operating income or (loss)

Value in 1,000 dollars; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Net income or (loss)

Value in 1,000 dollars; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

COGS to net sales ratio

Ratios in percent; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Gross profit or (loss) to net sales ratio

Ratios in percent; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

SG&A expenses to net sales ratio

Ratios in percent; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Operating income or (loss) to net sales ratio

Ratios in percent; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Net income or (loss) to net sales ratio

Ratios in percent; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Unit net sales value

Unit values in dollars per pound; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Unit raw material costs

Unit values in dollars per pound; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Unit direct labor costs

Unit values in dollars per pound; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Unit other factory costs

Unit values in dollars per pound; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Unit COGS

Unit values in dollars per pound; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Unit gross profit or (loss)

Unit values in dollars per pound; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Unit SG&A expenses

Unit values in dollars per pound; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Unit operating income or (loss)

Unit values in dollars per pound; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table 6.5 (Continued) Abrasive grains: U.S. producers' total market sales, costs/expenses, and profitability, by firm and period

Unit net income or (loss)

Unit values in dollars per pound; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent. Zeroes, null values, and undefined calculations are suppressed and shown as "---".

Net sales[5]

As presented in table 6.1, total net sales include commercial sales (including exports), internal consumption, and transfers to related firms. Tables 6.1 and 6.3 show that abrasive grains sales quantity and value of U.S. producers in both categories of operations (total and merchant markets) declined each year from 2021 to 2023. Net sales were higher in the total market but were lower in the merchant market between the two interim periods. All three categories of sales (internal consumption, transfers to related firms, and commercial sales) quantities and values declined overall from 2021 to 2023. Internal consumption and transfers to related firms quantities and values were higher while commercial sales were lower in interim 2024 than in interim 2023. Table 6.1 shows that non-commercial sales (internal consumption and transfers to related firms) accounted for the largest majority of net sales in all five data periods.[6] Each firm's commercial sales patterns varied; *** commercial sales quantity and value in interim 2024 than in interim 2023.[7]

Per-pound sales values in both categories of operations (shown as net sales for the total market in table 6.1 and shown as commercial sales in the merchant market in table 6.3) increased from 2021 to 2023 but were lower in interim 2024 than in interim 2023. On a company-specific basis, both U.S. producers reported increases in the net sales AUVs of

[5] As noted earlier, U.S. producers reported commercial sales, internal consumption, and transfers to related firms. From 2021 to September 2024, aggregated commercial sales ranged from *** percent of the U.S. producers' total net sales quantity, internal consumption ranged from *** percent, and transfers to related firms ranged from *** percent. Calculated from U.S. producer questionnaires, III-9a.

[6] *** U.S. producers, commercial sales were the smallest category of net sales. *** commercial sales ranged from *** percent of its total net sales by quantity and *** percent by value from 2021 to September 2024. *** commercial sales ranged from *** percent of its total net sales by quantity and *** percent by value during the same period. Ibid.

[7] U.S. producer questionnaire, III-9g.

abrasive grains from 2021 to 2023 as well as lower net sales AUVs in interim 2024 than in interim 2023. Table 6.5 shows that *** reported higher net sales values per-pound than *** in all five data periods examined.[8] Both U.S. producers noted that product mix is the primary driver for differences in AUVs for each category of sales and also the reason for the variations in net sales AUVs from 2021 to September 2024.[9]

Cost of goods sold and gross profit or loss

Tables 6.1 and 6.3 show that other factory costs account for the largest share of total COGS in four out of five periods examined (other factory costs was second to raw material costs as a share of total COGS only in 2021). In the total market, other factory costs ranged from a low of *** percent in 2021 to a high of *** percent in 2023 as a share of total COGS (table 6.1). In the merchant market, other factory costs' share of total COGS followed a similar pattern, ranging from a low of *** percent in 2021 to a high of *** percent in 2023 (table 6.3). In absolute values, other factory costs irregularly decreased from 2021 to 2023 and were lower in interim 2024 than in interim 2023 in both markets (tables 6.1 and 6.3).[10] As a ratio to net sales, other factory costs irregularly increased from 2021 to 2023 in both markets and were lower in interim 2024 than in interim 2023 in the total market (table 6.1) but remained the same in the merchant market (table 6.3). On a per-unit basis, other factory costs consistently increased from 2021 to 2023 and were lower in interim 2024 than in interim 2023 in both markets (tables 6.1 and 6.3).[11]

With the exception of 2021 (when raw material cost represented the largest share of total COGS), raw material costs were the second largest share of total COGS in 2022, 2023, and in both interim periods. Raw material costs as a share of total COGS ranged from *** to *** percent in the total market (table 6.1), with raw material cost shares essentially the same in the merchant market, ranging from *** percent to *** percent as a share of total COGS (table 6.3). In absolute values, raw material costs consistently decreased from 2021 to 2023 in both markets (tables 6.1 and 6.3). Raw material costs were higher in interim 2024 than in interim

[8] 3M used ***. *** U.S. producer questionnaire, III-9c and email from ***, December 23, 2024.
Saint-Gobain Ceramics' ***. *** U.S. producer questionnaire, III-9c and email from ***, January 6, 2025.

[9] 3M explained that ***. *** U.S. producer questionnaire, III-9c and email from ***, December 23, 2024.
Saint-Gobain Ceramics stated that ***. Emails from ***, December 23 and 26, 2024.

[10] Saint-Gobain Ceramics reported ***. *** U.S. producer questionnaire response, III-10 and email from ***, December 26, 2024.

[11] Saint-Gobain Ceramics explained ***. U.S. producer questionnaires, III-9b and emails from ***, December 23 and 26, 2024.

2023 in the total market (table 6.1) but lower in the merchant market. On a per-unit basis, raw material costs consistently decreased in the total market (table 6.1) and irregularly decreased in the merchant market (table 6.3) from 2021 to 2023. Average unit raw material costs were higher in interim 2024 than in interim 2023 in the total market but lower in the merchant market. As a share of net sales, raw material costs declined from 2021 to 2023 but were higher in interim 2024 than in interim 2023 in both markets.[12] Boehmite accounted for the majority of raw material cost for *** and in both markets.[13] [14] Other raw material inputs include: chemical dopants, pH adjuster, and other chemical additives such as aluminum trihydrate. Tables 6.6 and 6.7 present raw materials, by type, in the total and merchant markets, respectively.

Table 6.6 Abrasive grains: U.S. producers' total market raw material costs in 2023

Value in 1,000 dollars; unit values in dollars per pound; share of value in percent

Item	Value	Unit value	Share of value
Boehmite	***	***	***
Other material inputs	***	***	***
All raw materials	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires and emails from ***, December 24, 2024.

