Ferrovanadium from Korea

Investigation No. 731-TA-1315 (Preliminary)

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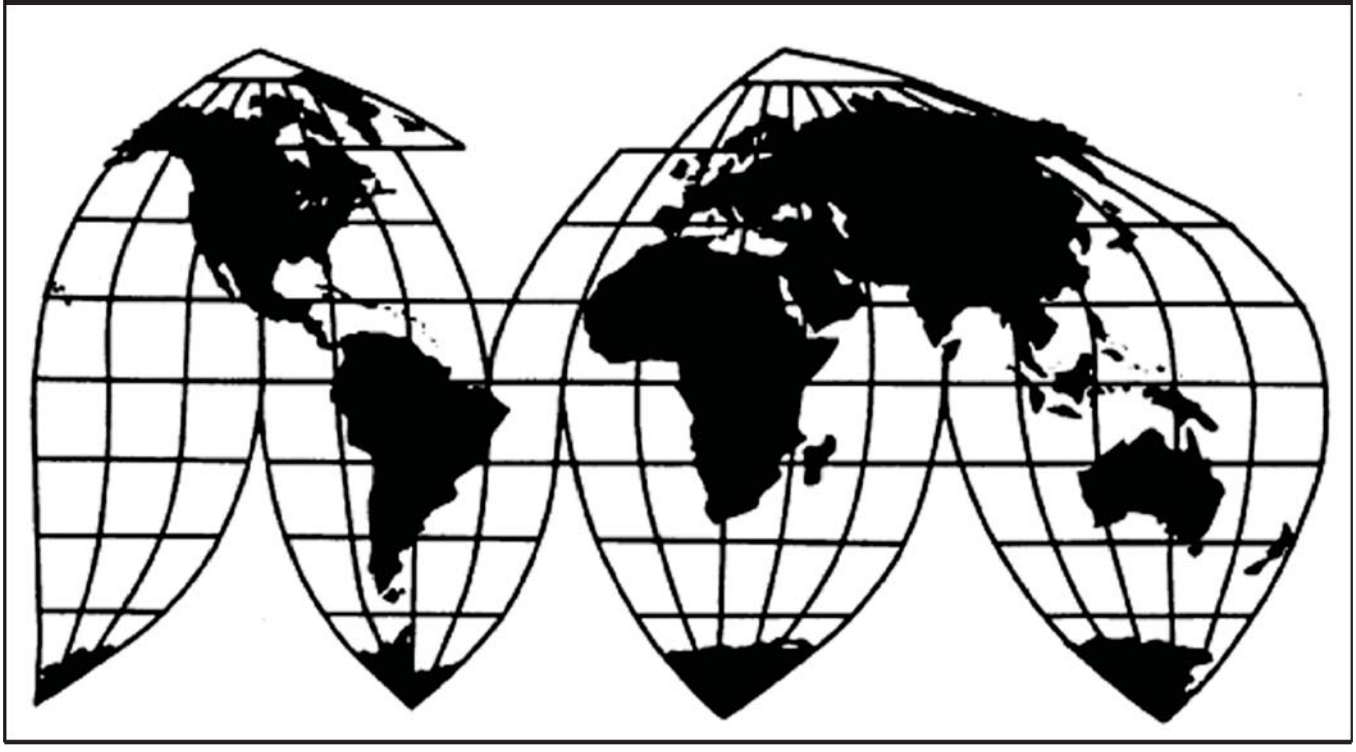
U.S. International Trade Commission



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U.S. International Trade Commission

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Note.—Information that would reveal confidential operations of individual concerns may not be published and therefore has been deleted.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

UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation No. 731-TA-1315 (Preliminary)

Ferrovanadium from Korea

DETERMINATION

On the basis of the record[1] developed in the subject investigation, 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 ferrovanadium from Korea, provided for in subheading 7202.92.00 of the Harmonized Tariff Schedule of the United States, that are alleged to be sold in the United States at less than fair value ("LTFV").

COMMENCEMENT OF FINAL PHASE INVESTIGATION

Pursuant to section 207.18 of the Commission's rules, the Commission also gives notice of the commencement of the final phase of its investigation. The Commission will issue a final phase notice of scheduling, which will be published in the *Federal Register* as provided in section 207.21 of the Commission's rules, upon notice from the Department of Commerce ("Commerce") of an affirmative preliminary determination in the investigation under section 733(b) of the Act, or, if the preliminary determination is negative, upon notice of an affirmative final determination in that investigation under section 735(a) of the Act. Parties that filed entries of appearance in the preliminary phase of the investigation need not enter a separate appearance for the final phase of the investigation. 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 public service list containing the names and addresses of all persons, or their representatives, who are parties to the investigation.

BACKGROUND

On March 28, 2016, the Vanadium Producers and Reclaimers Association and its members AMG Vanadium, LLC, Cambridge, Ohio; Bear Metallurgical Company, Butler, Pennsylvania; Gulf Chemical & Metallurgical Corporation, Freeport, Texas; and Evraz Stratcor, Inc., Hot Springs, Arkansas, filed a petition with the Commission and Commerce, alleging that an industry in the United States is materially injured and threatened with material injury by reason of LTFV imports of ferrovanadium from Korea. Accordingly, effective March 28, 2016, the Commission, pursuant to section 733(a) of the Tariff Act of 1930 (19 U.S.C. § 1673b(a)), instituted antidumping duty investigation No. 731-TA-1315 (Preliminary).

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

Notice of the institution of the Commission's investigation and of a public conference to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the *Federal Register* of April 1, 2016 (81 FR 18888). The conference was held in Washington, DC, on April 18, 2016, and all persons who requested the opportunity were permitted to appear in person or by counsel.

Views of the Commission

Based on the record in the preliminary phase of this investigation, we find that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of ferrovanadium from Korea that are allegedly sold in the United States at less than fair value.

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]

II. Background

Parties to the investigation. On March 28, 2016, the Vanadium Producers and Reclaimers Association ("VPRA") filed an antidumping duty petition jointly with each of its four individual members: domestic producer AMG Vanadium LLC ("AMG"); domestic producer Bear Metallurgical Company ("Bear");[3] wholesaler Gulf Chemical & Metallurgical Corporation ("Gulf"); and wholesaler Evraz Stratcor, Inc. ("Evraz Stratcor") (collectively "petitioners").[4] Petitioners appeared at the staff conference with counsel and submitted a postconference brief.

Korvan Industry Co. Ltd. ("Korvan"), a foreign producer and exporter of the subject merchandise from Korea, appeared at the staff conference through counsel, but did not submit a postconference brief.[5]

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[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, 2*0 CIT 353, 354-55 (1996). No party argues that the establishment of an industry in the United States is materially retarded by reason of the allegedly unfairly traded imports from Korea.

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

[3] Bear primarily toll produces vanadium pentoxide provided by its customers into ferrovanadium. Petition, Vol. I at 10. One of Bear's tollees, Gulf, wholly owns Bear. Petition, Vol. I at 2 n.2.

[4] Wholesalers of the domestic like product qualify as interested parties under 19 U.S.C. § 1677(9)(C). VPRA qualifies as an interested party under 19 U.S.C. § 1677(9)(F) because a majority (all) of its members manufacture, produce, or wholesale the domestic like product. Petition, Vol. I at 2-3.

[5] Transcript of April 18, 2016 Staff Conference ("Confer. Tr.") at 11 (Maberry).

Additionally, United Mineral Resources, Inc. ("United Mineral"), which does not identify itself as an interested party, submitted a written statement in the preliminary phase of this investigation. United Mineral previously provided Bear with vanadium pentoxide for toll conversion into ferrovanadium ***; in 2015, United Mineral ***.[6]

Data coverage. U.S. industry data are based on the questionnaire responses of two firms that are believed to account for all U.S. production of ferrovanadium (AMG and Bear). Together with tollees Gulf, Evraz Stratcor, Glencore Ltd. ("Glencore"), and Traxys North America LLC ("Traxys"), they are believed to account for nearly all U.S. shipments of ferrovanadium in 2015.[7] U.S. import data are based on adjusted official Commerce import statistics and on questionnaire responses from 16 U.S. importers that are believed to have accounted for virtually all U.S. imports of ferrovanadium in 2015.[8] The Commission received responses to its questionnaires from two producers of subject merchandise (Korvan and Woojin Ind. Co., Ltd. ("Woojin")), firms believed to account for the majority of ferrovanadium production in Korea[9] whose reported exports were equivalent to virtually all U.S. imports of ferrovanadium from Korea in 2015.[10]

Prior investigations of the same or similar merchandise. The Commission has conducted two sets of prior proceedings involving the same or similar products.

Imports from Russia: In response to a May 31, 1994 antidumping duty petition regarding imports of ferrovanadium and nitrided vanadium from Russia, the Commission determined in June 1995 that the domestic ferrovanadium industry was materially injured by reason of those imports.[11] On July 10, 1995, Commerce published an antidumping duty order regarding those imports.[12] The Commission reached affirmative determinations in its first full five-year review and in its second expedited review of that order.[13] After the Commission reached a negative determination in its third full review,[14] Commerce revoked the order on those imports from Russia effective October 13, 2011.[15]

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[6] United Mineral's Written Statement at 1; Confidential Staff Report, Memorandum INV-OO-038 (May 5, 2016), as modified by INV-OO-040 (May 9, 2016) ("CR") at I-5 n.9; Public Report, *Ferrovanadium from Korea*, Inv. No. 731-TA-1315 (Preliminary), USITC Pub. 4611 ("PR") at I-4 n.9 (May 2016).

[7] CR at I-5 and n.9; PR at I-4 n.9.

[8] CR at I-5; PR at I-4.

[9] Korvan and Woojin are the only two producers of ferrovanadium in Korea identified in this investigation, although they estimated that they collectively accounted for approximately *** percent of overall ferrovanadium production in Korea. CR at VII-3; PR at VII-3.

[10] CR at I-5; PR at I-4.

[11] *Ferrovanadium and Nitrided Vanadium from Russia*, Inv. No. 731-TA-720 (Final), USITC Pub. 2904 (June 1995).

[12] 60 Fed. Reg. 35550 (Jul. 10, 1995).

[13] *Ferrovanadium and Nitrided Vanadium from Russia*, Inv. No. 731-TA-720 (Review), USITC Pub. 3420 (May 2001); *Ferrovanadium and Nitrided Vanadium from Russia*, Inv. No. 731-TA-720 (Second Review), USITC Pub. 3887 (Sept. 2006).

[14] *Ferrovanadium and Nitrided Vanadium from Russia*, Inv. No. 731-TA-720 (Third Review), USITC Pub. 4345 (Aug. 2012).

[15] 77 Fed. Reg. 54897 (Sept. 6, 2012).

Imports from China and South Africa: In response to a November 26, 2001 antidumping duty petition regarding imports of ferrovanadium from China and South Africa, the Commission determined in January 2003 that the domestic ferrovanadium industry was materially injured by reason of those imports.[16] On January 28, 2003, Commerce published antidumping duty orders covering those imports.[17] The Commission reached affirmative determinations in its first and second full five-year reviews of those orders, and those orders remain in effect.[18]

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."[19] 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."[20] In turn, the Tariff Act defines the "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."[21]

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.[22] No single factor is dispositive, and the Commission may consider other factors it deems relevant based on the facts of a particular investigation.[23] The Commission looks for clear dividing lines among

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[16] *Ferrovanadium from China and South Africa*, Inv. Nos. 731-TA-986 to 987 (Final), USITC Pub. 3570 (Jan. 2003).

[17] 68 Fed. Reg. 4168 (Jan. 28, 2003) (China); 68 Fed. Reg. 4169 (Jan. 28, 2003) (South Africa).

[18] *Ferrovanadium from China and South Africa*, Inv. Nos. 731-TA-986 to 987 (Review), USITC Pub. 4046 (Nov. 2008); *Ferrovanadium from China and South Africa*, Inv. Nos. 731-TA-986 to 987 (Second Review), USITC Pub. 4517 (Jan. 2015); 80 Fed. Reg. 8607 (Feb. 18, 2015) (continuation of antidumping duty orders).

[19] 19 U.S.C. § 1677(4)(A).

[20] 19 U.S.C. § 1677(4)(A).

[21] 19 U.S.C. § 1677(10).

[22] *See*, *e.g.*, *Cleo Inc. v. United States*, 501 F.3d 1291, 1299 (Fed. Cir. 2007); *NEC Corp. v. Department 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).

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

possible like products and disregards minor variations.[24] Although 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,[25] the Commission determines what domestic product is like the imported articles Commerce has identified.[26]

In its notice of initiation, Commerce defined the imported merchandise within the scope of this investigation as follows:

> all ferrovanadium regardless of grade (*i.e.*, percentage of contained vanadium), chemistry, form, shape, or size. Ferrovanadium is an alloy of iron and vanadium. Ferrovanadium is classified under Harmonized Tariff Schedule of the United States ("HTSUS") item number 7202.92.0000. Although this HTSUS item number is provided for convenience and Customs purposes, the written description of the requested scope of this investigation is dispositive.[27]

Whereas the scope of the Commission's prior proceedings involving imports from Russia included ferrovanadium and nitrided vanadium,[28] petitioners report that the scope of this investigation is "substantively identical" to the scope of the prior proceedings involving ferrovanadium imports from China and South Africa.[29]

Steel manufacturers utilize the alloy ferrovanadium in their steelmaking processes when producing several types of construction and engineering alloy steels, rail steels, and high-speed and heat-resisting tool and die steels; they also use ferrovanadium for high-strength low-alloy ("HSLA") steels (also known as microalloyed steels) that are used in high-performance long-distance oil and gas pipelines, concrete reinforcing bars, structural shapes and plate for building construction, and automobile components.[30] Steelmakers add ferrovanadium to

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[24] *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.").

[25] *See*, *e.g.*, *USEC, Inc. v. United States*, 34 Fed. 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).

[26] *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); *Cleo*, 501 F.3d at 1298 n.1 ("Commerce's {scope} finding does not control the Commission's {like product} determination."); *Torrington*, 747 F. Supp. at 748-52 (affirming the Commission's determination defining six like products in investigations where Commerce found five classes or kinds).

[27] 81 Fed. Reg. 24059, 24063 (Apr. 25, 2016) (notice of initiation).

[28] USITC Pub. 2904 at I-6; USITC Pub. 3420 at 4; USITC Pub. 3887 at 4-5; USITC Pub. 4345 at 5.

[29] Petition, Vol. I at 8 at n.16; USITC Pub. 3570 at 4; USITC Pub. 4046 at 5; USITC Pub. 4517 at 5.