[12] 3M explained ***. U.S. producer questionnaires, III-9b.
In addition, Saint-Gobain Ceramics explained ***. Emails from ***, December 23 and 26, 2024.
[13] The petition and the U.S. producer questionnaire ***. Email from ***, January 2, 2025.
[14] *** as the starting primary raw material to produce abrasive grains using the sol-gel process. At the staff conference, Saint-Gobain Ceramics explained using boehmite to start production of abrasive grains. Conference transcript, p. 29 (Mydlarz). ***. Email from ***, January 2, 2025.

Table 6.7 Abrasive grains: U.S. producers' merchant market raw material costs in 2023

Value in 1,000 dollars; unit values in dollars per pound; share of value in percent

Item	Value	Unit value	Share of value
Boehmite	***	***	***
Other material inputs	***	***	***
All raw materials	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires and emails from ***, December 24, 2024.

In the total market, direct labor costs ranged from *** percent to *** percent as a share of total COGS from 2021 to interim 2024 (table 6.1). Merchant market's direct labor costs were similar, ranging from *** percent to *** percent as a share of total COGS for the same period (table 6.3). In absolute values, direct labor costs consistently decreased from 2021 to 2023 in both markets (tables 6.1 and 6.3) but were higher in interim 2024 than in interim 2023 in the total market (table 6.1) yet lower in the merchant market between interim periods (table 6.3). On a per-unit basis, direct labor costs irregularly increased within a narrow band from 2021 to 2023 and were higher in interim 2024 than in interim 2023 in both markets (tables 6.1 and 6.3). As a share of net sales, direct labor costs irregularly decreased from 2021 to 2023 but were higher in interim 2024 than in interim 2023 in both markets (tables 6.1 and 6.3).[15]

In absolute values, total COGS consistently decreased from 2021 to 2023 in both markets (tables 6.1 and 6.3) but was higher in interim 2024 than in interim 2023 in the total market (table 6.1) yet lower in the merchant market between the interim periods (table 6.3). On a per-unit basis, total COGS consistently increased from 2021 to 2023 but was lower in interim 2024 than in interim 2023 in both markets (tables 6.1 and 6.3). As a share of net sales, total COGS irregularly increased from 2021 to 2023 and was higher in interim 2024 than in interim 2023 in both markets (tables 6.1 and 6.3).

Gross profits consistently declined from 2021 to 2023 in both markets (tables 6.1 and 6.3) but were higher in interim 2024 than in interim 2023 in the total market (table 6.1) yet lower in the merchant market between the interim periods (table 6.3). Gross margins (total gross profit divided by total net sales) irregularly declined from 2021 to 2023 and were lower in interim 2024 than in interim 2023 in both markets (tables 6.1 and 6.3).

[15] *** U.S. producers explained that direct labor AUV increases were the result of ***. U.S. producer questionnaire, III-9b.

SG&A expenses and operating income or loss

From 2021 to 2023, total SG&A expenses decreased in the total market (table 6.1) and in the merchant market (table 6.3); SG&A expenses were lower in interim 2024 than in interim 2023 in both markets. SG&A expense ratios (i.e., total SG&A expenses divided by net sales) irregularly decreased from 2021 to 2023 and were lower in interim 2024 than in interim 2023 in both markets. On a company-specific basis (table 6.5), *** reported much higher SG&A expense ratios than ***.

As presented in tables 6.1 and 6.3, U.S. producers' operating income declined each year from 2021 to 2023 in both total and merchant markets; operating income was higher in interim 2024 than in interim 2023 in the total market but lower in the merchant market.[16] Operating margins (i.e., operating income divided by net sales) irregularly declined in both the total market and merchant market from 2021 to 2023; operating margins were higher in interim 2024 than in interim 2023 in the total market but lower in the merchant market (tables 6.1 and 6.3, respectively). The patterns of operating results primarily reflect the factors impacting financial results at the gross levels (i.e., reduced sales volume and declining gross profit ratios) in both total and commercial sales breakouts (tables 6.1 and 6.3, respectively).

All other expenses and net income or loss

Classified below the operating income level are interest expense, all other expenses, and all other income. In tables 6.1 and 6.3, these items are aggregated with the net amount shown. In both total and merchant markets, the net "all other expenses/income, net" declined (from a net expense to a net income) from 2021 to 2023 (tables 6.1 and 6.3). In the total market, net all other expenses/income were lower (all other income were higher than all other expenses) in interim 2024 than in interim 2023 (table 6.1) while no net all other expenses/income were reported in the merchant market (table 6.3).[17]

As presented in table 6.1, U.S. producers combined net income in the total market declined from $*** in 2021 to $*** in 2022, and then to $*** in 2023 but was higher in interim 2024 ($***) than in interim 2023 ($***). Table 6.3 shows that the full year trend in the

[16] In the total market *** accounted for vast majority *** of operating income from 2021 to interim 2024, irregularly decreasing from 2021 to 2023, but were higher in interim 2024 than in interim 2023 (table 6.5). In the merchant market *** operating income also accounted for vast majority *** and declined consistently from 2021 to 2023 and were lower in interim 2024 than in interim 2023 (table 6.5). *** (table 6.5).

[17] *** reported all other expenses and income from corporate allocations that included interest expenses. ***. Email from ***, December 23, 2024.

merchant market was the same, declining from $*** in 2021 to $*** in 2022, and then to $*** in 2023, and lower in interim 2024 ($***) than in interim 2023 ($***).[18]

Capital expenditures and research and development expenses

Table 6.8 presents capital expenditures, by firm, and table 6.10 presents R&D expenses, by firm. Tables 6.9 and 6.11 present the firms' narrative explanations of the nature, focus, and significance of their capital expenditures and R&D expenses, respectively.

Table 6.8 Abrasive grains: U.S. producers' capital expenditures, by firm and period

Value in 1,000 dollars; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Table 6.9 Abrasive grains: U.S. producers' narrative descriptions of their capital expenditures, by firm

Firm	Narrative on capital expenditures
3M	***
Saint-Gobain Ceramics	***

Source: Compiled from data submitted in response to Commission questionnaires, emails from ***, December 23, 2024, and emails from ***, December 23 and 26, 2024.

[18] A variance analysis is not shown mostly due to large differences in product mix as well as the production of other products. These differences result in wide variations in the costs allocated to abrasive grain operations as well as the different cost structures between the two reporting U.S. producers.

Table 6.10 Abrasive grains: U.S. producers' R&D expenses, by firm and period

Value in 1,000 dollars; interim is January to September

Firm	2021	2022	2023	Interim 2023	Interim 2024
3M	***	***	***	***	***
Saint-Gobain Ceramics	***	***	***	***	***
All firms	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Table 6.11 Abrasive grains: U.S. producers' narrative descriptions of their R&D expenses, by firm

Firm	Narrative on R&D expenses
3M	***
Saint-Gobain Ceramics	***

Source: Compiled from data submitted in response to Commission questionnaires, emails from ***, December 23, 2024, and emails from ***, December 23 and 26, 2024.

Assets and return on assets

Table 6.12 presents data on the U.S. producers' total assets while table 6.13 presents their operating ROA.[19] Table 6.14 presents U.S. producers' narrative responses explaining their major asset categories and any significant changes in asset levels over time.

Table 6.12 Abrasive grains: U.S. producers' total net assets, by firm and period

Value in 1,000 dollars

Firm	2021	2022	2023
3M	***	***	***
Saint-Gobain Ceramics	***	***	***
All firms	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Table 6.13 Abrasive grains: U.S. producers' ROA, by firm and period

Ratio in percent

Firm	2021	2022	2023
3M	***	***	***
Saint-Gobain Ceramics	***	***	***
All firms	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Table 6.14 Abrasive grains: U.S. producers' narrative descriptions of their total net assets, by firm

Firm	Narrative on assets
3M	***
Saint-Gobain Ceramics	***

Source: Compiled from data submitted in response to Commission questionnaires and emails from ***, December 23, 2024.

[19] The operating ROA is calculated as operating income divided by total assets. With respect to a firm's total operations, the total asset value reflects an aggregation of a number of assets which are generally not product specific. Thus, high-level allocations are generally required in order to report a total asset value on a product-specific basis.

Capital and investment

The Commission requested U.S. producers of abrasive grains to describe any actual or potential negative effects of imports of abrasive grains from China on their firms' growth, investment, ability to raise capital, development and production efforts, or the scale of capital investments. Table 6.15 presents the number of firms reporting an impact in each category and table 6.16 provides the U.S. producers' narrative responses.

Table 6.15 Abrasive grains: Count of firms indicating actual and anticipated negative effects of imports from subject sources on investment, growth, and development since January 1, 2021, by effect

Number of firms reporting

Effect	Category	Count
Cancellation, postponement, or rejection of expansion projects	Investment	***
Denial or rejection of investment proposal	Investment	***
Reduction in the size of capital investments	Investment	***
Return on specific investments negatively impacted	Investment	***
Other investment effects	Investment	***
Any negative effects on investment	Investment	***
Rejection of bank loans	Growth	***
Lowering of credit rating	Growth	***
Problem related to the issue of stocks or bonds	Growth	***
Ability to service debt	Growth	***
Other growth and development effects	Growth	***
Any negative effects on growth and development	Growth	***
Anticipated negative effects of imports	Future	***

Source: Compiled from data submitted in response to Commission questionnaires.

Table 6.16 Abrasive grains: U.S. producers' narratives relating to actual and anticipated negative effects of imports on investment, growth, and development, since January 1, 2021, by firm and effect

Item	Firm name and narrative on impact of imports
Cancellation, postponement, or rejection of expansion projects	***
Denial or rejection of investment proposal	***
Reduction in the size of capital investments	***
Return on specific investments negatively impacted	***
Return on specific investments negatively impacted	***
Other effects on growth and development	***
Anticipated effects of imports	***
Anticipated effects of imports	***

Source: Compiled from data submitted in response to Commission questionnaires.

Part 7: Threat considerations and information on nonsubject countries

Section 771(7)(F)(i) of the Act (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 subject merchandise, the Commission shall consider, among other relevant economic factors*[1]*--*
>
> *(I) if a countervailable 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 countervailable subsidy is a subsidy described in Article 3 or 6.1 of the Subsidies Agreement), and whether imports of the subject merchandise are likely to increase,*
>
> *(II) any existing unused production capacity or imminent, substantial increase in production capacity in the exporting country indicating the likelihood of substantially increased imports of the subject merchandise into the United States, taking into account the availability of other export markets to absorb any additional exports,*
>
> *(III) a significant rate of increase of the volume or market penetration of imports of the subject merchandise indicating the likelihood of substantially increased imports,*
>
> *(IV) whether imports of the subject merchandise are entering at prices that are likely to have a significant depressing or suppressing effect on domestic prices, and are likely to increase demand for further imports,*
>
> *(V) inventories of the subject merchandise,*

[1] Section 771(7)(F)(ii) of the Act (19 U.S.C. § 1677(7)(F)(ii)) provides that "The Commission shall consider {these factors} . . . as a whole in making a determination of whether further dumped or subsidized imports are imminent and whether material injury by reason of imports would occur unless an order is issued or a suspension agreement is accepted under this title. The presence or absence of any factor which the Commission is required to consider . . . shall not necessarily give decisive guidance with respect to the determination. Such a determination may not be made on the basis of mere conjecture or supposition."

(VI) the potential for product-shifting if production facilities in the foreign country, which can be used to produce the subject merchandise, are currently being used to produce other products,

(VII) 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),

(VIII) 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 domestic like product, and

(IX) any other demonstrable adverse trends that indicate the probability that there is likely to be material injury by reason of imports (or sale for importation) of the subject merchandise (whether or not it is actually being imported at the time).[2]

Information on the nature of the alleged subsidies was presented earlier in this report; information on the volume and pricing of imports of the subject merchandise is presented in Parts 4 and 5; and information on the effects of imports of the subject merchandise on U.S. producers' existing development and production efforts is presented in Part 6. Information on inventories of the subject merchandise; foreign producers' operations, including the potential for "product-shifting;" any other threat indicators, if applicable; and any dumping in third-country markets, follows. Also presented in this section of the report is information obtained for consideration by the Commission on nonsubject countries.

[2] 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 WTO 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."

The industry in China

The Commission issued foreign producers' or exporters' questionnaires to 20 firms believed to produce and/or export abrasive grains from China.[3] A usable response to the Commission's questionnaire was received from one firm.

Table 7.1 presents the number of producers/exporters in China that responded to the Commission's questionnaire, their exports to the United States as a share of U.S. imports by China in 2023, and their estimated share of total production of abrasive grains in China during 2023.

Table 7.1 Abrasive grains: Number of responding producers/exporters, approximate share of production, and exports to the United States as a share of U.S. imports from China, 2023

Subject foreign industry	Number of responding firms	Approximate share of production (percent)	Approximate share of exports to the United States (percent)
China	1	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Note: "Approximate share of production" reflects the responding firm's estimate of its 2023 production as a share of total production of abrasive grains in China.

Note: "Exports as a share of U.S. imports" reflects the responding firm's estimate of its 2023 exports to the United States as a share of total exports to the United States of abrasive grains from China.

Table 7.2 presents information on the abrasive grains operations of the responding producer and exporter in China.