[30] CR at I-10, II-1; PR at I-7, II-1; Petitioners' Postconf. Brief at 5; Petition, Vol. I at 8-9.

molten steel after the molten mixture is poured from a steelmaking furnace into a ladle. When the vanadium combines with carbon and nitrogen in steel, it creates stable carbides and nitrides that improve the product's wear resistance, strength, and hardness; vanadium also imparts a fine grain size that increases the steel's ductility.[31]

A. Findings in Other Proceedings Involving the Same or Similar Products and Arguments of the Parties in the Current Proceedings

In the prior proceedings regarding imports from China and South Africa that involved an identical scope, the Commission defined a single domestic like product consisting of the ferrovanadium products described in the scope.[32] The Commission rejected a request to define 45 percent grade ferrovanadium and 80 percent grade ferrovanadium as separate domestic like products.[33] In the current investigation, petitioners ask the Commission to define the domestic like product to encompass all grades of ferrovanadium that are described in the investigation's scope.[34] Respondent Korvan is not aware of any evidence that would warrant defining the domestic like product differently than petitioners' proposal.[35]

B. Analysis and Conclusion

Based on the record, we define a single domestic like product consisting of the ferrovanadium products corresponding to the investigation's scope.

Physical Characteristics and Uses. Ferrovanadium is commonly produced in either of two grades, ranging from 40 to 60 percent contained vanadium and from 75 to 85 percent contained vanadium.[36] All grades of ferrovanadium share similar physical characteristics and are sold on the basis of the contained vanadium content.[37] Ferrovanadium is primarily used as an alloying agent for steelmaking, regardless of grade.[38]

Interchangeability. Although some purchasers may prefer a particular grade of ferrovanadium, different grades of ferrovanadium are interchangeable because steelmakers have the capability to adjust their steelmaking process to accommodate ferrovanadium with varying percentages of contained vanadium.[39]

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[31] Petition, Vol. I at 8; USITC Pub. 4046 at 5.

[32] USITC Pub. 3750 at 5-6; USITC Pub. 4046 at 7; USITC Pub. 4517 at 6.

[33] USITC Pub. 3570 at 5-9.

[34] Petitioners argue that this definition would be consistent with the Commission's findings in the prior proceedings involving ferrovanadium from China and South Africa and that there have been no significant changes in the relevant facts that would warrant a different approach. Petitioners' Postconf. Brief at 1-4; Petition, Vol. I at 4-6, 8, 20-21.

[35] Confer. Tr. at 83 (Maberry).

[36] CR at I-11; PR at I-8; Petitioners' Postconf. Brief at 2; Confer. Tr. at 17-18 (Neal); Petition, Vol. I at 4, 9-10.

[37] CR at I-11; PR at I-8; Petitioners' Postconf. Brief at 2; Petition, Vol. I at 8-9.

[38] CR at I-10; PR at I-7; Petitioners' Postconf. Brief at 2, 3; Petition, Vol. I at 8-9.

[39] Petitioners' Postconf. Brief at 2; Petition, Vol. I at 4.

Manufacturing Facilities, Production Processes, and Employees. U.S. producer Bear produces ferrovanadium via an aluminothermic process that blends a mixture of vanadium pentoxide (V_2O_5) supplied by its tolling customers with aluminum, iron scrap, and other materials; charges the blend into a crucible; and ignites the mixture for it to react using its own energy. After the molten ferrovanadium and an aluminum oxide-rich slag are allowed to cool and freeze in the reaction vessel, both are crushed and sized for sale.[40] U.S. producer AMG manufactures ferrovanadium using a pyrometallurgical process that recycles spent catalysts from oil refineries, which are classified as hazardous waste, petroleum combustion residues, ashes from power plants that burn vanadium-bearing crudes, and other vanadium-bearing sources.[41] Bear manufactures ferrovanadium with a higher vanadium content of about 80 percent vanadium by weight whereas AMG's ferrovanadium typically contains 55 to 60 percent vanadium, but both firms are able to modify their production process to alter the percentage of contained vanadium in the resulting ferrovanadium.[42]

Channels of Distribution. Ferrovanadium is sold mainly to end users, primarily steel manufacturers but also iron foundries.[43] Ferrovanadium is commonly packaged for sale in the United States in containers of a specified content of contained vanadium, typically 25 pounds.[44]

Producer and Customer Perceptions. Domestic producers Bear and AMG argue that all grades of ferrovanadium are part of the same domestic like product, regardless of contained vanadium.[45] In prior proceedings in which the Commission surveyed purchasers on this question, some purchasers preferred a particular grade of ferrovanadium but all responding purchasers reported that all grades of ferrovanadium were interchangeable.[46]

Price. All grades of ferrovanadium are priced based on the per pound contained vanadium content.[47] The two domestically manufactured pricing products had roughly comparable prices on a per-pound contained vanadium basis.[48]

Conclusion. All grades of ferrovanadium have similar physical characteristics and are generally used as an alloying agent in the production of steel. Although some purchasers may prefer a particular grade of ferrovanadium, the current record indicates that all grades of ferrovanadium are interchangeable. The two domestic producers utilize different production processes and manufacture different grades of ferrovanadium, but both report the capability to alter the vanadium content of their ferrovanadium. The record indicates that ferrovanadium is

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[40] CR at I-12 to I-13; PR at I-8 to I-9; Confer. Tr. at 26 (Carey); Petition, Vol. I at 10-11.

[41] CR at I-13 to I-14; PR at I-9; Confer. Tr. at 17-18 (Neal); Petition, Vol. I at 10.

[42] Petitioners' Postconf. Brief at 2; Confer. Tr. at 17 (Neal); Petition, Vol. I at 4, 9-10.

[43] CR at II-1; PR at II-1; CR/PR at Table II-1.

[44] Material supersacks holding up to 4,000 pounds of contained vanadium also are common packaging for ferrovanadium, although ferrovanadium also may be sold in cans in a range of 10 to 25 pounds of contained vanadium, bags of 10, 12.5, 15, or 25 pounds of contained vanadium, or steel drums that permit storage of the ferrovanadium on the factory floor close to the furnace. CR at I-11, I-13 to I-14 n.33; PR at I-8 to I-9 n.33; Confer. Tr. at 57-58 (Anderson); Petition, Vol. I at 9.

[45] Petitioners' Postconf. Brief at 1-4; Petition, Vol. I at 4-6, 8, 20-21.

[46] USITC Pub. 3570 at 7.

[47] CR at I-11; PR at I-8; Petitioners' Postconf. Brief at 3; Confer. Tr. at 87 (Maberry).

[48] *Compare* CR/PR at Table V-3 *with* CR/PR at Table V-4.

primarily sold to steel manufacturers and priced based on the contained vanadium content. No party has advocated defining the domestic like product as other than the products corresponding to the scope. Because the record does not support finding clear dividing lines between different grades of ferrovanadium, we define a single domestic like product consisting of the ferrovanadium products described in the investigation's scope.

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."[49] 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.

Petitioners ask the Commission to define the domestic industry as the two U.S. producers of ferrovanadium, and they also ask the Commission to consider the experiences of Bear's tollees as "other relevant economic factors."[50] Respondent Korvan does not dispute defining the domestic industry as all domestic producers of ferrovanadium.[51]

We define the domestic industry as the domestic producers of ferrovanadium, which in this case encompasses Bear (which primarily toll produces ferrovanadium for others) and AMG (a U.S. firm that manufactures ferrovanadium for sale to unrelated customers).[52] Tollees such as Evraz Stratcor, Gulf, Glencore, and Traxys supply vanadium pentoxide to Bear, retain title to the product during Bear's conversion operations, and negotiate the sale of the resulting ferrovanadium.[53] Because these tollees do not manufacture ferrovanadium,[54] they are not producers of the domestic like product under the statute, and we do not include them in the domestic industry.[55]

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[49] 19 U.S.C. § 1677(4)(A).

[50] Petitioners' Postconf. Brief at 22.

[51] Confer. Tr. at 83-84 (Maberry).

[52] CR at III-1; PR at III-1.

[53] CR at III-1; PR at III-1.

[54] CR/PR at Table III-1, Table III-2.

[55] We must 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 or which are themselves importers. *See Torrington Co. v. United States*, 790 F. Supp. 1161, 1168 (Ct. Int'l Trade 1992), *aff'd mem.*, 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). Bear and AMG are not related parties because neither imported subject merchandise and neither is affiliated with an exporter or importer of subject merchandise. CR at III-3; PR at III-2; CR/PR at Table III-3. *** of Bear's tollees imported subject merchandise, but *** qualifies as a domestic

(*continued*...)

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 3 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.[56]

Subject imports from Korea accounted for *** percent of all ferrovanadium imports into the United States in 2015, the most recent 12-month period for which data are available that precedes the filing of the petition.[57] Because this figure exceeds the applicable three percent threshold, we determine that subject imports from Korea 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.[58] 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 operations.[59] The statute defines "material injury" as "harm which is not inconsequential, immaterial, or unimportant."[60] 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.[61] 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."[62]

(…*continued*)
producer, as noted above. CR/PR at Table III-10. These tollees, *** unrelated to Bear. CR/PR at Table III-3. Consequently, there is no basis to find Bear or any other domestic producer to be a related party.

[56] 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)).

[57] CR at IV-8; PR at IV-5; CR/PR at Table IV-2.

[58] 19 U.S.C. §§ 1671b(a), 1673b(a). The Trade Preferences Extension Act of 2015, Pub. L. 114-27, amended the provisions of the Tariff Act pertaining to Commission determinations of reasonable indication of material injury and threat of material injury by reason of subject imports in certain respects. We have applied these amendments here.

[59] 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 ... {a}nd explain in full its relevance to the determination." 19 U.S.C. § 1677(7)(B).

[60] 19 U.S.C. § 1677(7)(A).

[61] 19 U.S.C. § 1677(7)(C)(iii).

[62] 19 U.S.C. § 1677(7)(C)(iii).

Although the statute requires the Commission to determine whether there is a reasonable indication that the domestic industry is "materially injured by reason of" unfairly traded imports,[63] 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.[64] 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 cause of injury and that there is a sufficient causal, not merely a temporal, nexus between subject imports and material injury.[65]

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.[66] In performing its examination, however, the Commission need not isolate

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[63] 19 U.S.C. §§ 1671b(a), 1673b(a).

[64] *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).

[65] The Federal Circuit, in addressing the causation standard of the statute, has 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 re-affirmed in *Mittal Steel Point Lisas Ltd. v. United States*, 542 F.3d 867, 873 (Fed. Cir. 2008), in which 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).

[66] SAA, H.R. Rep. 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. 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. 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*, 542 F.3d at 877.

the injury caused by other factors from injury caused by unfairly traded imports.[67] 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.[68] It is clear that the existence of injury caused by other factors does not compel a negative determination.[69]

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" and the Commission "ensure{s} that it is not attributing injury from other sources to the subject imports."[70] [71] Indeed, the Federal Circuit has examined and affirmed various Commission methodologies and has disavowed "rigid adherence to a specific formula."[72]

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[67] SAA at 851-52 ("{T}he Commission need not isolate the injury caused by other factors from injury caused by unfair imports."); *Taiwan Semiconductor*, 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 and 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.").

[68] S. Rep. 96-249 at 74-75; H.R. Rep. 96-317 at 47.

[69] *See Nippon*, 345 F.3d at 1381 ("an 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.").

[70] *Mittal*, 542 F.3d at 877-78; *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 United States Steel Group v. United States*, 96 F.3d 1352, 1362 (Fed. Cir. 1996) and S. Rep. 96-249 at 75. In its decision in *Swiff-Train v. United States*, 792 F.3d 1355 (Fed. Cir. 2015), the Federal Circuit affirmed the Commission's causation analysis as comporting with the Court's guidance in *Mittal*.

[71] Vice Chairman Pinkert and Commissioner Kieff do not join this paragraph or the following three paragraphs. They point out that the Federal Circuit, in *Bratsk*, 444 F.3d 1369, and *Mittal*, held that the Commission is *required*, in certain circumstances when analyzing present material injury, to consider a particular issue with respect to the role of nonsubject imports, without reliance upon presumptions or rigid formulas. The Court has not prescribed a specific method of exposition for this consideration. *Mittal* explains as follows:

(*continued*...)

The Federal Circuit's decisions in *Gerald Metals*, *Bratsk,* and *Mittal* all involved cases in which the relevant "other factor" was the presence in the market of significant volumes of price-competitive nonsubject imports. The Commission interpreted the Federal Circuit's guidance in *Bratsk* as requiring it to apply a particular additional methodology following its finding of material injury in cases involving commodity products and a significant market presence of price-competitive nonsubject imports.[73] The additional "replacement/benefit" test looked at whether nonsubject imports might have replaced subject imports without any benefit to the U.S. industry. The Commission applied that specific additional test in subsequent cases, including the *Carbon and Certain Alloy Steel Wire Rod from Trinidad and Tobago* determination that underlies the *Mittal* litigation.

Mittal clarifies that the Commission's interpretation of *Bratsk* was too rigid and makes clear that the Federal Circuit does not require the Commission to apply an additional test nor any one specific methodology; instead, the court requires the Commission to have "evidence in the record 'to show that the harm occurred 'by reason of' the LTFV imports,'" and requires that the Commission not attribute injury from nonsubject imports or other factors to subject imports.[74] Accordingly, we do not consider ourselves required to apply the replacement/benefit test that was included in Commission opinions subsequent to *Bratsk*.

The progression of *Gerald Metals*, *Bratsk*, and *Mittal* clarifies that, in cases involving commodity products where price-competitive nonsubject imports are a significant factor in the U.S. market, the Court will require the Commission to give full consideration, with adequate explanation, to non-attribution issues when it performs its causation analysis.[75]

(…*continued*)

> What *Bratsk* held is that "where commodity products are at issue and fairly traded, price competitive, non-subject imports are in the market," the Commission would not fulfill its obligation to consider an important aspect of the problem if it failed to consider whether non-subject or non-LTFV imports would have replaced LTFV subject imports during the period of investigation without a continuing benefit to the domestic industry. 444 F.3d at 1369. Under those circumstances, *Bratsk* requires the Commission to consider whether replacement of the LTFV subject imports might have occurred during the period of investigation, and it requires the Commission to provide an explanation of its conclusion with respect to that factor.

542 F.3d at 878.

[72] *Nucor Corp. v. United States*, 414 F.3d 1331, 1336, 1341 (Fed. Cir. 2005); *see also Mittal*, 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.").

[73] *Mittal*, 542 F.3d at 875-79.

[74] *Mittal*, 542 F.3d at 873 (quoting from *Gerald Metals*, 132 F.3d at 722), 875-79 & n.2 (recognizing the Commission's alternative interpretation of *Bratsk* as a reminder to conduct a non-attribution analysis).