Table 7.2 Abrasive grains: Summary data for producer in China in 2023

Quantity in 1,000 pounds; share in percent

Producer	Production (quantity)	Share of reported production	Exports to the United States (quantity)	Share of reported exports to the United States	Total shipments (quantity)	Share of firm's total shipments exported to the United States
Shandong Imerys	***	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

[3] These firms were identified through a review of information submitted in the petition and presented in third-party sources.

Table 7.3 presents events in China's abrasive grains industry since January 1, 2021.

Table 7.3 Abrasive Grains: Important industry events in the subject foreign industry since 2021

Item	Firm: Event
Expansions	Qingdao Reckel Advanced Materials Co.Ltd ("Reckel Advanced Materials"): Announced expansion of RECERAMAX series ceramic abrasives in 2022, when completed, production will be 6,000 tons/month.
Announced Entry	Roy Material Technology: Announced intent to "join hands with foreign capital to build an international top three base of ceramic corundum new materials" by 2023.

Source: Petition, vol.1, p. 31, Exhibit, vol.1, 1.11.

Note: The Government of China has placed policy weight on the development of new materials, categorizing the new or advanced materials a key in national high-tech industries, strategic emerging industries, and other key objectives. However direct reference to ceramic abrasive grains produced via sol-gel method as one of those advanced or new materials does not exist in the materials provided by petitioner. Petition, vol.3, p. 10; and conference transcript, p. 44 (DeCarlo and Mydlarz).

Changes in operations

Producers in China were asked to report any change in the character of their operations or organization relating to the production of abrasive grains since January 1, 2021. Table 7.4 presents the changes identified by the responding foreign producer.[4]

Table 7.4 Abrasive grains: Reported changes in operations in China since January 1, 2021, by firm

Item	Firm name and accompanying narrative response regarding changes in operations
***	***

Source: Compiled from data submitted in response to Commission questionnaires.

[4] The firm also reported that ***. Foreign producer's questionnaire response, 2.2c.

Operations on abrasive grains

Table 7.5 presents information on the abrasive grains operations of the responding producer and exporter in China. Practical capacity of abrasive grains did not change during the period for which data were collected.[5] Production fluctuated and increased by *** percent during 2021 to 2023 but was *** percent lower in interim 2024 than in interim 2023. Capacity is projected to remain the same, while production is projected to decrease in 2024 then increase in 2025 when compared to 2023.[6] Capacity utilization fluctuated and increased overall by *** percentage points between 2021 and 2023 but was *** percentage points lower in interim 2024 than in interim 2023. During 2021 to 2023, capacity utilization ranged between *** percent in 2021 and *** percent in 2022.

Exports to the United States accounted for less than *** percent of total shipments in each period. Exports to the United States, which were *** in 2021, increased by *** percent from 2022 to 2023, but were *** percent lower in interim 2024 than in interim 2023. The vast majority of total shipments were exported, primarily to markets other than the United States (***).

Table 7.5 Abrasive grains: Data on industry in China, by period

Quantity in 1,000 pounds

Item	2021	2022	2023	Interim 2023	Interim 2024	Projected 2024	Projected 2025
Capacity	***	***	***	***	***	***	***
Production	***	***	***	***	***	***	***
End-of-period inventories	***	***	***	***	***	***	***
Internal consumption	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Home market shipments	***	***	***	***	***	***	***
Exports to the United States	***	***	***	***	***	***	***
Exports to all other markets	***	***	***	***	***	***	***
Export shipments	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***

Table continued.

[5] The subject producer reported installed capacity of *** pounds in each year and *** pounds in interim 2023 and interim 2024. Foreign producer's questionnaire response, 2.3a.

[6] The subject producer reported that its production trends in 2021 to 2024 are ***. Foreign producer's questionnaire response, 2.9.

Table 7.5 (Continued) Abrasive grains: Data on industry in China, by period

Ratio and share in percent

Item	2021	2022	2023	Interim 2023	Interim 2024	Projected 2024	Projected 2025
Capacity utilization ratio	***	***	***	***	***	***	***
Inventory ratio to production	***	***	***	***	***	***	***
Inventory ratio to total shipments	***	***	***	***	***	***	***
Internal consumption share	***	***	***	***	***	***	***
Commercial home market shipments share	***	***	***	***	***	***	***
Home market shipments share	***	***	***	***	***	***	***
Exports to the United States share	***	***	***	***	***	***	***
Exports to all other markets share	***	***	***	***	***	***	***
Export shipments share	***	***	***	***	***	***	***
Total shipments share	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

Alternative products

The responding producer in China does not produce alternative products using the same equipment, machinery, or employees as abrasive grains. Shandong Imerys reported that ***.[7]

Constraints on capacity

Table 7.6 presents the subject producer's reported capacity constraints since January 1, 2021.

Table 7.6 Abrasive grains: China producers' reported constraints to practical overall capacity since January 1, 2021, by constraint and firm

Type of constraint	Firm name and narrative response on constraints to practical overall capacity
Other constraints	***

Source: Compiled from data submitted in response to Commission questionnaires.

Exports

According to GTA, the leading export markets for artificial corundum, a category that includes abrasive grains and out-of-scope products, from China are the United States, Japan, and India (table 7.7). During 2023, the United States was the top export market for artificial corundum from China, accounting for 13.3 percent of the total, followed by Japan and India, accounting for 13.0 percent and 12.0 percent respectively.

[7] Foreign producer's questionnaire response, 2.4.

Table 7.7 Artificial corundum: Exports from China, by period

Quantity in 1,000 pounds; value in 1,000 dollars

Destination market	Measure	2021	2022	2023
United States	Quantity	286,843	379,772	247,391
Japan	Quantity	329,711	271,593	241,725
India	Quantity	179,354	181,233	223,277
South Korea	Quantity	152,899	140,142	155,995
Netherlands	Quantity	208,283	168,400	100,867
Turkey	Quantity	66,457	77,804	91,638
Taiwan	Quantity	98,811	72,539	69,026
Poland	Quantity	40,839	60,263	63,792
Belgium	Quantity	22,734	16,413	60,083
Germany	Quantity	41,196	49,100	56,857
Thailand	Quantity	65,517	60,766	56,571
Russia	Quantity	16,050	28,117	41,373
All other destination markets	Quantity	454,454	416,648	447,676
All destination markets	Quantity	1,963,147	1,922,790	1,856,270
United States	Value	95,872	156,389	79,330
Japan	Value	217,658	212,392	120,136
India	Value	76,936	114,527	87,145
South Korea	Value	124,537	120,103	84,585
Netherlands	Value	83,192	83,530	39,884
Turkey	Value	28,330	43,911	37,762
Taiwan	Value	85,729	84,354	36,831
Poland	Value	17,590	36,976	23,590
Belgium	Value	7,604	8,546	22,335
Germany	Value	26,980	37,068	29,108
Thailand	Value	40,468	43,296	31,787
Russia	Value	8,687	17,853	20,030
All other destination markets	Value	268,426	335,036	228,468
All destination markets	Value	1,082,009	1,293,979	840,992

Table continued.