[75] To that end, after the Federal Circuit issued its decision in *Bratsk*, the Commission began to present published information or send out information requests in the final phase of investigations to producers in nonsubject countries that accounted for substantial shares of U.S. imports of subject merchandise (if, in fact, there were large nonsubject import suppliers). In order to provide a more complete record for the Commission's causation analysis, these requests typically seek information on capacity, production,

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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.[76] Congress has delegated this factual finding to the Commission because of the agency's institutional expertise in resolving injury issues.[77]

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. Demand Conditions

Ferrovanadium is sold principally to steel manufacturers and also to iron foundries.[78] As noted above, steelmakers utilize ferrovanadium as an alloying agent when producing certain types of steel.[79] Demand for ferrovanadium is derived primarily from demand for the steel products in which it is used, particularly HSLA steel.[80] Steelmaking accounts for 90 percent or more of all global vanadium consumption,[81] although the vanadium content added by ferrovanadium accounts for a small share of steel's content by weight and a small share of steel's manufacturing cost.[82]

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and shipments of the product under investigation in the major source countries that export to the United States. The Commission plans to continue utilizing published or requested information in the final phase of investigations in which there are substantial levels of nonsubject imports.

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

[77] *Mittal*, 542 F.3d at 873; *Nippon*, 458 F.3d at 1350, *citing U.S. Steel*, 96 F.3d at 1357; S. Rep. 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.").

[78] CR at II-1; PR at II-1. Questionnaire respondents reported some substitutes for ferrovanadium in specific applications, including ferroniobium, niobium, and nitrided vanadium. *** reported that ferroniobium is used in structural steel beams, rebar, and steel plate end uses. CR at II-9; PR at II-6.

[79] CR at I-10, II-1; PR at I-7, II-1; Petitioners' Postconf. Brief at 5; Confer. Tr. at 32 (Lutz); Petition, Vol. I at 8-9.

[80] CR at II-7, II-8; PR at II-4, II-5; Petitioners' Postconf. Brief at 5; Confer. Tr. at 9 (Totaro), 79, 88 (Maberry); Petition, Vol. I at 22.

[81] CR at I-3 to I-4, I-10; PR at I-3, I-7; Petition, Vol. I at 9.

[82] CR at II-8; PR at II-5; Petitioners' Postconf. Brief at 5; Confer. Tr. at 18 (Neal), 33 (Lutz). According to petitioners, the U.S. steel industry consumes ferrovanadium at a higher rate per ton (or has a greater "steel intensity") than other global steelmaking industries because U.S. steelmakers manufacture more vanadium-bearing steel than their counterparts. Petitioners' Postconf. Brief at 6; Confer. Tr. at 9 (Totaro), 48 (Neal); Petition, Vol. I at 23.

Most questionnaire respondents reported a decrease in demand for ferrovanadium in the United States since January 1, 2013 due to a decline in steel production.[83] Between January 2013 and December 2015, steel production in the United States fell by 19.0 percent.[84] Apparent U.S. consumption of ferrovanadium by quantity of contained vanadium increased from *** pounds in 2013 to *** pounds in 2014 but decreased to *** pounds in 2015.[85]

2. Supply Conditions

Petitioners report that ferrovanadium production is highly capital intensive and involves high fixed costs.[86] AMG and Bear account for all ferrovanadium production in the United States.[87] Between 2013 and 2015, U.S. producers/tollees' U.S. shipments accounted for between *** and *** percent of apparent U.S. consumption.[88] The *** of the two domestic producers, AMG, utilizes spent catalysts, petroleum combustion residues, ashes from power plants that burn vanadium-bearing crudes, and other vanadium-bearing sources to manufacture ferrovanadium for sale to unrelated customers.[89]

Bear receives a fee for toll processing ferrovanadium from vanadium pentoxide supplied by tollees Gulf, Evraz Stratcor, Glencore, and Traxys.[90] Gulf, the largest of Bear's tollees, recycles spent catalysts from oil refineries into vanadium pentoxide that it transfers to its wholly owned subsidiary Bear for processing into ferrovanadium,[91] and Gulf then sells and ships the ferrovanadium in the U.S. market.[92] Tollee Evraz Stratcor,[93] ***, manufactures vanadium

[83] In particular, importer *** reported lower demand for tubular steel in the energy market due to lower oil prices. CR at II-9; PR at II-6; CR/PR at Table II-3 (indicating that five of six U.S. producers/tollees and nine of 13 U.S. importers reported decreased U.S. demand for ferrovanadium since January 1, 2013); *see also* Petitioners' Postconf. Brief at 5-6; Confer. Tr. at 33 (Lutz); Petition, Vol. I at 22.

[84] Steel production rose slightly in the first two months of 2016 but remained below January 2013 levels. CR/PR at Figure II-1.

[85] CR/PR at Table IV-5.

[86] CR at III-4 to III-5; PR at III-3; Confer. Tr. at 23 (Anderson).

[87] CR at I-5; PR at I-4; Petitioners' Postconf. Brief at 5; Petition, Vol. I at 3.

[88] CR/PR at Table IV-5.

[89] CR at I-13, III-1; PR at I-9, III-1; CR/PR at Table III-1. AMG is the corporate successor of Metallurg Vanadium Corporation, which previously conducted its vanadium operations as Shieldalloy Metallurgical Corporation. CR/PR at Table III-3; Petition, Vol. I at 2 n.1.

[90] CR/PR at Table III-2; Petitioners' Postconf. Brief at 5; Confer. Tr. at 27 (Carey); Petition, Vol. I at 10-11, 21.

[91] Confer. Tr. at 26-27 (Carey). Gulf acquired 100 percent ownership of Bear in December 2005, an increase over the 49.5 percent share that Gulf owned between January 2002 and November 2005. Subsequent to Gulf's purchase of Bear, Gulf was purchased by Eramet, a French multinational mining and metallurgy firm. CR at VI-1 n.3; PR at V1-1 n.3.

[92] CR at I-13; PR at I-9; Confer. Tr. at 26-27 (Carey), 29-30 (Valdes); Petition, Vol. I at 11, 21.

[93] CR at I-13; PR at I-9; CR/PR at Table IV-1. Evraz Stratcor is the corporate successor to U.S. Vanadium Corp., a domestic producer that toll produced ferrovanadium for its corporate parent Strategic Minerals Corporation during the period of the original investigation of ferrovanadium and nitrided vanadium from Russia. In 2004, Strategic Minerals Corporation consolidated U.S. Vanadium

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pentoxide and various vanadium chemicals and supplied some of the vanadium pentoxide to Bear for conversion into ferrovanadium pursuant to a tolling arrangement that has been in place since 1993.[94] A subsidiary of East Metals AG ("EMAG"), East Metals North America ("EMNA"), ***, also supplied Bear with vanadium pentoxide to toll into ferrovanadium, and EMNA was merged into Evraz Stratcor effective July 1, 2014.[95] As of ***, Evraz Stratcor's ferrovanadium operations primarily involved acting as a wholesaler of ***.[96]

Petitioners estimate that Korvan and Woojin account for all or virtually all production in Korea of the subject ferrovanadium exported to the United States.[97] Subject imports accounted for between *** and *** percent of apparent U.S. consumption between 2013 and 2015.[98] Under provisions of the U.S.-Korea Free Trade Agreement, the applicable duty for U.S. imports of ferrovanadium wholly originating in Korea declined to 3.3 percent *ad valorem* effective March 15, 2012, 2.5 percent effective January 1, 2013, 1.6 percent effective January 1, 2014, 0.8 percent effective January 1, 2015, and free effective on and after January 1, 2016.[99]

The volume of ferrovanadium imports from nonsubject sources declined between 2013 and 2015, and the composition of these imports fluctuated.[100] The majority of ferrovanadium imports from nonsubject countries during this period originated from the Czech Republic, Austria, and Canada, and each of these countries has a single producer.[101] The United States

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Corp. and another wholly owned subsidiary into Stratcor Inc. ("Stratcor"), a single wholly owned subsidiary. In 2006, Evraz S.A. acquired *** ownership of Strategic Minerals Corporation and subsequently changed Stratcor's name to Evraz Stratcor. Petition, Vol. I at 3 n.3; CR at VI-1 n.3; PR at VI-1 n.3.

[94] CR at I-13, VI-1 n.3; PR at I-9, VI-1 n.3. ***. Petition, Vol. I at 11-12. In February 2014, Evraz Stratcor began importing vanadium-containing slag from the steelmaking facility in Russia owned by its corporate parent (Evraz plc). Once Evraz Stratcor's U.S. slag processing facilities achieve full production, Evraz Stratcor will use the slag as its primary input to manufacture vanadium pentoxide. CR at I-13 n.33; PR at I-9 n.33.

[95] CR at I-4, VI-1 n.3, VI-16 n.13; PR at I-3, VI-1 n.3, VI-4 n.13.

[96] Petition, Vol. I at 12; CR at I-4 at n.7, VI-16 n.13; PR at I-3 at n.6, VI-4 n.13; CR/PR at Table III-4.

[97] Petition, Vol. I at 13.

[98] CR/PR at Table IV-5.

[99] The normal trade relations import duty for ferrovanadium is 4.2 percent *ad valorem*. CR at I-10; PR at I-7.

[100] CR/PR at Table IV-2, Table IV-3 (indicating an overall decline in nonsubject imports of ferrovanadium from the Czech Republic). Nonsubject imports accounted for between *** and *** percent of apparent U.S. consumption between 2013 and 2015. CR/PR at Table IV-5.

[101] CR/PR at Table IV-2. The parent of Bear's tollee Evraz Stratcor (Evraz plc) owns Evraz Nikom, which manufactures ferrovanadium in the Czech Republic from vanadium pentoxide manufactured by Evraz Vanady Tula, a ferrovanadium producer in Russia that obtains its steel slag from Evraz NTMK, a steel producer in Russia. CR at VII-10 to VII-11; PR at VII-6. In Austria, Treibacher Industrie AG processes vanadium slag into vanadium pentoxide and refines the vanadium pentoxide to yield ferrovanadium, vanadium chemicals, and other alloys; one of Treibacher's major sources of vanadium slag, Evraz Highveld in South Africa, has been shut down since July 2015. CR at I-11 n.29, VII-11; PR at I-8 n.29,

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imposed antidumping duty orders on ferrovanadium imports from China and South Africa in January 2003, and those orders remain in effect.[102]

3. Substitutability

Ferrovanadium is sold in two grades that differ in terms of the percentage of contained vanadium.[103] Some users prefer ferrovanadium with a lower vanadium content that melts into the steel bath more easily, and others prefer ferrovanadium with a higher vanadium content and lower share of non-vanadium elements.[104] According to petitioners, most steelmakers will accept any grade because most of them possess the technical capability to adjust their steelmaking processes to accommodate different grades of ferrovanadium.[105] Approximately *** percent of U.S. ferrovanadium production in 2015 was of ferrovanadium with 40 to 60 percent contained vanadium, and *** percent was of ferrovanadium with 75 to 85 percent contained vanadium.[106] U.S. importers of subject merchandise reported that *** percent of their imports from Korea in 2015 were of ferrovanadium with 75 to 85 percent contained vanadium and *** percent was of ferrovanadium with 40 to 60 percent contained vanadium.[107]

A majority of U.S. producers/tollees and importers reported that U.S.-produced ferrovanadium was always interchangeable with ferrovanadium manufactured in Korea.[108]

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VII-7. In Canada, Masterloy Products Company toll processes ferrovanadium from customer-supplied vanadium pentoxide. CR at VII-11 to VII-12; PR at VII-7.

[102] *See* 80 Fed. Reg. 8607 (Feb. 18, 2015) (continuation of antidumping duty orders).

[103] Petitioners' Postconf. Brief at 3; Confer. Tr. at 17-18 (Neal); Petition, Vol. I at 4, 10.

[104] Confer. Tr. at 18-19 (Neal).

[105] Confer. Tr. at 18 (Neal), 33 (Lutz). U.S. importer *** reported that steel producers that use ferrovanadium with 80 percent vanadium content rarely switch to ferrovanadium with 50 percent vanadium content. CR at II-11; PR at II-7. In any final phase of this investigation, we will seek information from purchasers about their ability to substitute different grades of ferrovanadium.

[106] As discussed above, domestic producer AMG manufactures ferrovanadium with 40 to 60 percent contained vanadium and Bear manufactures ferrovanadium with 75 to 85 percent contained vanadium, but both have the ability to modify their production processes to alter the vanadium content. CR/PR at Table III-6; CR at III-6; PR at III-4; Petitioners' Postconf. Brief at 2; Confer. Tr. at 17-18 (Neal); Petition, Vol. I at 4, 9-10.

[107] CR/PR at Table IV-4. Korvan's witness testified that the majority of the subject merchandise that it exports to the United States consists of ferrovanadium with 80 percent contained vanadium. Confer. Tr. at 86 (Maberry).

[108] CR/PR at Table II-9 (indicating that each of the five responding U.S. producers/tollees and 14 of 15 responding U.S. importers reported that ferrovanadium produced in the United States is always or frequently interchangeable with ferrovanadium imported from Korea); Confer. Tr. at 93, 98 (Maberry) (indicating that Korvan "is not challenging" petitioners' argument regarding the substitutability of ferrovanadium made in Korea and the United States). Questionnaire respondents also reported that ferrovanadium manufactured in the United States and imported from Korea is sold in all regions in the contiguous United States and that ferrovanadium from both sources is sold to end users and distributors. CR/PR at Table II-1, Table II-2. Moreover, U.S. producers/tollees and U.S. importers of

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When asked whether factors other than price are significant in sales of ferrovanadium manufactured in the United States and Korea, all responding U.S. producers/tollees and 12 of 14 responding importers reported that non-price factors are never or at most sometimes significant.[109] Based on the current record, we find that ferrovanadium manufactured in Korea and the United States is highly substitutable and that price is an important factor in purchasing decisions.[110]

4. Purchasing Conditions

Ferrovanadium is priced on a contained vanadium basis,[111] meaning that ferrovanadium with differing percentages of contained vanadium is treated as equivalent in price negotiations.[112] Petitioners assert that most purchasers obtain offers from multiple ferrovanadium suppliers.[113] United Mineral asserts that, due to consolidation in the steel industry, a limited number of firms (***) account for a substantial share of ferrovanadium purchases in the U.S. market.[114] The majority of questionnaire respondents reported mainly using transaction-by-transaction negotiations to set prices.[115] Petitioners and Korvan contend that spot market prices for ferrovanadium that are published by *CRU Ryan's Notes* or *Metal Bulletin* are used as benchmarks for spot market sales and long-term contracts in the U.S. market.[116] Five of six responding U.S. producers/tollees and nine of 15 responding importers reported using *CRU Ryan's Notes* to set ferrovanadium prices.[117] The current record indicates that *** percent of U.S. producers/tollees' U.S. shipments involved annual contracts, *** percent involved long-term contracts, *** percent involved short-term contracts, and *** percent involved spot sales; *** percent of U.S. importers' U.S. shipments of subject imports from Korea involved annual contracts, *** percent involved long-term contracts, *** percent

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ferrovanadium from Korea reported similar lead times for their sales of ferrovanadium, with both primarily selling from inventory. CR at II-10; PR at II-6.

[109] CR/PR at Table II-11. Purchasers responding to lost sales and lost revenue allegations were asked to identify the main factors their firms consider in purchasing decisions, and the one responding purchaser (***) reported price, availability, and quality. CR at II-10; PR at II-7.

[110] CR at II-9 to II-10; PR at II-7 to II-9; CR/PR at Table II-9, Table II-11; Petitioners' Postconf. Brief at 6-7, 14; Confer. Tr. at 9 (Totaro), 18, 21 (Neal), 33 (Lutz), 51-52 (Carey, Totaro); Petition, Vol. I at 6.

[111] CR at I-11; PR at I-8; Petitioners' Postconf. Brief at Answer to Question 9; Confer. Tr. at 18 (Neal), 87 (Maberry).

[112] Confer. Tr. at 18 (Neal); Petition, Vol. I at 9.

[113] Confer. Tr. at 18 (Neal).

[114] United Mineral's Written Statement at 2.

[115] CR/PR at Table V-1 (six U.S. producers/tollees and 12 U.S. importers reported using transaction-by-transaction negotiations, four U.S. producers/tollees and six U.S. importers reported using contracts, and one U.S. importer reported using a set price list).

[116] Petitioners' Postconf. Brief at 14; Confer. Tr. at 12 (Maberry).

[117] U.S. tollee/importer *** and importer *** reported using *Platts Metal Week* to set ferrovanadium prices. CR at V-4; PR at V-3.

involved short-term contracts, and *** percent involved spot sales.[118] In any final phase of this investigation, we intend to seek comparable information about contract and spot sales for ferrovanadium imports from nonsubject sources.[119]

5. Raw Materials

Raw materials accounted for *** percent of the cost of goods sold ("COGS") computed from data reported by the two domestic producers and their tollees in 2013, and raw materials' share of COGS decreased steadily to *** percent in 2015.[120] All five responding U.S. producers/tollees reported that raw material prices decreased since January 1, 2013, and two of them cited reduced demand for vanadium.[121] The majority of responding U.S. importers reported decreases in imported raw material prices.[122]

The primary inputs used in production of ferrovanadium in the United States are spent catalysts from oil refineries and petroleum combustion residues, which are either processed into vanadium pentoxide (which can be further processed to manufacture ferrovanadium)[123] or are processed directly into ferrovanadium and other products.[124] Vanadium pentoxide also is imported into the United States for toll conversion, as discussed above. Thus, U.S. production of ferrovanadium may be influenced by the availability of catalysts and residues and imports of

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[118] CR/PR at Table V-2; *see also* Petitioners' Postconf. Brief at 16-17, Answer to Question 4, Question 19; Confer. Tr. at 10 (Totaro), 19 (Neal), 44-45 (Anderson, Valdes). Korvan has "from time to time sought long-term contracts with the buyers of its product," but "at least in recent months has been forced to {rely on} spot sales." Confer. Tr. at 82 (Maberry).

[119] Petitioners report competition in the contract market from nonsubject imports from the Czech Republic, Russia, and Austria and competition in the spot market from nonsubject imports from the Czech Republic and Russia. Confer. Tr. at 45-46 (Anderson). In any final phase of this investigation, we also intend to seek more information about the nature of purchasing activities in this industry, including the number and size of purchasers in the spot and contract markets and the role of spot market sales for prices in the spot and contract markets.

[120] CR at V-1 & n.1; PR at V-1 & n.1.

[121] CR at V-1; PR at V-1.

[122] Nine of 15 responding U.S. importers reported that imported raw material prices had decreased, three reported that imported raw material prices had not changed, and four reported that imported raw material prices had fluctuated. Importers that reported a decrease in raw material costs since January 2013 cited decreases in demand and global consumption due to a slowdown in the steel industry. CR at V-1; PR at V-1.

[123] For example, Bear utilizes an aluminothermic process to toll produce ferrovanadium for Gulf and other tollees. Gulf supplies Bear with vanadium pentoxide that Gulf manufactures through a recycling process that uses spent oil refinery catalysts as its primary vanadium-bearing raw material. Confer. Tr. at 26-27 (Carey), 29-30 (Valdes); Petition, Vol. I at 21. Gulf uses two procedures to recycle spent catalysts, depending on their content. One process yields vanadium pentoxide and molybdenum, and the other process yields cobalt and nickel. Confer. Tr. at 53-55 (Valdes, Totaro).

[124] CR at V-1; PR at V-1. In its pyrometallurgical process, AMG manufactures ferrovanadium by recycling spent catalysts from oil refineries and other sources. Confer. Tr. at 17 (Neal).

vanadium pentoxide.[125] Both ferrovanadium producers in Korea reportedly convert vanadium pentoxide into ferrovanadium.[126] Other global sources of vanadium are recovery from vanadium-containing ore or use of byproducts from steelmaking operations that use iron ore with a high vanadium content.[127]

Catalyst prices may be tied to prices of vanadium pentoxide or ferrovanadium.[128] Vanadium pentoxide, which is primarily used to manufacture ferrovanadium but is also used to manufacture vanadium chemicals and vanadium-aluminum master alloys for addition to titanium, is widely traded, and industry publications regularly report its price.[129] Prices for vanadium pentoxide declined by 62.6 percent from January 2013 to December 2015.[130]

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."[131]

The absolute volume of subject imports of ferrovanadium from Korea in the U.S. market progressively increased between January 2013 and December 2015.[132] The volume of subject imports of ferrovanadium from Korea increased from 784,000 pounds contained vanadium in 2013 to 1.2 million pounds of contained vanadium in 2014 and 1.7 million pounds of contained vanadium in 2015.[133] Between 2013 and 2014, as apparent U.S. consumption of ferrovanadium increased, subject imports from Korea increased their share of the U.S. market from *** percent to *** percent (an increase of *** percentage points).[134] Between 2014 and 2015,

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[125] CR at V-1; PR at V-1; United Mineral's Written Statement at 2; Petitioners' Postconf. Brief at 37-38, Answer to Question 10; Confer. Tr. at 31-32 (Valdes), 38 (Totaro), 78-79, 98 (Maberry).

[126] CR at VII-4; PR at VII-3; Confer. Tr. at 12, 89-91 (Maberry) (reporting that Korvan sources vanadium pentoxide from China). Brazil recently became the largest source of vanadium pentoxide imports for Korea, with imports of vanadium pentoxide from Brazil exceeding imports of vanadium pentoxide from China in 2015. In September 2014, Largo Resources Ltd. ("Largo"), a new vanadium pentoxide producer in Brazil, began shipments of vanadium pentoxide from its new primary vanadium Maracas Menchen mine. Largo has an offtake agreement with Glencore International plc for all of the output from Maracas for the first six years. CR at VII-12; PR at VII-7.

[127] CR at I-11; PR at I-8.

[128] Confer. Tr. at 56 (Neal).

[129] CR at I-12; PR at I-8; Petition, Vol. I at 10.

[130] CR/PR at Figure V-1, Figure V-2.

[131] 19 U.S.C. § 1677(7)(C)(i).

[132] CR/PR at Table IV-5.

[133] CR/PR at Table IV-5.

[134] CR/PR at Table IV-5. Petitioners acknowledge that subject imports from Korea have been present in the U.S. market for a number of years. Based on their belief that U.S. imports of ferrovanadium from all sources, including Korea, in the first half of the 2013 to 2015 period were fairly traded, petitioners ask the Commission to focus its analysis in this investigation on the latter portion of the investigation period. Petitioners' Postconf. Brief at 9-10, 20-21, Answer to Question 15; Confer. Tr at 10 (Totaro); Petition, Vol. I at 19.

as apparent U.S. consumption of ferrovanadium decreased, the volume and market share of subject imports from Korea continued to increase, with their share of the U.S. market reaching *** percent in 2015.[135] Between 2014 and 2015, subject imports' market share increase of *** percentage points exceeded the domestic industry's *** percentage point market share increase over the same period.[136] Based on the current record, for purposes of the preliminary determination, we find that the volume of subject imports from Korea and the increase in that volume are significant both in absolute terms and relative to consumption in the United States.[137]

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.[138]

As stated above, the current record suggests a high degree of substitutability between subject imports from Korea and the domestic like product and that price is an important consideration in purchasing decisions and thus competition in the U.S. market.

In the preliminary phase of this investigation, the Commission requested that U.S. producers and importers provide quarterly weighted-average sales price data for two ferrovanadium products shipped to unrelated U.S. customers between January 2013 and December 2015.[139] Six U.S. producers/tollees and 11 importers submitted usable pricing data on sales of the requested products, although not all firms reported pricing for all products for all quarters.[140] The U.S. producers/tollees reported pricing data for both products, with pricing data for product 1 (contained vanadium of 40 to 60 percent) accounting for *** percent of their U.S. commercial shipments of ferrovanadium and pricing data for product 2 (contained

[135] CR/PR at Table IV-5.

[136] CR/PR at Table IV-5.

[137] In any final phase of this investigation, we invite the parties to comment on the relationship between duty reductions on imports of ferrovanadium from Korea associated with the U.S.-Korea Free Trade Agreement and trends in the volume of subject imports of ferrovanadium from Korea.

[138] 19 U.S.C. § 1677(7)(C)(ii).

[139] The pricing products are (1) ferrovanadium containing 40 to 60 percent contained vanadium, 2" by down and (2) ferrovanadium containing 75 to 85 percent contained vanadium, 2" by down. CR at V-5; PR at V-4.

[140] CR at V-6; PR at V-4. The pricing data accounted for approximately all of the domestic industry's U.S. shipments of ferrovanadium between January 2013 and December 2015 and *** percent of subject imports from Korea in the same period. Derived from CR/PR at Table IV-5, Table V-3, Table V-4.

vanadium of 75 to 85 percent) accounting for *** percent.[141] U.S. importers of subject merchandise from Korea reported pricing data on only product 2 (contained vanadium of 75 to 85 percent).[142]

Petitioners contend that ferrovanadium is a commodity,[143] and they argue that underselling would be "unexpected" in this industry based on their assertions that subject imports from Korea are sold largely in the spot market whereas the domestic like product is mostly sold through contracts based on formulas that provide for a discount from published spot market prices.[144] The available pricing comparisons indicate mixed underselling and overselling.[145] Subject imports from Korea undersold the domestic like product in five of 12 possible quarterly comparisons (accounting for *** pounds contained vanadium of subject imports) at underselling margins that ranged from 3.9 to 7.0 percent and oversold it in the remaining seven comparisons (accounting for *** pounds contained vanadium of subject imports) at overselling margins that ranged from 0.4 to 9.9 percent.[146]

With respect to whether subject imports depressed prices of the domestic like product to a significant degree, we considered changes in prices of the domestic like product and subject imports between January 2013 and December 2015. According to questionnaire data, the weighted-average price for product 1 manufactured in the United States fell *** percent

[141] CR at V-6; PR at V-4; CR/PR at Table V-3, Table V-4.

[142] CR at V-6; PR at V-4; CR/PR at Table V-3, Table V-4.

[143] Petitioners' Postconf. Brief at 14; Confer. Tr. at 9 (Totaro).

[144] Petitioners' Postconf. Brief at Answer to Question 3; Confer. Tr. at 35-36 (Lutz). In any final phase of this investigation, we intend to seek more information regarding how data are collected to support published prices, how prices are set for spot sales and contracts, how the formulas in contracts operate, and whether contract prices influence prices for other contract sales.

[145] The Commission requested that U.S. producers/tollees report lost sales or revenue due to competition from imports of ferrovanadium from Korea between January 2013 and December 2015. Of the five responding U.S. producers/tollees, four reported that they did not have to reduce prices or roll back announced price increases. U.S. producer *** reported losing contracts and sales at purchaser *** as a result of subject imports from Korea, and *** reported losing sales and revenue for spot sales at purchaser ***. *** did not respond to the Commission's request for information about the alleged lost sales and revenue. *** reported that it had not shifted purchases of ferrovanadium from the domestic like product to subject imports from Korea since 2013 and did not know if U.S. producers had reduced prices to compete with lower-priced subject imports from Korea. CR at V-12 to V-13; PR at V-6; CR/PR at Table V-7.

[146] CR at V-11; PR at V-5; CR/PR at Table V-3, Table V-4, Table V-6. As noted earlier, petitioners ask the Commission to focus on the end of the period given their contention that subject imports from Korea were fairly traded prior to that point. In the last five quarters of the period, three price comparisons involved underselling by subject imports from Korea at margins of *** percent, *** percent, and *** percent (accounting for *** pounds contained vanadium of subject imports), and the other two comparisons involved overselling of the domestic like product at margins of (***) percent and (***) percent (accounting for *** pounds contained vanadium of subject imports). CR/PR at Table V-4.

between January 2013 and December 2015,[147] and the weighted-average price for product 2 manufactured in the United States fell *** percent during this period.[148] The reported weighted-average price for product 2 imported from Korea fell *** percent during this period.[149] Thus, the record shows that between 2013 and 2015 prices of the domestic like product declined and that the weighted-average price of ferrovanadium from Korea declined more than prices of the domestic like product.[150]

Petitioners maintain that low and declining prices for spot market sales of ferrovanadium from Korea directly affected the domestic industry's contract prices, because annual contracts typically are based on formulas that provide a discount off of the spot market prices published by *CRU Ryan's Notes* or *Metal Bulletin*.[151] They state that under a typical

[147] Quarterly weighted-average prices of product 1 manufactured in the United States declined irregularly from $*** per pound of contained vanadium in the first quarter of 2013 to $*** in the fourth quarter of 2015. CR/PR at Table V-3, Table V-5.

[148] Quarterly weighted-average prices of product 2 manufactured in the United States declined irregularly from $*** per pound of contained vanadium in the first quarter of 2013 to $*** in the fourth quarter of 2015. CR/PR at Table V-4, Table V-5.

[149] Quarterly weighted-average prices of product 2 imported from Korea decreased irregularly from $*** per pound of contained vanadium in the first quarter of 2013 to $*** in the fourth quarter of 2015. CR/PR at Table V-4, Table V-5.

[150] We also considered the magnitude of changes in prices from one year to the next. Between the first quarter of 2013 and the fourth quarter of 2014, weighted average prices for products 1 and 2 manufactured in the United States declined by *** percent and *** percent, respectively, and the weighted average price for product 2 imported from Korea declined by *** percent. From the first quarter of 2015 to the last quarter of 2015, weighted average prices for products 1 and 2 manufactured in the United States declined by *** percent and *** percent, respectively, and weighted average prices for product 2 imported from Korea declined by *** percent. Derived from CR/PR at Table V-4, Table V-5.