Table 7.7 (Continued) Artificial corundum: Exports from China, by period

Unit value in dollars per pound; share in percent

Destination market	Measure	2021	2022	2023
United States	Unit value	0.33	0.41	0.32
Japan	Unit value	0.66	0.78	0.50
India	Unit value	0.43	0.63	0.39
South Korea	Unit value	0.81	0.86	0.54
Netherlands	Unit value	0.40	0.50	0.40
Turkey	Unit value	0.43	0.56	0.41
Taiwan	Unit value	0.87	1.16	0.53
Poland	Unit value	0.43	0.61	0.37
Belgium	Unit value	0.33	0.52	0.37
Germany	Unit value	0.65	0.75	0.51
Thailand	Unit value	0.62	0.71	0.56
Russia	Unit value	0.54	0.63	0.48
All other destination markets	Unit value	0.59	0.80	0.51
All destination markets	Unit value	0.55	0.67	0.45
United States	Share of quantity	14.6	19.8	13.3
Japan	Share of quantity	16.8	14.1	13.0
India	Share of quantity	9.1	9.4	12.0
South Korea	Share of quantity	7.8	7.3	8.4
Netherlands	Share of quantity	10.6	8.8	5.4
Turkey	Share of quantity	3.4	4.0	4.9
Taiwan	Share of quantity	5.0	3.8	3.7
Poland	Share of quantity	2.1	3.1	3.4
Belgium	Share of quantity	1.2	0.9	3.2
Germany	Share of quantity	2.1	2.6	3.1
Thailand	Share of quantity	3.3	3.2	3.0
Russia	Share of quantity	0.8	1.5	2.2
All other destination markets	Share of quantity	23.1	21.7	24.1
All destination markets	Share of quantity	100.0	100.0	100.0

Source: Official export statistics under HS subheading 2818.10 as reported by China Customs in the Global Trade Atlas Suite database, accessed December 3, 2024.

Note: United States is shown at the top. All remaining top export destinations are shown in descending order of 2023 data.

U.S. inventories of imported merchandise

Table 7.8 presents data on U.S. importers' reported inventories of abrasive grains. Three of six responding firms reported such inventories with *** accounting for the majority in each period.[8]

U.S. importers' inventories from China more than *** between 2021 and 2023 and were *** percent higher in interim 2024 than in interim 2023. The ratio of subject inventories to total shipments ranged between *** percent and *** percent in each period. The ratio of subject inventories to total shipments increased from 2021 to 2022 then decreased from 2022 to 2023, increasing overall by *** percentage points during 2021 to 2023 but was *** percentage points lower in interim 2024 than in interim 2023. The ratio of subject inventories to imports similarly fluctuated and increased overall by *** percentage points between 2021 and 2023 but was *** percentage points lower in interim 2024 than in interim 2023.

U.S. importers' inventories from nonsubject sources increased from 2021 to 2022 then decreased from 2022 to 2023, decreasing overall by *** percent between 2021 and 2023, but were *** percent higher in interim 2024 than in interim 2023. The ratio of nonsubject inventories to total shipments ranged between *** percent and *** percent in each period. The ratio of nonsubject inventories to total shipments fluctuated and increased overall by *** percentage points from 2021 to 2023 and was *** percentage points higher in interim 2024 than in interim 2023. The ratio of nonsubject inventories to imports also fluctuated and increased overall by *** percentage points from 2021 to 2023 but was *** percentage points lower in interim 2024 than in interim 2023.

[8] Three firms reported inventories from China and two firms reported inventories from nonsubject sources. *** accounted for the majority of inventories from China, while *** accounted for the vast majority of inventories from nonsubject sources.

Table 7.8 Abrasive grains: U.S. importers' inventories and their ratio to select items, by source and period

Quantity in 1,000 pounds; ratio in percent

Measure	Source	2021	2022	2023	Interim 2023	Interim 2024
Inventories quantity	China	***	***	***	***	***
Ratio to imports	China	***	***	***	***	***
Ratio to U.S. shipments of imports	China	***	***	***	***	***
Ratio to total shipments of imports	China	***	***	***	***	***
Inventories quantity	Nonsubject sources	***	***	***	***	***
Ratio to imports	Nonsubject sources	***	***	***	***	***
Ratio to U.S. shipments of imports	Nonsubject sources	***	***	***	***	***
Ratio to total shipments of imports	Nonsubject sources	***	***	***	***	***
Inventories quantity	All import sources	***	***	***	***	***
Ratio to imports	All import sources	***	***	***	***	***
Ratio to U.S. shipments of imports	All import sources	***	***	***	***	***
Ratio to total shipments of imports	All import sources	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. importers' outstanding orders

The Commission requested importers to indicate whether they imported or arranged for the importation of abrasive grains from China and nonsubject sources after September 30, 2024. Two of six responding firms indicated that they had arranged such imports from China, with *** accounting for the majority. No firm reported arranged imports from nonsubject sources. U.S. importers' arranged imports are presented in table 7.9.

Table 7.9 Abrasive grains: U.S. importers' arranged imports, by source and period

Quantity in 1,000 pounds

Source	Q4 2024	Q1 2025	Q2 2025	Q3 2025	Total
China	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Third-country trade actions

Based on available information, alumina-based ceramic abrasive grains from China have not been subject to other antidumping or countervailing duty investigations outside the United States. However, on November 21, 2024, the European Union initiated an antidumping proceeding concerning imports of fused alumina, which includes alumina-based ceramic abrasive grains produced via the sol-gel method, originating in the People's Republic of China.[9]

Information on nonsubject countries

Table 7.10 presents data for global exports of abrasive grains under HS subheading 2818.10. Exports under this heading include both in scope abrasive grains and out of scope abrasive grains (e.g., fused aluminum grains). During the period of investigation the volume of global exports under HS subheading 2818.10 declined from 3.1 billion pounds to 2.6 billion pounds. China was the largest global exporter during the period of investigation, with its share of global exports increasing from 63.4 and 63.5 percent in 2021 and 2022 respectively to 72.0 percent in 2023. During the period of investigation, Russia's exports under 2818.10 decreased from 96.3 million pounds in 2021 to 8.9 million pounds in 2023.[10]

[9] European Commission, "Case AD720 - Fused alumina," Trade Defence Investigations, accessed December 12, 2024, https://tron.trade.ec.europa.eu/investigations/case-view?caseId=2757; Petition, vol. 1, pp. 31-32. Note that this scope also contains conventional fused alumina abrasive grains. Conference transcript, p. 54 (Mydlarz). In the United States, there are currently orders in place on "Refined Brown Aluminum Oxide" from China, which includes conventional fused abrasive grains. WTO, "Trade Remedies," accessed December 16, 2024, https://trade-remedies.wto.org/en/antidumping/investigations/measures/usa-a-570-882-1.