Additionally, petitioners observe that published U.S. spot market prices for ferrovanadium were adjusted downward on 25 separate occasions in 2015, and the published monthly average price for ferrovanadium in December 2015 was less than half of the corresponding price in December 2014. Petitioners' Postconf. Brief at 16 (citing Petition, Vol. I at Exhibit I-12). As further evidence that subject imports from Korea depressed prices in the U.S. market, petitioners point to three affidavits in the petition that they argue demonstrate how three sales of low-priced imports of ferrovanadium from Korea resulted in three instances of price declines between September and December 2015. Petitioners' Postconf. Brief at 16-19, Answer to Question 3; Confer. Tr. at 10-11 (Totaro), 20 (Neal), 35 (Lutz); Petition, Vol. I at 29-31, Exhibit I-13. Petitioners acknowledge that published prices of ferrovanadium have increased somewhat in recent months, but they assert that prices have not returned to levels experienced even at the beginning of 2015. Petitioners' Postconf. Brief at Answer to Question 17; Confer. Tr. at 24 (Anderson).

[151] Petitioners' Postconf. Brief at 6-7, 14-15, Response to Question 3; Confer. Tr. at 19-20 (Neal), 33-36 (Lutz); Petition, Vol. I at 23, 26; *compare* CR/PR at Figure V-2 *with* CR/PR at Table V-2 and Figure V-3. According to petitioners, twice per week, *CRU Ryan's Notes* publishes "ex U.S. warehouse" prices for spot market sales of 25-pound contained vanadium bags of ferrovanadium on pallets; the publishers apply a formula that accounts for transactions occurring on a different basis, such as in cans.

(*continued*...)

annual contract, a steel mill would order ferrovanadium in a given month (*e.g.*, September) at a price that is based on the average of published prices for the prior month (*e.g.*, August), less a previously negotiated discount; these contracts reportedly do not include a bottom or floor price below which the price cannot fall.[152] Thus, petitioners argue, a relatively small volume of low-priced spot sales could have a significant impact on market prices and on the domestic industry's revenue.[153]

Both Korvan and United Mineral argue that factors other than subject imports, including competition from domestic and nonsubject suppliers, declines in steel production, and raw material costs and availability explain any price declines.[154] Petitioners acknowledge that a number of factors may influence ferrovanadium prices but maintain that subject imports have depressed prices in the U.S. market.[155]

As discussed above, production of steel in the United States declined overall between January 2013 and December 2015 and vanadium pentoxide prices also fell, particularly in 2015,[156] but the current record also indicates that subject imports from Korea played a role in

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(…*continued*)
Petitioners' Postconf. Brief at 14-15, Answer to Question 6 and Exhibit 8; Confer. Tr. at 49, 58-59 (Anderson).

Petitioners acknowledge that monthly and quarterly volumes of subject imports from Korea "do not match up directly with published spot market prices," but they contend that the substantial, readily available U.S. inventories of ferrovanadium from Korea affected spot market prices because *** of subject imports from Korea were sold in the spot market and imports from Korea accounted for a larger share of the ferrovanadium spot market than any other source. Petitioners' Postconf. Brief at 16-17, Answer to Question 4, Answer to Question 16, Exhibit 10; Confer. Tr. at 10, 16 (Totaro), 24 (Anderson); Petition, Vol. I at 26; *see also* CR/PR at Table VII-6 (indicating that U.S. importers' end-of-period inventories decreased from *** pounds of contained vanadium in 2013 (equivalent to *** percent of U.S. imports) to *** pounds in 2014 (*** percent of U.S. imports) and increased to *** pounds in 2015 (*** percent of U.S. imports)). As discussed above, we intend to seek more information in any final phase of this investigation concerning how prices are set in this market and the extent and nature of competition for contract and spot sales by nonsubject imports.

[152] Petitioners' Postconf. Brief at 15 (explaining that variations in this discount permit competition among producers that may each base prices on the same published prices), Answer to Question 7.

[153] Confer. Tr. at 34 (Lutz).

[154] United Mineral's Written Statement at 1-2; Confer. Tr. at 12-14, 72, 74-76, 79-80, 86, 98-99 (Maberry).

[155] Petitioners argue that demand for ferrovanadium for steelmaking is one of several factors influencing ferrovanadium pricing, with other factors including scrap and iron ore prices. Confer. Tr. at 46 (Totaro). They disagree that the relationship among declining oil prices, declining steel production, and declining ferrovanadium prices is as clear cut as alleged by respondents. They argue that the energy market accounts for only 10 percent of end uses for steel and that the correlation between steel production and ferrovanadium prices is stronger than the correlation between oil prices and steel production or oil prices and ferrovanadium prices. Petitioners' Postconf. Brief at Answer to Question 20, Exhibit 15.

[156] Petitioners argue that declines in steelmaking in 2009 did not then lead to the magnitude of ferrovanadium price declines experienced in 2015. Moreover, petitioners state that declines in

(*continued*...)

the observed declines in prices of the domestic like product. Domestic price declines were steepest at the end of the period during a time of increased underselling of the domestic like product by subject imports.[157] The current record indicates that neither demand trends nor nonsubject imports can fully explain the magnitude of the price declines.[158]

For purposes of our preliminary determination, we find that the significant and increasing volume of subject imports from Korea depressed prices of the domestic like product to a significant degree. In any final phase of this investigation, we intend to explore further the role of subject imports as well as other market factors in price trends for the domestic like product.

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 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, and factors affecting domestic prices.

(…*continued*)
ferrovanadium prices in 2015 exceeded the decline in steel production and the decline in apparent U.S. consumption in that year. Confer. Tr. at 46-47 (Totaro, Lutz); Petitioners' Postconf. Brief at Answer to Question 5, Exhibit 6 and Exhibit 7; *see also* CR/PR at Figure V-1, Figure V-2, Table V-3, Table V-4, Table C-1. Furthermore, as petitioners suggest, the spread between ferrovanadium and vanadium pentoxide prices was relatively steady between 2010 and 2014 but the prices narrowed in 2015. Petitioners' Postconf. Brief at Answer to Question 14, Exhibit 9. We note, however, that domestic producers' ratio of raw materials costs to net sales declined overall from 2013 to 2015. CR/PR at Table VI-1. In any final phase of this investigation, we will further examine the role of raw material costs in determining the price of ferrovanadium.

[157] *See, e.g.*, CR/PR at Table V-4, Figure V-4.

[158] It appears that nonsubject imports were generally priced higher than ferrovanadium produced in the United States and subject imports from Korea. CR/PR at Table D-3. Some nonsubject imports were sold at lower prices than the domestic like product. CR/PR at Table D-3 (indicating that nonsubject imports of ferrovanadium from the Czech Republic, in particular, were lower than the domestic like product in 7 of 12 possible comparisons). Nevertheless, the volume of nonsubject imports, led by a decline in ferrovanadium imports from the Czech Republic, declined from *** pounds contained vanadium in 2013 to *** pounds of contained vanadium in 2014 and *** pounds of contained vanadium in 2015. Moreover, nonsubject imports' share of the market decreased from *** percent in 2013 to *** percent in 2014 and *** percent in 2015. CR/PR at Table IV-5.

[159] In its notice initiating the antidumping duty investigation, Commerce reported estimated antidumping duty margins that ranged from 20.25 percent to 54.69 percent for imports of ferrovanadium from Korea. 81 Fed. Reg. 24059 (Apr. 25, 2016); *see also* CR at I-9; PR at I-6.

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 of ferrovanadium increased between 2013 and 2014 and then declined between 2014 and 2015, the domestic industry's performance indicia were mixed,[161] with many of its production-related factors improving overall and most of its financial indicators declining over this period, particularly in 2015. The domestic industry progressively increased production capacity and production.[162] U.S. shipments, net sales, and market share

[160] 19 U.S.C. § 1677(7)(C)(iii). This provision was recently amended by the Trade Preferences Extension Act of 2015, Pub. L. 114-27.

[161] Under 19 U.S.C. § 1677(4), the Commission does not examine the effect of subject imports on overall corporate operations, only on the U.S. operations producing the domestic like product. Thus, in this investigation, we focus on the impact of subject imports on the operations of domestic producers AMG and Bear. We consider the data provided by the tollees to measure U.S. shipments, apparent U.S. consumption, inventories, and prices, consistent with the Commission's approach in prior ferrovanadium proceedings. *See* USITC Pub. 3570 at 10-11, 22-23; USITC Pub. 3420 at 6-7, 18-19; USITC Pub. 4046 at 8, 33; USITC Pub. 4517 at 7, 28-29. Because the *** of Bear's production is sold in the U.S. market by its tollees, Bear is principally affected by market conditions through its tollees. CR at I-12; PR at I-8; CR/PR at Table III-2, Table VI-2. A reduction in demand for ferrovanadium sold by the tollees would reduce the volume of Bear's toll conversion and its profits. If ferrovanadium prices were to fall, Bear's tollees would become less profitable and would exert pressure on Bear to reduce its conversion fee, which in turn would reduce Bear's profit. Thus, although Bear is for the most part not directly exposed to the conditions in the ferrovanadium sales market, these conditions, and the health of its tollees, impact Bear's financial condition. Petitioners' Postconf. Brief at 24-26, Answer to Question 2; Confer. Tr. at 27-28, 30 (Carey). AMG, on the other hand, is directly exposed to market conditions, and therefore is directly injured by falling sales volume and prices. The consolidated ferrovanadium operations of AMG, Bear, and Bear's responding tollee firms presented in CR/PR at Table VI-6 differ from those in Table VI-1 in that Table VI-1 includes the revenues earned by Bear in toll-converting raw materials provided by the tollee firms whereas Table VI-6 substitutes the revenues earned by the tollee firms selling the finished ferrovanadium to other parties. The trends in both tables are substantially the same but the absolute values and per-unit values are higher in Table VI-6, reflecting the open market sales values and fully loaded costs. CR at VI-15; PR at VI-4.

[162] The domestic industry's average production capacity increased from *** pounds contained vanadium in 2013 to *** pounds in 2014 and *** pounds in 2015, and its production increased from *** pounds contained vanadium in 2013 to *** pounds in 2014 and *** pounds in 2015. CR/PR at Table III-5. The domestic industry's capacity and production increases were ***, although *** reported substantially higher levels of capacity, largely ***. AMG made substantial capital investments to improve and expand its production facilities, including a furnace shell expansion that it completed in October 2014. Despite worsening market and price conditions, AMG reported that it maintained high production volumes to sustain an adequate level of shipments in an attempt to recover its fixed production costs. CR at III-4 to III-5; PR at III-2 to III-3; Petitioner's Postconf. Brief at Answer to Question 13, Question 18; Confer. Tr. at 10, 39 (Totaro), 22 (Anderson), 26, 61 (Carey); Petition, Vol. I at 19. We intend to further explore the domestic industry's capital investments and capacity in any final phase of this investigation.

increased overall during this period.[163] Several employment-related factors increased as well.[164] The domestic industry's capacity utilization increased overall but, like U.S. shipments and net sales, was lower in 2015 than in 2014.[165]

The domestic industry's financial performance deteriorated during the period. Sales revenues increased from 2013 to 2014 but declined from 2014 to 2015.[166] The domestic industry's ratio of COGS to net sales declined from 2013 to 2014 but rose between 2014 and 2015 for an overall increase.[167] Its gross profit, operating income, net income, and operating income ratio each increased between 2013 and 2014 and then decreased between 2014 and 2015 for an overall decline during this period.[168] The domestic industry's capital expenditures fell overall, and U.S. producers reported negative effects from subject imports on their return on investment and on their growth and development.[169]

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[163] U.S. producers/tollees' U.S. shipments increased from *** pounds contained vanadium in 2013 to *** pounds in 2014 and decreased somewhat to *** pounds in 2015. CR/PR at Table III-8. Its net sales increased from *** pounds contained vanadium in 2013 to *** pounds in 2014 and decreased somewhat to *** pounds in 2015. CR/PR at Table VI-1. Exports accounted for a small share of U.S. producers/tollees' total U.S. shipments. CR/PR at Table III-8. U.S. producers/tollees' market share increased from *** percent in 2013 to *** percent in 2014 and *** percent in 2015. CR/PR at Table IV-5.

[164] Production-related workers increased from *** employees in 2013 to *** employees in 2014 and *** employees in 2015. Total hours worked increased from *** hours in 2013 to *** hours in 2014 and decreased somewhat to *** hours in 2015. Hourly wages increased from $*** in 2013 to $*** in 2014 and $*** in 2015. Productivity increased from *** pounds of contained vanadium per hour in 2013 to *** pounds in 2014 and *** pounds in 2015. CR/PR at Table III-11.

[165] The domestic industry's capacity utilization increased from *** percent in 2013 to *** percent in 2014 and declined to *** percent in 2015. CR/PR at Table III-5. The ratio of end-of-period inventories to total shipments increased overall, declining from *** percent in 2013 to *** percent in 2014 and increasing to *** percent in 2015. CR/PR at Table III-9.

[166] The domestic industry's sales revenues increased from $*** in 2013 to $*** in 2014 and decreased to $*** in 2015. CR/PR at Table VI-1.

[167] The domestic industry's COGS as a ratio to net sales declined from *** percent in 2013 to *** percent in 2014 and increased to *** percent in 2015. CR/PR at Table VI-1. We note that raw material costs were affected by ***. CR/PR at Table VI-1. Raw material costs would have been ***. CR/PR at Table VI-1 at n.4. We also observe that CR at VI-9 at n.7; PR at VI-2 n.7.

In any final phase of this investigation, we will further examine the effect of *** and the role of *** on the domestic industry's financial performance. CR at VI-8 to VI-9; PR at VI-2; CR/PR at Table VI-1 at n.4.

[168] The domestic industry's gross profit increased from $*** in 2013 to $*** in 2014 and decreased to $*** in 2015. Its operating income increased from $*** in 2013 to $*** in 2014 and decreased to $*** in 2015. Its net income increased from $*** in 2013 to $*** in 2014 and decreased to $*** in 2015. Its gross profit ratio increased from *** percent in 2013 to *** percent and decreased to *** percent in 2015. Its operating ratio increased from *** percent in 2013 to *** percent in 2014 and declined to *** percent in 2015, whereas its net income ratio increased from *** percent in 2013 to *** percent in 2014 and declined to *** percent in 2015. CR/PR at Table VI-1.

[169] Domestic producers' capital expenditures decreased from $*** in 2013 to $*** in 2014 and increased to $*** in 2015, a level below that of 2013, whereas their research and development

(*continued*...)

Between 2013 and 2015, significant and increasing volumes of subject imports that were good substitutes for the domestic like product entered the U.S. market. These imports depressed prices for the domestic like product, and as a consequence the domestic industry's revenues and financial performance were worse than they otherwise would have been. In light of these considerations and the record as a whole in the preliminary phase of this investigation, we find that subject imports from Korea had a significant impact on the domestic industry.

In reaching this conclusion, we have considered whether there are factors other than subject imports from Korea that may have had an adverse impact on the domestic industry between 2013 and 2015 to ensure that we are not attributing any injury from other such factors to the subject imports. As indicated in our price effects discussion above, however, the current record indicates that these other factors do not appear to explain the lower prices that had negative effects on the domestic industry's revenue and financial performance.

Accordingly, for purposes of this preliminary determination, we conclude that subject imports from Korea had a significant impact on the domestic industry.

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 subject imports of ferrovanadium from Korea that allegedly are sold in the United States at less than fair value.

(…*continued*)
expenditures, while small, increased overall, declining from $*** in 2013 to $*** in 2014 and increasing to $*** in 2014. CR/PR at Table VI-3. Domestic producers also reported negative effects on investment and on growth and development due to subject imports from Korea. CR/PR at Table VI-5a, Table VI-5b; Confer. Tr. at 21 (Neal), 25 (Anderson).

PART I: INTRODUCTION

BACKGROUND

This investigation results from a petition filed with the U.S. Department of Commerce ("Commerce") and the U.S. International Trade Commission ("USITC" or "Commission") by the Vanadium Producers and Reclaimers Association and its members: AMG Vanadium, LLC ("AMG"), Cambridge, Ohio; Bear Metallurgical Company ("Bear"), Butler, Pennsylvania; Gulf Chemical & Metallurgical Corporation, Freeport, Texas; and Evraz Stratcor, Inc. ("Evraz Stratcor"), Hot Springs, Arkansas, on March 28, 2016, alleging that an industry in the United States is materially injured and threatened with material injury by reason of less-than-fair-value ("LTFV") imports of ferrovanadium[1] from Korea. The following tabulation provides information relating to the background of this investigation.[2] [3]

Effective date	Action
March 28, 2016	Petition filed with Commerce and the Commission; institution of Commission investigation (81 FR 18888, April 1, 2016)
April 18, 2016	Commission's conference
April 18, 2016	Commerce's notice of initiation (81 FR 24059, April 25, 2016)
May 11, 2016	Commission's vote
May 12, 2016	Commission's determination
May 19, 2016	Commission's views

STATUTORY CRITERIA AND ORGANIZATION OF THE REPORT

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*

[1] See the section entitled "The Subject Merchandise" in *Part I* of this report for a complete description of the merchandise subject to this investigation.

[2] Pertinent *Federal Register* notices are referenced in app. 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 app. B of this report.

merchandise on domestic producers of domestic like products, but only in 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

[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.

United States merely because that industry is profitable or because the performance of that industry has recently improved.

Organization of report

Part I of this report presents information on the subject merchandise, alleged dumping margins, and domestic like product. *Part II* of this report presents information on conditions of competition and other relevant economic factors. *Part III* presents information on the condition of the U.S. industry, including data on capacity, production, shipments, inventories, and employment. *Parts IV* and *V* present the volume of subject imports and pricing of domestic and imported products, respectively. *Part VI* presents information on the financial experience of U.S. producers. *Part VII* 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

Ferrovanadium is an alloy used to add vanadium to molten steel. Steelmaking is the largest use of vanadium and accounts for 90 percent or more of all vanadium consumption worldwide.[6] The leading U.S. producers of ferrovanadium are AMG Vanadium and Bear, while the leading producers of ferrovanadium from Korea include Korvan and Woojin. The leading U.S. importers of ferrovanadium from Korea are ***. Leading importers of product from nonsubject countries (primarily the Czech Republic, Austria, and Canada) include ***,[7] ***. Leading purchasers are end-users (iron or steel producers), primarily located in the Midwest.[8]

Apparent U.S. consumption of ferrovanadium totaled approximately *** pounds contained vanadium ($***) in 2015. Currently, two firms are known to produce ferrovanadium in the United States. U.S. producers/tollees' U.S. shipments of ferrovanadium totaled *** pounds contained vanadium ($***) in 2015, and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value. U.S. imports from Korea totaled 1.7 million pounds contained vanadium ($16.3 million) in 2015 and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value. U.S. imports from nonsubject sources totaled *** pounds contained vanadium ($50.7 million) in 2015 and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value.

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[6] Roskill Information Services, *Vanadium: Market Outlook to 2025, 14th edition* https://roskill.com/product/vanadium-market-outlook-to-2025-14th-edition-2015-premium-edition/, May 4, 2016.

[7] ***.

[8] *Ferrovanadium from China and South Africa, Investigation Nos. 731-TA-986-987 (Second Review)*, USITC Publication 4517, January 2015, p. I-20.

SUMMARY DATA AND DATA SOURCES

A summary of data collected in this investigation is presented in appendix C, table C-1. Except as noted, U.S. industry data are based on questionnaire responses of six firms, comprising of two groups. The first group includes producers that either produce ferrovanadium for their own account or process the product for the account of other firms under a toll agreement. This group consists of U.S. producers AMG and Bear. The second group includes tolling customer firms that provide raw materials to the producer, retain title to the product produced, and ultimately sell the ferrovanadium to their customers. This group is commonly referred to as tollees, and consists of Evraz Stratcor, Glencore, Ltd. ("Glencore"), Gulf Chemicals and Metallurgical Corporation ("Gulf"), and Traxys North America LLC ("Traxys").[9] Staff believes that these responses represent all U.S. production and account for nearly all U.S. shipments of ferrovanadium in 2015. U.S. imports are based on Commerce's adjusted official import statistics and the questionnaire responses of 16 U.S. importers that are believed to have accounted for virtually all U.S. imports of ferrovanadium in 2015. Foreign industry data and related information are based on the questionnaire responses of Korvan and Woojin, firms believed to account for the majority of Korean ferrovanadium production. These firms' exports to the United States accounted for virtually all U.S. imports of ferrovanadium from Korea in 2015.[10]

PREVIOUS AND RELATED INVESTIGATIONS

Shieldalloy Metallurgical Corp. ("Shieldalloy"), New York, New York, filed a petition on May 31, 1994, alleging that an industry in the United States was materially injured and threatened with material injury by reason of less-than-fair-value ("LTFV") imports of ferrovanadium and nitrided vanadium from Russia. Following notification of a final determination by Commerce that imports of ferrovanadium and nitrided vanadium from Russia were being sold at LTFV, the Commission determined on May 19, 1995, that a domestic industry was materially injured by reason of LTFV imports of ferrovanadium and nitrided vanadium from Russia. Commerce published the antidumping duty order on ferrovanadium and nitrided vanadium from Russia on July 10, 1995.[11]

In May 2001, the Commission completed a full five-year review of that order and determined that revocation of the antidumping duty order on ferrovanadium and nitrided

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[9] ***.

[10] Petitioners believe that these two producers operate both as producers and exporters of ferrovanadium to the United States for their own accounts and as toll producers of ferrovanadium that is exported to the United States by or on behalf of tollees. The firms are believed to account for the vast majority of exports of the subject merchandise during the most recent twelve month period. Petition, p. 13.

[11] *Notice of Antidumping Order: Ferrovanadium and Nitrided Vanadium from the Russian Federation*, 60 FR 35550, July 10, 1995.

vanadium from Russia would be likely to lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time. Following the affirmative determinations in the first five-year review by Commerce and the Commission, Commerce issued notice of a continuation of the antidumping duty order on imports of ferrovanadium and nitrided vanadium from Russia, effective June 7, 2001.[12]

In September 2006, the Commission completed an expedited five-year review of the subject order and determined that revocation of the antidumping duty order on ferrovanadium and nitrided vanadium from Russia would be likely to lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time. Following the affirmative determinations in the second five-year review by Commerce and the Commission, Commerce issued notice of a continuation of the antidumping duty order on imports of ferrovanadium and nitrided vanadium from Russia, effective October 13, 2006.[13]

In August 2012, the Commission completed a full five-year review of the antidumping duty order on ferrovanadium and nitrided vanadium from Russia and determined that revocation of that order would not be likely to lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time.[14] On September 6, 2012, Commerce published notice of a revocation of the antidumping duty order on ferrovanadium and nitrided vanadium from Russia, effective October 13, 2011.[15]

The Ferroalloys Association Vanadium Committee and its members: Bear, Butler, Pennsylvania; Shieldalloy, Cambridge, Ohio; Gulf, Freeport, Texas; U.S. Vanadium Corp., Danbury, Connecticut; and CS Metals of Louisiana, Convent, Louisiana, filed petitions on November 26, 2001, alleging that an industry in the United States was materially injured and threatened with material injury by reason of LTFV imports of ferrovanadium from China and South Africa. Following notification of a final determination by Commerce that imports of ferrovanadium from China and South Africa were being sold at LTFV, the Commission determined that a domestic industry was materially injured by reason of LTFV imports of ferrovanadium from China and South Africa.[16] Commerce published the antidumping duty orders on ferrovanadium from China[17] and South Africa[18] on January 28, 2003.

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[12] *Continuation of Antidumping Duty Order: Ferrovanadium and Nitrided Vanadium from Russia*, 66 FR 30694, June 7, 2001.

[13] *Ferrovanadium and Nitrided Vanadium from Russia: Notice of Continuation of Antidumping Duty Order*, 71 FR 60475, October 13, 2006.

[14] *Ferrovanadium and Nitrided Vanadium from Russia*, 77 FR 51825, August 27, 2012.

[15] *Ferrovanadium and Nitrided Vanadium from Russia: Revocation of Antidumping Duty Order*, 77 FR 54897, September 6, 2012.

[16] *Ferrovanadium from China and South Africa*, *Inv. Nos. 731-TA-986-987 (Final)*, USITC Publication 3570, January 2003.

[17] *Notice of Amended Final Antidumping Duty Determination of Sales at Less Than Fair Value and Antidumping Duty Order: Ferrovanadium from China*, 68 FR 4168, January 28, 2003.

[18] *Notice of Antidumping Duty Order: Ferrovanadium from the Republic of South Africa*, 68 FR 4169, January 28, 2003.

In November 2008, the Commission completed full five-year reviews of the antidumping duty orders on ferrovanadium from China and South Africa and determined that revocation of those orders would be likely to lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time.[19] Following affirmative determinations in the first five-year reviews by Commerce and the Commission,[20] Commerce issued notice of continuation of the antidumping duty orders on imports of ferrovanadium from China and South Africa, effective December 19, 2008.[21]

In January 2015, the Commission completed full five-year reviews of the antidumping duty orders on ferrovanadium from China and South Africa and determined that revocation of those orders would be likely to lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time.[22] Following affirmative determinations in the second five-year reviews by Commerce and the Commission,[23] Commerce issued notice of continuation of the antidumping duty orders on imports of ferrovanadium from China and South Africa, effective February 18, 2015.[24]

NATURE AND EXTENT OF ALLEGED SALES AT LTFV

On April 25, 2016, Commerce published a notice in the *Federal Register* of the initiation of its antidumping duty investigation on ferrovanadium from Korea.[25] Commerce has initiated an antidumping duty investigation based on estimated dumping margins ranging from 20.25 percent to 54.69 percent for ferrovanadium from Korea.

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[19] *Ferrovanadium from China and South Africa, Inv. Nos. 731-TA-986-987 (Review)*, USITC Publication 4046, November 2008.

[20] *Ferrovanadium from China and South Africa: Final Results of the Expedited Sunset Reviews of the Antidumping Duty Orders*, 73 FR 19192, April 9, 2008; *Ferrovanadium from China and South Africa*, 73 FR 72837, December 1, 2008.

[21] *Ferrovanadium from China and South Africa: Continuation of Antidumping Duty Orders*, 73 FR 77609, December 19, 2008.

[22] *Ferrovanadium from China and South Africa, Inv. Nos. 731-TA-986-987 (Second Review)*, USITC Publication 4517, January 2015.

[23] *Ferrovanadium from China and South Africa: Final Results of the Expedited Second Sunset Reviews of the Antidumping Duty Orders*, 73 FR 19192, April 9, 2008; *Ferrovanadium from China and South Africa: Determinations*, 80 FR 5787, February 3, 2015.

[24] *Ferrovanadium from the People's Republic of China and the Republic of South Africa: Continuation of Antidumping Duty Orders*, 80 FR 8607, February 18, 2015.

[25] *Ferrovanadium From the Republic of Korea: Initiation of Less-Than-Fair-Value Investigation*, 81 FR 24059, April 25, 2016.

THE SUBJECT MERCHANDISE

Commerce's scope

Commerce has defined the scope of this investigation as follows:

> *The product covered by this investigation is all ferrovanadium regardless of grade (i.e., percentage of contained vanadium), chemistry, form, shape, or size. Ferrovanadium is an alloy of iron and vanadium. Ferrovanadium is classified under Harmonized Tariff Schedule of the United States (HTSUS) item number 7202.92.0000. Although this HTSUS item number is provided for convenience and Customs purposes, the written description of the scope of the investigation is dispositive.*

Tariff treatment

Ferrovanadium is classifiable in the Harmonized Tariff Schedule of the United States ("HTS") under subheading 7202.92.00. The normal trade relations import duty is 4.2 percent *ad valorem*. The import duty applicable to originating goods of Korea was phased out under the provisions of the U.S.-Korea Free Trade Agreement; the applicable rule of origin for heading 7202 (requiring a tariff chapter-level change for third-country inputs) effectively seems to require that imports wholly originate in Korea or in the United States. The applicable duty on goods of Korea was 3.3 percent *ad valorem* effective March 15, 2012, 2.5 percent effective January 1, 2013, 1.6 percent effective January 1, 2014, 0.8 percent effective January 1, 2015, and free effective on and after January 1, 2016.

THE PRODUCT

Description and applications

Ferrovanadium is an alloy used to add vanadium to molten steel. Steelmaking is the largest use of vanadium and accounts for 90 percent or more of all vanadium consumption worldwide.[26] Steel products that may include vanadium are certain construction alloy steels, rail steels, high-speed and heat-resisting tool and die steels, and high-strength low-alloy steels, often called microalloy steels. Microalloy steels are used in pipeline steel, concrete reinforcing bars, structural shapes and plate for construction, and in automobile components.[27]

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[26] Roskill Information Services, *Vanadium: Market Outlook to 2025, 14th edition* https://roskill.com/product/vanadium-market-outlook-to-2025-14th-edition-2015-premium-edition/, May 4, 2016.

[27] The Vanadium International Technical Committee, "Vanadium Applications," http://vanitec.org/vanadium/vanadium-solutions-and-advantages/, October 16, 2014.

Ferrovanadium is commonly produced in grades having a vanadium content of 40–60 percent or 75-85 percent. Regardless of grade, commercial practice is to quote the price of ferrovanadium on the basis of the contained vanadium content. Ferrovanadium is commonly packaged for sale in the United States in containers of a specified content of contained vanadium, typically 25 pounds.

Although vanadium is one of the most common elements in the earth's crust, it frequently is found in concentrations that would be uneconomical to mine or process for vanadium content alone. As a result, it is most often produced as a byproduct or co-product of other mineral operations. For example, the largest source of vanadium is a byproduct of the production of steel using iron ore with high vanadium content. Iron ore containing recoverable vanadium is mined in only a few places in the world; the major producers are China, South Africa, and Russia, with growing production in Brazil partially offsetting recent declines in Chinese and South African mine production.[28] The second most common production method is recovery from vanadium-containing ore. Most ore production is in South Africa and China. The third and final method of vanadium production is secondary production from such sources as the residue from the processing and burning of vanadium-containing oil products. Such secondary production is the primary vanadium source in the United States.[29]

Manufacturing processes[30]

The manufacturing process to produce ferrovanadium is determined by the raw material to be used. Most operations utilize a two-step process: first, the production and separation of vanadium pentoxide from the other contents of the starting raw material, and second, the production of ferrovanadium from vanadium pentoxide. Vanadium pentoxide is an important intermediate chemical compound that is used primarily to produce ferrovanadium, but also is used to produce many other vanadium chemicals and alloys. It is widely traded and industry publications regularly report its price.