[10] Official global imports statistics from Russia (constructed exports) under HS subheadings 2818.10 as reported by various national statistical authorities in the Global Trade Atlas Suite database, accessed December 3, 2024.

Table 7.10 Artificial corundum: Global exports, by exporter and period

Quantity in 1,000 pounds; value in 1,000 dollars

Exporting country	Measure	2021	2022	2023
United States	Quantity	40,245	44,393	31,673
China	Quantity	1,963,147	1,922,790	1,856,270
Germany	Quantity	110,008	118,567	86,772
France	Quantity	109,533	89,690	72,708
Netherlands	Quantity	101,132	157,826	67,141
Brazil	Quantity	59,270	72,134	52,230
Italy	Quantity	74,294	65,103	48,493
Canada	Quantity	50,491	41,347	44,130
Belgium	Quantity	29,236	21,906	42,772
Slovenia	Quantity	93,417	82,509	40,786
Hungary	Quantity	78,832	65,754	40,154
Russia	Quantity	96,349	26,368	8,916
All other exporters	Quantity	290,522	317,686	184,991
Nonsubject exporters	Quantity	1,093,084	1,058,890	689,092
All reporting exporters	Quantity	3,096,476	3,026,073	2,577,035
United States	Value	62,112	61,066	40,488
China	Value	1,082,009	1,293,979	840,992
Germany	Value	108,990	114,780	89,574
France	Value	71,839	71,068	57,058
Netherlands	Value	41,052	72,239	31,638
Brazil	Value	25,715	34,273	25,592
Italy	Value	43,682	44,650	31,979
Canada	Value	19,833	20,329	20,907
Belgium	Value	12,821	14,116	16,845
Slovenia	Value	36,864	40,514	21,427
Hungary	Value	35,914	42,024	25,376
Russia	Value	35,828	14,466	3,996
All other exporters	Value	143,787	152,829	118,384
Nonsubject exporters	Value	576,325	621,287	442,777
All reporting exporters	Value	1,720,446	1,976,333	1,324,257

Table continued.

Table 7.10 (Continued) Artificial corundum: Global exports, by exporter and period

Unit value in dollars per pound; share in percent

Exporting country	Measure	2021	2022	2023
United States	Unit value	1.54	1.38	1.28
China	Unit value	0.55	0.67	0.45
Germany	Unit value	0.99	0.97	1.03
France	Unit value	0.66	0.79	0.78
Netherlands	Unit value	0.41	0.46	0.47
Brazil	Unit value	0.43	0.48	0.49
Italy	Unit value	0.59	0.69	0.66
Canada	Unit value	0.39	0.49	0.47
Belgium	Unit value	0.44	0.64	0.39
Slovenia	Unit value	0.39	0.49	0.53
Hungary	Unit value	0.46	0.64	0.63
Russia	Unit value	0.37	0.55	0.45
All other exporters	Unit value	0.49	0.48	0.64
Nonsubject exporters	Unit value	0.53	0.59	0.64
All reporting exporters	Unit value	0.56	0.65	0.51
United States	Share of quantity	1.3	1.5	1.2
China	Share of quantity	63.4	63.5	72.0
Germany	Share of quantity	3.6	3.9	3.4
France	Share of quantity	3.5	3.0	2.8
Netherlands	Share of quantity	3.3	5.2	2.6
Brazil	Share of quantity	1.9	2.4	2.0
Italy	Share of quantity	2.4	2.2	1.9
Canada	Share of quantity	1.6	1.4	1.7
Belgium	Share of quantity	0.9	0.7	1.7
Slovenia	Share of quantity	3.0	2.7	1.6
Hungary	Share of quantity	2.5	2.2	1.6
Russia	Share of quantity	3.1	0.9	0.3
All other exporters	Share of quantity	9.4	10.5	7.2
Nonsubject exporters	Share of quantity	35.3	35.0	26.7
All reporting exporters	Share of quantity	100.0	100.0	100.0

Source: Official exports statistics under HS subheading 2818.10 as reported by various national statistical authorities in the Global Trade Atlas Suite database, accessed December 3, 2024, and official global imports statistics from Russia under HS subheading 2818.10 as reported by UN comtrade in the Global Trade Atlas Suite database, accessed December 3, 2024.

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent. Zeroes, null values, and undefined calculations are suppressed and shown as "—". United States is shown at the top followed by the countries under investigation, all remaining top exporting countries in descending order of 2023 data. Russia is included due to the high volumes in 2021.

APPENDIX A

FEDERAL REGISTER NOTICES

The Commission makes available notices relevant to its investigations and reviews on its website, www.usitc.gov. In addition, the following tabulation presents, in chronological order, Federal Register notices issued by the Commission and Commerce during the current proceeding.

Citation	Title	Link
89 FR 95235, December 2, 2024	Sol Gel Alumina-Based Ceramic Abrasive Grains From China; Notice of Institution of Antidumping and Countervailing Duty Investigations and Scheduling of Preliminary Phase Investigations	https://www.govinfo.gov/content/pkg/FR-2024-12-02/pdf/2024-28126.pdf
89 FR 100465, December 12, 2024	Notice of Extension of the Deadline for Determining the Adequacy of the Antidumping and Countervailing Duty Petitions: Sol Gel Alumina-Based Ceramic Abrasive Grains From the People's Republic of China	https://www.govinfo.gov/content/pkg/FR-2024-12-12/pdf/2024-29221.pdf
89 FR 102953, December 18, 2024	Sol Gel Alumina-Based Ceramic Abrasive Grains From China; Revised Schedule for the Subject Investigations	https://www.govinfo.gov/content/pkg/FR-2024-12-18/pdf/2024-30024.pdf
90 FR 3175, January 14, 2025	Sol Gel Alumina-Based Ceramic Abrasive Grains from the People's Republic of China: Initiation of Countervailing Duty Investigation	https://www.govinfo.gov/content/pkg/FR-2025-01-14/pdf/2025-00545.pdf
90 FR 3179, January 14, 2025	Sol Gel Alumina-Based Ceramic Abrasive Grains from the People's Republic of China: Initiation of Less-Than-Fair-Value Investigation	https://www.govinfo.gov/content/pkg/FR-2025-01-14/pdf/2025-00544.pdf

APPENDIX B

LIST OF STAFF CONFERENCE WITNESSES

CALENDAR OF PUBLIC PRELIMINARY CONFERENCE

Those listed below appeared in the United States International Trade Commission's Preliminary Conference:

Subject: Sol Gel Alumina-Based Ceramic Abrasive Grains from China

Inv. Nos.: 701-TA-750 and 731-TA-1728 (Preliminary)

Date and Time: December 16, 2024 - 9:30 a.m.