Bear's operations are based on the production of ferrovanadium for a processing fee (toll production), using vanadium pentoxide provided by its customers such as Gulf and Evraz Stratcor. The process used by Bear is aluminothermic, in which heat for the process is derived from chemical reactions. Vanadium pentoxide and aluminum are placed in a conversion vessel along with steel scrap and flux materials.[31] The contents are ignited with a fuse and the reaction

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[28] Ibid.

[29] Ibid. See also Polyak, Désirée, *2016 Minerals Yearbook: Vanadium*, United States Geological Survey, January 2016, pp. 182-183 (mine production data, referencing Evraz Highveld Steel and Vanadium Ltd.'s 2015 filing for business-rescue proceedings).

[30] Unless otherwise specified, information on U.S. manufacturing processes is from *Ferrovanadium from China and South Africa, Investigation Nos. 731-TA-986-987 (Second Review), USITC Publication 4517, January 2015.*

[31] Flux is a purifying agent added during the manufacturing process. The flux reacts with the impurities to form a slag (agglomerated impurities) which floats on top of the ferrovanadium and can be skimmed off.

proceeds quickly, with the oxidation (burning) of aluminum providing the heat. There is no external heat source such as electricity or gas. Following a reaction period of about seven minutes, the result is molten ferrovanadium and an aluminum-oxide-rich slag. The products are allowed to cool and freeze in the reaction vessel for about six hours.[32] After cooling, both are crushed and sized for sale. Slag is sold for use as flux in steelmaking operations.

Gulf is primarily a processor of spent catalysts from oil refineries. Catalysts contain recoverable cobalt, molybdenum, nickel, and vanadium, and Gulf's operation depends upon the recovery not only of vanadium but of the other elements as well. Gulf produces vanadium pentoxide, which it transfers to its corporate affiliate, Bear, which processes the vanadium pentoxide into ferrovanadium in exchange for a processing fee. The toll-produced ferrovanadium remains the property of Gulf.

Evraz Stratcor produces vanadium pentoxide as well as a variety of vanadium chemicals from vanadium ashes, residues, and other raw materials including vanadium-containing slag.[33] The company transfers vanadium pentoxide to Bear, which processes the vanadium pentoxide into ferrovanadium. The toll-produced ferrovanadium remains the property of Evraz Stratcor, which is responsible for selling the product and administering the sales.

AMG produces ferrovanadium and other ferroalloys from spent catalysts and petroleum combustion residues and uses pyrometallurgical processing in electrical furnaces. AMG's ferrovanadium contains approximately 55 percent of vanadium, in contrast to Bear's product, which contains 80 percent. AMG's product also contains more silicon but less aluminum than Bear's. Despite the difference in the contained vanadium content, the product is packaged similarly to 80-percent product, in individual cans or paper sacks, typically of 10-25 pounds of vanadium content, or in 2,000- or 4,000-pound supersacks.[34]

Spent oil refinery catalysts, as well as oil residues and ash, are waste products that are subject to regulation with respect to their handling, processing, and disposition. Two classes of spent catalysts are specifically classified as hazardous wastes under the RCRA (the Resource Conservation and Recovery Act): hydrotreating catalysts (RCRA waste K171) and hydrorefining catalysts (RCRA waste K172). Receivers and processors of hazardous waste must be licensed

[32] Petitioners' postconference brief, Exhibit 3.

[33] In February 2014, Evraz Stratcor began importing vanadium-containing slag from its parent company's steelmaking plant in Nizhny Tagil, Russia. When Evraz Stratcor's new slag processing facilities in the United States are at full production, this slag will be the primary feedstock. Evraz Stratcor, "New Facilities at Hot Springs Plant Start Processing Vanadium-Bearing Steelmaking Slag," press release, February 6, 2014.

[34] In general, ferrovanadium is packaged for sale in a variety of types and sizes of containers. Steel companies reportedly have been changing their handling of alloy products to bulk systems so 4,000 pound supersacks are increasingly common. In addition, packaging may be in cans or in bags, each with a specific amount of contained vanadium—from 10 to 25 pounds. Paper bags may be placed in a steel drum for protection. Staff conference transcript, pp. 57-58.

and comply with RCRA regulations with respect to handling, processing, and record-keeping related to the hazardous wastes.[35]

DOMESTIC LIKE PRODUCT ISSUES

No party raised issues with respect to the definition of the domestic like product in this investigation. Petitioners propose that the domestic like product should be defined as all grade of ferrovanadium, co-extensive with the scope definition, and as defined by the Commission in its previous related proceedings, i.e. ferrovanadium from China and South Africa.[36] At the time of the staff conference, counsel for foreign producer Korvan did not contest petitioners' proposed domestic like product and domestic industry definitions.[37]

[35] *Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Petroleum Refining Process Wastes; Land Disposal Restrictions for Newly Identified Wastes; and CERCLA Hazardous Substance Designation and Reportable*, 63 FR 42110, August 6, 1998.

[36] Petition, pp. 3-6.

[37] Conference transcript, pp. 83-84 (Maberry).

PART II: CONDITIONS OF COMPETITION IN THE U.S. MARKET

U.S. MARKET CHARACTERISTICS

Ferrovanadium is an alloy used to add vanadium to molten steel. Ferrovanadium enhances the physical properties of the steel in such products as several types of construction and engineering alloy steels, rail steels, high-speed and heat-resisting tool and die steels, and high-strength low-alloy steels, often called microalloy steels. It can be produced directly from mined vanadium bearing iron ore, by recycling spent oil refinery catalysts, or from vanadium bearing iron slag. Ferrovanadium is sold primarily to end users, principally steel companies but also iron foundries. Ferrovanadium is sold in a variety of packaging, from small bags to drums to supersacks, and is sold on the basis of contained vanadium content.[1]

Apparent U.S. consumption of ferrovanadium increased from 2013 to 2015. Overall, apparent U.S. consumption in 2015 was modestly higher than in 2013.

CHANNELS OF DISTRIBUTION

U.S. producers/tollees sold mainly to end users while importers' sales were split between distributors and end users, as shown in table II-1.

Table II-1
Ferrovanadium: U.S. producers/tollees' and importers' U.S. commercial shipments, by sources and channels of distribution, 2013-2015

* * * * * * *

GEOGRAPHIC DISTRIBUTION

U.S. producers/tollees and importers reported selling ferrovanadium to all regions in the contiguous United States (table II-2). For U.S. producers/tollees, *** percent of sales were within 100 miles of their production facility, *** percent were between 101 and 1,000 miles, and *** percent were over 1,000 miles. Importers sold *** percent within 100 miles of their U.S. point of shipment, *** percent between 101 and 1,000 miles, and *** percent over 1,000 miles.

[1] Petition, pp. 7-9.

Table II-2

Ferrovanadium: Geographic market areas in the United States served by U.S. producers and importers

Region	U.S. producers/tollees	U.S. importers/tollees of subject product
Northeast	4	8
Midwest	6	9
Southeast	4	7
Central Southwest	3	2
Mountains	2	2
Pacific Coast	2	1
Other[1]	0	0
All regions (except Other)	1	0

[1] All other U.S. markets, including AK, HI, PR, and VI.

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

SUPPLY AND DEMAND CONSIDERATIONS

U.S. supply

Domestic production

Based on available information, U.S. producers/tollees of ferrovanadium have the ability to respond to changes in demand with large changes in the quantity of shipments of U.S.-produced ferrovanadium to the U.S. market. The main contributing factors to this degree of responsiveness of supply are the available capacity and inventories, but responsiveness is limited by the availability of viable alternative markets.

Industry capacity

Domestic capacity utilization fluctuated, but overall increased, from ***percent in 2013 to *** percent in 2015. This increase is driven by a ***percent increase in production; however, capacity increased by *** percent as well. U.S. producer AMG indicated that capacity increased over the period due to the completion of furnace shell expansion in October of 2014.[2] U.S. producer Bear testified that furnace expansion nearly doubled capacity at its facility over the period.[3] The relatively low level of capacity utilization and increased production capacity suggests that U.S. producers may have substantial ability to increase production of ferrovanadium in response to an increase in prices.

[2] Conference transcript, p. 22 (Anderson).

[3] Conference transcript, p. 39 (Totaro).

Alternative markets

U.S. producers/tollees' exports, as a share of total shipments, increased slightly from ***percent in 2013 to *** percent in 2015. The low portion of shipments exported outside the United States suggests that U.S. producers may have only a limited ability to shift shipments from other markets to the U.S. market in response to price changes.

Inventory levels

U.S. producers/tollees' ratio of inventories to total shipments fluctuated from *** percent in 2013 to *** percent in 2014 to *** percent in 2015. These inventory levels suggest that U.S. producers/tollees may have some ability to respond to changes in demand with changes in the quantity shipped from inventories.

Production alternatives

U.S. producer Bear stated that they could switch production from ferrovanadium to ferromolybdenum. U.S. producer Bear reported that it could produce ferromolybdenum and ferrovanadium on the same equipment in the same day. It reported that ***. Bear elaborated that ***; the ***.[4]

Supply constraints

U.S. producer *** reported supply constraints due to poor market conditions.

Subject imports from Korea[5]

Based on available information, producers of ferrovanadium from Korea have the ability to respond to changes in demand with moderate changes in the quantity of shipments of ferrovanadium to the U.S. market. The main contributing factors to this degree of responsiveness of supply are sales to export markets, but responsiveness is limited by the lack of unused capacity and the low amount of inventories.

Industry capacity

Korean producers' capacity utilization increased from *** percent to *** percent from 2013 to 2015. While Korean capacity remained constant, production more than *** in 2015, enabling Korean producers to more than *** their exports to the United States and to other

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[4] Conference transcript, p. 41 (Carey), and Petitioners' postconference brief, Answers to staff questions, pp. 2-3.

[5] For data on the number of responding foreign firms and their share of U.S. imports from Korea, please refer to Part I, "Summary Data and Data Sources."

markets. The relatively high level of capacity utilization in 2015 suggests that Korean producers may have a limited ability to increase production of ferrovanadium further in response to an increase in prices. Staff also notes that actual capacity utilization in 2013-14 and projected capacity utilization in 2016-17 are noticeably lower than that calculated for 2015.

Alternative markets

Korean producers' exports, as a share of total shipments, fluctuated but ultimately increased, between 2013 and 2015. Korean producers' exports, as a share of total shipments, increased from *** percent in 2013 to *** percent in 2014 and dropped in 2015 to *** percent. Exports of ferrovanadium to the United States increased by *** percent from 2013 to 2015. Korean producers *** reported that the European Union and Japan were their primary export markets. This fluctuation in exports indicates that Korean producers may have some ability to shift shipments from other markets to the U.S. market in response to price changes.

Inventory levels

Korean producers' ratio of inventories to total shipments fluctuated from *** percent in 2013 to *** percent in 2014 to *** percent in 2015. These inventory levels suggest that U.S. producers may have a limited ability to respond to changes in demand with changes in the quantity shipped from inventories.

Production alternatives

Korean producer *** reported that it could make ferromolybdenum on the same equipment as ferrovanadium and that the ability to switch depended on price fluctuations and market demands.

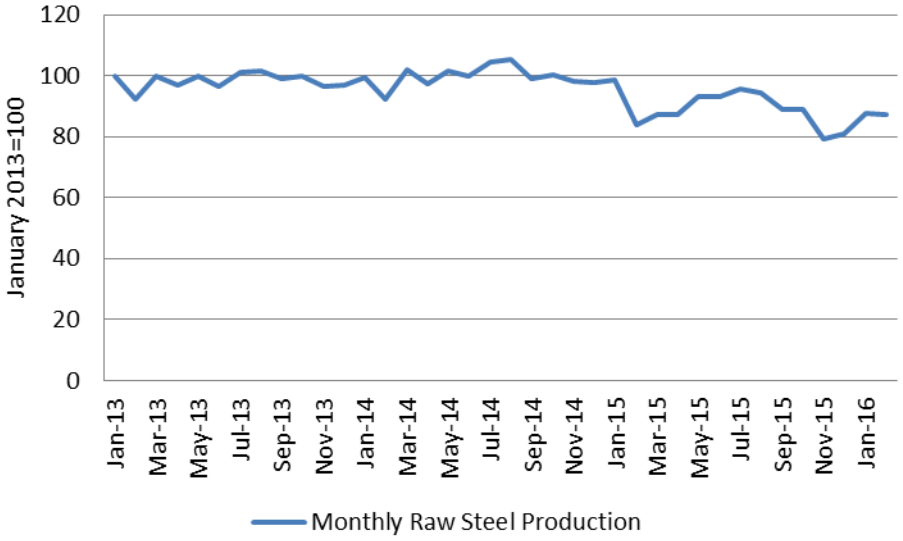
Supply constraints

Korean producer *** reported that rapid changes in the price for vanadium and molybdenum affect its ability to produce ferrovanadium. Korean producer *** reported being limited by labor supply and availability of raw material restraints and uncertain global steel markets.

U.S. demand

Based on available information, the overall demand for ferrovanadium is likely to experience small-to-moderate changes in response to changes in price. The main contributing factors are the availability of substitute products and the very small cost share of ferrovanadium in steel production. Steel production is one of the main drivers of demand for ferrovanadium. From January 2013 to December 2015, steel production in the United States fell by 19.0 percent (figure II-1). Steel production rose slightly in the first two months of 2016, but still remains below January 2013 levels.

Figure II-1
Ferrovanadium: Indexed monthly U.S. raw steel production, January 2013-February 2016



Source: AISI monthly steel production, retrieved April 21, 2016.

End uses

U.S. demand for ferrovanadium depends on the demand for U.S.-produced downstream products. Reported end uses include steel production, particularly high strength and anti-corrosive steel alloys.

Cost share

Ferrovanadium accounts for a small share of the cost of steel production. Responding U.S. producers and importers reported that ferrovanadium accounted for less than *** percent of steel production costs.

Business cycles

Four of six U.S. producers/tollees and 10 of 15 importers/tollees indicated that the market was not subject to business cycles or conditions of competition. U.S. tollee and importer *** reported that the ferrovanadium market was affected by the drop in oil prices in 2015, which led in the demand for steel used in the energy sector to fall. U.S. tollee and importer *** and importer *** reported that demand for ferrovanadium is seasonal with demand decreasing in the summer.

Demand trends

Most firms reported a decrease in U.S. demand for ferrovanadium since January 1, 2013 (table II-3), citing the decline in steel production. In particular, importer *** reported that demand for tubular steel in the energy market was low due to lower oil prices.