Sessions were held in connection with these preliminary phase investigations in the Main Hearing Room (Room 101), 500 E Street, SW., Washington, DC.

OPENING REMARKS:

In Support of Imposition (**Alexander Schaefer**, Crowell & Moring LLP)

In Support of the Imposition of the Antidumping and Countervailing Duty Orders:

Crowell & Moring LLP
Washington, DC
on behalf of

Saint-Gobain Ceramics & Plastics Inc.

Scott Leonard, Commercial Director Specialty Grains and Powders, Saint-Gobain Ceramics & Plastics Inc.

Jeffery Mydlarz, Vice President for Specialty Grains and Powders, Saint-Gobain Ceramics & Plastics Inc.

Alexander Schaefer)
Jacqueline Schaeffer)
) – OF COUNSEL
Maria Krestiyanova)
Emily Devereaux)

CLOSING REMARKS:

In Support of Imposition (**Alexander Schaefer**, Crowell & Moring LLP)

APPENDIX C

SUMMARY DATA

Total Market

Table C.1

Abrasive grains: Summary data concerning the U.S. total market, by item and period

Quantity=1,000 pounds; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per pound; Period changes=percent--exceptions noted; Interim period is January through September

	Reported data					Period change comparisons			
	Calendar year			Interim		Calendar year			Interim
Item	2021	2022	2023	2023	2024	2021–23	2021-22	2022–23	2023–24
U.S. total market consumption quantity:									
Amount	***	***	***	***	***	▼***	▼***	▼***	▲***
Producers' share (fn1)	***	***	***	***	***	▼***	▲***	▼***	▼***
Importers' share (fn1):									
China	***	***	***	***	***	▲***	▲***	▲***	▲***
Nonsubject sources	***	***	***	***	***	▼***	▼***	▼***	▲***
All import sources	***	***	***	***	***	▲***	▼***	▲***	▲***
U.S. total market consumption value:									
Amount	***	***	***	***	***	▼***	▼***	▲***	▲***
Producers' share (fn1)	***	***	***	***	***	▼***	▼***	▼***	▼***
Importers' share (fn1):									
China	***	***	***	***	***	▲***	▲***	▲***	▲***
Nonsubject sources	***	***	***	***	***	▼***	▼***	▼***	▲***
All import sources	***	***	***	***	***	▲***	▲***	▲***	▲***
U.S. importers' U.S. shipments of imports from:									
China:									
Quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
Value	***	***	***	***	***	▲***	▲***	▲***	▲***
Unit value	***	***	***	***	***	▲***	▲***	▲***	▼***
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
Nonsubject sources:									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▲***
Value	***	***	***	***	***	▼***	▼***	▼***	▲***
Unit value	***	***	***	***	***	▲***	▲***	▲***	▼***
Ending inventory quantity	***	***	***	***	***	▼***	▲***	▼***	▲***
All import sources:									
Quantity	***	***	***	***	***	▲***	▼***	▲***	▲***
Value	***	***	***	***	***	▲***	▲***	▲***	▲***
Unit value	***	***	***	***	***	▲***	▲***	▼***	▼***
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
U.S. producers':									
Practical capacity quantity	***	***	***	***	***	▼***	▼***	▼***	▼***
Production quantity	***	***	***	***	***	▼***	▼***	▼***	▲***
Capacity utilization (fn1)	***	***	***	***	***	▼***	▼***	▼***	▲***
U.S. shipments:									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▲***
Value	***	***	***	***	***	▼***	▼***	▲***	▲***
Unit value	***	***	***	***	***	▲***	▲***	▲***	▼***
U.S. shipments for use in apparent consumption (fn2):									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▲***
Value	***	***	***	***	***	▼***	▼***	▲***	▲***
Unit value	***	***	***	***	***	▲***	▼***	▲***	▼***
Export shipments:									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▲***
Value	***	***	***	***	***	▼***	▼***	▼***	▲***
Unit value	***	***	***	***	***	▲***	▲***	▲***	▼***
Ending inventory quantity	***	***	***	***	***	▼***	▼***	▼***	▼***
Inventories/total shipments (fn1)	***	***	***	***	***	▲***	▲***	▲***	▼***
Production workers	***	***	***	***	***	▼***	▼***	▼***	▼***
Hours worked (1,000s)	***	***	***	***	***	▼***	▼***	▼***	▲***
Wages paid ($1,000)	***	***	***	***	***	▼***	▼***	▼***	▲***
Hourly wages (dollars per hour)	***	***	***	***	***	▼***	▼***	▲***	▲***
Productivity (pounds per hour)	***	***	***	***	***	▼***	▼***	▼***	▲***
Unit labor costs	***	***	***	***	***	▲***	▲***	▲***	▲***

Table continued.

Table C.1 Continued
Abrasive grains: Summary data concerning the U.S. total market, by item and period
Quantity=1,000 pounds; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per pound; Period changes=percent--exceptions noted; Interim period is January through September

	Reported data					Period change comparisons			
	Calendar year			Interim		Calendar year			Interim
Item	2021	2022	2023	2023	2024	2021–23	2021-22	2022–23	2023–24
U.S. producers':--Continued									
Net sales:									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▲***
Value	***	***	***	***	***	▼***	▼***	▼***	▲***
Unit value	***	***	***	***	***	▲***	▲***	▲***	▼***
Cost of goods sold (COGS)	***	***	***	***	***	▼***	▼***	▼***	▲***
Gross profit or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▼***	▲***
SG&A expenses	***	***	***	***	***	▼***	▼***	▼***	▼***
Operating income or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▼***	▲***
Net income or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▼***	▲***
Unit COGS	***	***	***	***	***	▲***	▲***	▲***	▼***
Unit SG&A expenses	***	***	***	***	***	▲***	▲***	▼***	▼***
Unit operating income or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▲***	▲***
Unit net income or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▲***	▲***
COGS/sales (fn1)	***	***	***	***	***	▲***	▲***	▼***	▲***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▼***	▲***	▲***
Net income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▼***	▲***	▲***
Capital expenditures	***	***	***	***	***	▲***	▼***	▲***	▼***
Research and development expenses	***	***	***	***	***	▼***	▼***	▼***	▼***
Total assets	***	***	***	***	***	▼***	▼***	▼***	***

Source: Compiled from data submitted in response to Commission questionnaires. 508-compliant tables for these data are contained in parts 3, 4, 6, and 7 of this report.

Note.--Shares and ratios shown as "0.0" percent represent non-zero values less than "0.05" percent (if positive) and greater than "(0.05)" percent (if negative). Zeroes, null values, and undefined calculations are suppressed and shown as "—". Period changes preceded by a "▲" represent an increase, while period changes preceded by a "▼" represent a decrease.

fn1.--Reported data are in percent and period changes are in percentage points.

fn2.--A portion of *** attached to downstream out-of-scope products. These *** have been added to apparent U.S. consumption *** as U.S. producers' U.S. shipments ***.
fn3.--Percent changes only calculated when both comparison values represent profits; The directional change in profitability provided when one or both comparison values represent a loss.

Merchant Market

Table C.2
Abrasive grains: Summary data concerning the U.S. merchant market, by item and period
Quantity=1,000 pounds; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per pound; Period changes=percent--exceptions noted; Interim period is January through September

	Reported data					Period change comparisons			
	Calendar year			Interim		Calendar year			Interim
Item	2021	2022	2023	2023	2024	2021–23	2021-22	2022–23	2023–24
U.S. merchant market consumption quantity:									
Amount	***	***	***	***	***	▼***	▲***	▼***	▲***
Producers' share (fn1)	***	***	***	***	***	▼***	▲***	▼***	▼***
Importers' share (fn1):									
China	***	***	***	***	***	▲***	▲***	▲***	▲***
Nonsubject sources	***	***	***	***	***	▼***	▼***	▼***	▲***
All import sources	***	***	***	***	***	▲***	▼***	▲***	▲***
U.S. merchant market consumption value:									
Amount	***	***	***	***	***	▲***	▼***	▲***	▲***
Producers' share (fn1)	***	***	***	***	***	▼***	▼***	▼***	▼***
Importers' share (fn1):									
China	***	***	***	***	***	▲***	▲***	▲***	▲***
Nonsubject sources	***	***	***	***	***	▼***	▼***	▼***	▲***
All import sources	***	***	***	***	***	▲***	▲***	▲***	▲***
U.S. importers' U.S. shipments of imports from:									
China:									
Quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
Value	***	***	***	***	***	▲***	▲***	▲***	▲***
Unit value	***	***	***	***	***	▲***	▲***	▲***	▼***
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
Nonsubject sources:									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▲***
Value	***	***	***	***	***	▼***	▼***	▼***	▲***
Unit value	***	***	***	***	***	▲***	▲***	▲***	▼***
Ending inventory quantity	***	***	***	***	***	▼***	▲***	▼***	▲***
All import sources:									
Quantity	***	***	***	***	***	▲***	▼***	▲***	▲***
Value	***	***	***	***	***	▲***	▲***	▲***	▲***
Unit value	***	***	***	***	***	▲***	▲***	▼***	▼***
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***

Table continued.

Table C.2 Continued
Abrasive grains: Summary data concerning the U.S. merchant market, by item and period
Quantity=1,000 pounds; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per pound; Period changes=percent--exceptions noted; Interim period is January through September

	Reported data					Period change comparisons			
	Calendar year			Interim		Calendar year			Interim
Item	2021	2022	2023	2023	2024	2021–23	2021-22	2022–23	2023–24
U.S. producers':									
Commercial U.S. shipments:									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▲***
Value	***	***	***	***	***	▼***	▼***	▼***	▲***
Unit value	***	***	***	***	***	▲***	▲***	▲***	▼***
Commercial U.S. shipments for use in apparent consumption (fn2):									
Quantity	***	***	***	***	***	▼***	▲***	▼***	▲***
Value	***	***	***	***	***	▲***	▼***	▲***	▼***
Unit value	***	***	***	***	***	▲***	▼***	▲***	▼***
Commercial sales:									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▼***
Value	***	***	***	***	***	▼***	▼***	▼***	▼***
Unit value	***	***	***	***	***	▲***	▼***	▲***	▼***
Cost of goods sold (COGS)	***	***	***	***	***	▼***	▼***	▼***	▼***
Gross profit or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▼***	▼***
SG&A expenses	***	***	***	***	***	▼***	▼***	▼***	▼***
Operating income or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▼***	▼***
Net income or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▼***	▼***
Unit COGS	***	***	***	***	***	▲***	▲***	▲***	▼***
Unit SG&A expenses	***	***	***	***	***	▼***	▼***	▲***	▼***
Unit operating income or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▲***	▼***
Unit net income or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▲***	▼***
COGS/sales (fn1)	***	***	***	***	***	▲***	▲***	▼***	▲***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▼***	▲***	▼***
Net income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▼***	▲***	▼***

Source: Compiled from data submitted in response to Commission questionnaires. 508-compliant tables for these data are contained in parts 3, 4, 6, and 7 of this report.

Note.--Shares and ratios shown as "0.0" percent represent non-zero values less than "0.05" percent (if positive) and greater than "(0.05)" percent (if negative). Zeroes, null values, and undefined calculations are suppressed and shown as "—". Period changes preceded by a "▲" represent an increase, while period changes preceded by a "▼" represent a decrease.

fn1.--Reported data are in percent and period changes are in percentage points.

fn2.--A portion of *** attached to downstream out-of-scope products. These *** have been added to apparent U.S. consumption *** as U.S. producers' U.S. shipments ***.
fn3.--Percent changes only calculated when both comparison values represent profits; The directional change in profitability provided when one or both comparison values represent a loss.

APPENDIX D

NARRATIVE RESPONSES FOR DOMESTIC LIKE PRODUCT FACTORS

Table D.1 Abrasive grains: U.S. producers' narratives regarding the comparability of sol gel vs conventional abrasive grains, by the domestic like product factors

Factor	Producer name and narrative on factor
Physical characteristics	***
Physical characteristics	***
Interchangeability	***
Interchangeability	***
Channels	***
Channels	***
Manufacturing	***
Manufacturing	***
Perceptions	***
Perceptions	***
Price	***
Price	***

Source: Compiled from data submitted in response to Commission questionnaires.

Table D.2 Abrasive grains: U.S. importers' narratives regarding the comparability of sol gel vs conventional abrasive grains, by the domestic like product factors

Factor	Importer name and narrative on factor
Physical characteristics	***
Physical characteristics	***
Physical characteristics	***
Physical characteristics	***
Physical characteristics	***
Physical characteristics	***
Interchangeability	***
Interchangeability	***
Interchangeability	***
Interchangeability	***
Interchangeability	***
Interchangeability	***

Factor	Importer name and narrative on factor
Channels	***
Channels	***
Channels	***
Channels	***
Channels	***
Manufacturing	***
Manufacturing	***
Manufacturing	***
Manufacturing	***
Perceptions	***
Perceptions	***
Perceptions	***
Perceptions	***

Factor	Importer name and narrative on factor
Price	***
Price	***
Price	***
Price	***
Price	***

Source: Compiled from data submitted in response to Commission questionnaires.