Table II-3
Ferrovanadium: Firms' responses regarding U.S. demand and demand outside the United States

Item	Number of firms reporting			
	Increase	No change	Decrease	Fluctuate
Demand inside the United States: U.S. producers/tollees	0	1	5	0
Importers	0	2	9	2
Demand outside the United States: U.S. producers/tollees	2	0	4	0
Importers	1	2	9	3

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

Substitute products

Reported substitutes for ferrovanadium include ferroniobium, niobium, and nitrided vanadium. U.S. producers *** reported that ferroniobium is used in structural beams, rebar, and steel plate end-use applications.

SUBSTITUTABILITY ISSUES

The degree of substitution between domestic and imported ferrovanadium depends upon such factors as relative prices, quality (*e.g.*, grade standards, reliability of supply, defect rates, etc.), and conditions of sale (*e.g.*, price discounts/rebates, lead times between order and delivery dates, payment terms, product services, etc.). Based on available data, staff believes that there is high degree of substitutability between domestically produced ferrovanadium and ferrovanadium imported from Korea.

Lead times

Ferrovanadium is primarily sold from U.S. inventory. U.S. producers/tollees reported that all of their commercial shipments were from inventory, with lead times averaging *** days. Importers reported that *** percent of their commercial shipments were from U.S. inventory, with lead times averaging *** days. The remaining *** percent of their commercial shipments were produced-to-order, with lead times averaging 40 days.

Factors affecting purchasing decisions

Purchasers responding to lost sales and lost revenue allegations[6] were asked to identify the main purchasing factors their firm considered in their purchasing decisions for ferrovanadium. The only responding purchaser, ***, reported that price, availability, and quantity were the top purchasing factors.

Comparison of U.S.-produced and imported ferrovanadium

In order to determine whether U.S.-produced ferrovanadium can generally be used in the same applications as imports from Korea, U.S. producers and importers were asked whether the products can "always," "frequently," "sometimes," or "never" be used interchangeably. As shown in table II-9, a majority of U.S. producers/tollees and importers reported that U.S.-produced ferrovanadium was "always" interchangeable with Korean-produced ferrovanadium. Importer *** reported that U.S.-produced ferrovanadium is "sometimes" interchangeable with imports from subject and nonsubject sources. It reported that Korean- and nonsubject-produced ferrovanadium is classified as ferrovanadium with 80-percent vanadium content; whereas, U.S. producers mainly produce ferrovanadium with 50-percent vanadium content. Additionally, *** reported that steel producers that use ferrovanadium with 80-percent vanadium content rarely switch to ferrovanadium with 50-percent vanadium content.

[6] This information is compiled from responses by purchasers identified by Petitioners as part of their lost sales lost revenue allegations. Only two purchasers were identified by Petitioners in response to requests for lost sales/lost revenue allegations. See Part V for additional information.

Table II-9

Ferrovanadium: Interchangeability between ferrovanadium produced in the United States and in other countries, by country pairs

Country pair	U.S. producers/tollees				U.S. importers			
	A	F	S	N	A	F	S	N
United States vs. Korea	4	1	0	0	9	5	1	0
United States vs. Austria	4	1	0	0	6	7	1	0
United States vs. Canada	4	1	0	0	8	5	1	0
United States vs. Czech Republic	4	1	0	0	8	5	1	0
United States vs. Other	4	1	0	0	6	6	2	0
Korea vs. Austria	4	1	0	0	8	5	1	0
Korea vs. Canada	4	1	0	0	10	4	0	0
Korea vs. Czech Republic	4	1	0	0	10	4	0	0
Korea vs. Other	4	1	0	0	8	6	1	0
Austria vs. Canada	4	1	0	0	9	5	0	0
Austria vs. Czech Republic	4	1	0	0	8	6	0	0
Austria vs. Other	4	1	0	0	7	6	1	0
Canada vs. Czech Republic	4	1	0	0	10	4	0	0
Canada vs. Other	4	1	0	0	7	6	1	0
Czech Republic vs. Other	4	1	0	0	7	6	1	0

Note.—A=Always, F=Frequently, S=Sometimes, N=Never.

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

In addition, producers/tollees and importers were asked to assess how often differences other than price were significant in sales of ferrovanadium from the United States, Korea, or nonsubject countries. As seen in table II-11, all responding U.S. producers/tollees and a majority of responding importers reported that factors other than price are “sometimes” or “never” significant in sales of ferrovanadium from the United States, Korea, or nonsubject countries. U.S. tollee and importer *** reported that factors other than price are “sometimes” significant in the sales of ferrovanadium, citing availability.

Table II-11

Ferrovanadium: Significance of differences other than price between ferrovanadium produced in the United States and in other countries, by country pairs

Country pair	U.S. producers/tollees				U.S. importers			
	A	F	S	N	A	F	S	N
United States vs. Korea	0	0	2	3	1	1	7	5
United States vs. Austria	0	0	2	3	0	1	8	4
United States vs. Canada	0	0	2	3	0	1	7	5
United States vs. Czech Republic	0	0	2	3	0	1	7	5
United States vs. Other	0	0	2	3	1	1	7	5
Korea vs. Austria	0	0	2	3	0	0	6	6
Korea vs. Canada	0	0	2	3	0	0	6	6
Korea vs. Czech Republic	0	0	2	3	0	0	6	6
Korea vs. Other	0	0	2	3	1	0	6	6
Austria vs. Canada	0	0	2	3	0	0	6	6
Austria vs. Czech Republic	0	0	2	3	0	0	6	6
Austria vs. Other	0	0	2	3	0	0	6	6
Canada vs. Czech Republic	0	0	2	3	0	0	6	6
Canada vs. Other	0	0	2	3	0	0	6	6
Czech Republic vs. Other	0	0	2	3	0	0	6	6

Note.--A = Always, F = Frequently, S = Sometimes, N = Never.

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

PART III: 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 dumping margins was presented in *Part I* of this report and information on the volume and pricing of imports of the subject merchandise is presented in *Part IV* and *Part V*. Information on the other factors specified is presented in this section and/or *Part VI* and (except as noted) is based on the questionnaire responses of six firms that are believed to account for all U.S. production and nearly all U.S. shipments of ferrovanadium during 2015.

U.S. PRODUCERS

The Commission issued a U.S. producer questionnaire to nine firms based on information contained in the petition. The six responding firms comprise two groups. The first group includes producers that either produce ferrovanadium for their own account or process the product for the account of other firms under a toll agreement. This group consists of U.S. producers AMG and Bear. The second group includes firms that provide raw materials to the producer, retain title to the product produced, and ultimately sell the ferrovanadium to their customers. This group is commonly referred to as tollees, and consists of Evraz Stratcor,[1] Glencore, Ltd. ("Glencore"), Gulf Chemicals and Metallurgical Corporation ("Gulf"), and Traxys North America LLC ("Traxys").[2] Staff believes that these responses represent all of U.S. production and nearly all U.S. shipments of ferrovanadium.

Table III-1 lists U.S. producers of ferrovanadium, their production locations, positions on the petition, and shares of total production.

Table III-1
Ferrovanadium: U.S. producers, their positions on the petition, production locations, and shares of reported production, 2015

Firm	Position on petition	Production location(s)	Share of production (percent)
AMG	Support	Cambridge, OH	***
Bear	Support	Butler, PA	***
Total			***

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

Table III-2 presents a list of current U.S. producers and U.S. tollees of ferrovanadium and each company's positions on the petition, headquarters, and share of reported U.S. shipments of ferrovanadium in 2015.

[1] Effective July 1, 2014, East Metals North America merged into Evraz Stratcor.
[2] ***.

Table III-2
Ferrovanadium: U.S. producers/tollees, their positions on the petition, headquarters, and shares of reported U.S. commercial shipments, 2015

Firm	Position on petition	Headquarters	Share of U.S. shipments (percent)
AMG	Support	Cambridge, OH	***
Bear	Support	Butler, PA	***
Evraz Stratcor	Support	Hot Springs, AR	***
Glencore Ltd	***	Stamford, CT	***
Gulf	Support	Freeport, TX	***
Traxys North America LLC	***	New York, NY	***
Total			***

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

Table III-3 presents information on U.S. producers' ownership, related and/or affiliated firms.

Table III-3
Ferrovanadium: U.S. producers' ownership, related and/or affiliated firms, 2015

* * * * * * *

As indicated in table III-3, no U.S. producers are related to foreign producers of the subject merchandise and none is related to a U.S. importer of the subject merchandise. In addition, as discussed in greater detail below, no U.S. producer directly imports the subject merchandise and none purchases the subject merchandise from U.S. importers. However, ***.

Producers were asked to report any changes in operations since January 1, 2013. Table III-4 presents producer/tollee responses.

Table III-4
Ferrovanadium: U.S. producers/tollees' reported changes in operations, since January 1, 2013

* * * * * * *

U.S. PRODUCTION, CAPACITY, AND CAPACITY UTILIZATION

Table III-5 and figure III-1 present U.S. producers' production, capacity, and capacity utilization. Capacity and production increased between 2013 and 2015, by *** percent and *** percent respectively. The capacity and production increases were ***, although *** reported substantially higher levels of capacity, largely ***. AMG made substantial capital investments to improve and expand its production facilities, including a furnace shell expansion that was

completed in October 2014.[3] In its conference testimony, AMG also reported that its production processes have always been highly capital intensive, and include high fixed costs. Despite worsening market and price conditions, AMG reported that it maintained high production volumes to sustain an adequate level of shipments in an attempt to recover its fixed production costs.[4]

Table III-5
Ferrovanadium: U.S. producers' production, capacity, and capacity utilization, 2013-15

* * * * * * *

Figure III-1
Ferrovanadium: U.S. producers' capacity, production, and capacity utilization, 2013-15

* * * * * * *

AMG's production capacity is calculated ***. Bear's production capacity is calculated ***.

Table III-6 presents U.S. producers' reported shares of total production of ferrovanadium by grade in 2015. AMG produces ferrovanadium with 40-60 percent contained vanadium while Bear produces ferrovanadium with 75-85 percent contained vanadium.

Table III-6
Ferrovanadium: U.S. producers' production, by grade, 2015

* * * * * * *

The Commission asked the domestic producers to report constraints on their capacity to produce ferrovanadium. AMG stated that ***. The company also reported that "***." Bear stated that ***.

Bear produced ferromolybdenum using the same equipment and machinery used in the production of ferrovanadium. Table III-7 presents data on U.S. producers' overall production, capacity, and capacity utilization.

Table III-7
Ferrovanadium: U.S. producers' overall capacity and production on the same equipment as subject production, 2013-15

* * * * * * *

[3] Conference transcript, p. 22 (Anderson).
[4] Conference transcript, pp. 23-24 (Anderson).

AMG reported that ***. Bear reported that *** its production between ferrovanadium and ferromolybdenum using the same equipment and labor ***. However, given that ferrovanadium production is *** times as profitable as ferromolybdenum, ***.

U.S. PRODUCERS/TOLLEES' U.S. SHIPMENTS AND EXPORTS

Table III-8 presents U.S. producers/tollees' U.S., export, and total shipments. Total shipments, including both U.S. and export shipments, increased between 2013 and 2014, then decreased in 2015. The vast majority of shipments reported by producers/tollees were U.S. shipments, the quantity of which increased from 2013 to 2015 by *** percent, while the value decreased by *** percent. The unit values of U.S. shipments decreased by *** percent from 2013 to 2015. U.S. producers/tollees also reported modest volumes of exports to ***.

Table III-8
Ferrovanadium: U.S. producers' and tollees' U.S. shipments, exports shipments, and total shipments, 2013-15

* * * * * * *

U.S. PRODUCERS/TOLLEES' INVENTORIES

Table III-9 presents U.S. producers/tollees' end-of-period inventories and the ratio of these inventories to U.S. producers' production, U.S. shipments, and total shipments. The data are for inventories resulting from production as reported by AMG and Bear, and include end-of-period inventories of ferrovanadium held by tollees.

Table III-9
Ferrovanadium: U.S. producers' and tollees' inventories, 2013-15

* * * * * * *

U.S. TOLLEES' IMPORTS

U.S. tollees' direct imports of ferrovanadium are presented in table III-10.

Table III-10
Ferrovanadium: U.S. tollees' U.S. shipments of U.S.-produced ferrovanadium and direct imports, 2013-15

* * * * * * *

U.S. EMPLOYMENT, WAGES, AND PRODUCTIVITY

Table III-11 shows U.S. producers' employment-related data. The level of production and related workers (PRWs), hours worked, wages paid, productivity, and unit labor costs increased from 2013 to 2015. However, hours worked per PRW decreased during the period.

Table III-11
Ferrovanadium: Average number of production and related workers, hours worked, wages paid to such employees, hourly wages, productivity, and unit labor costs, 2013-15

* * * * * * *

PART IV: U.S. IMPORTS, APPARENT U.S. CONSUMPTION, AND MARKET SHARES

U.S. IMPORTERS

The Commission issued importer questionnaires to 23 firms believed to be importers of ferrovanadium, as well as to all U.S. producers of ferrovanadium.[1] Usable questionnaire responses were received from 16 companies.[2] [3] Table IV-1 lists all responding U.S. importers of ferrovanadium from Korea and other sources, their locations, and their shares of U.S. imports, in 2015.

Table IV-1
Ferrovanadium: U.S. importers, their locations, and share of total imports by source, 2015

Firm	Headquarters	Share of imports by source (percent)		
		Korea	All other sources	Total imports
CCMA	Amherst, NY	***	***	***
Evraz	Hot Springs, AR	***	***	***
Glencore	Stamford, CT	***	***	***
Grondmet	Brooklyn, NY	***	***	***
ICD Metals	New York, NY	***	***	***
JuliMar	Tulsa, OK	***	***	***
Masterloy	Ottawa, ON	***	***	***
Medima	Clarence, NY	***	***	***
Metherma	Düsseldorf,	***	***	***
ProFound	McMurray, PA	***	***	***
Selectrode Industries	Aliquippa, PA	***	***	***
Sideralloys	Lugano (Switzerland), TI	***	***	***
The David J. Joseph Company	Cincinnati, OH	***	***	***
Traxys	New York, NY	***	***	***
Treibacher Industrie Ag	Althofen, AT	***	***	***
United Mineral	Zelienople, PA	***	***	***
Total		***	***	***

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

[1] The Commission issued questionnaires to those firms identified in the petition, along with firms that, based on ***, may have accounted for more than one percent of total imports under HTS subheading 7202.92.0000 in 2013 through 2015.

[2] An additional firm, ***, provided a letter detailing its U.S. import operations, but did not complete a questionnaire. ***. The Commission also received an incomplete questionnaire response from ***.

[3] For data on the share of responding U.S. importers' U.S. imports from Korea, please refer to Part I, "Summary Data and Data Sources."

U.S. IMPORTS

Table IV-2 presents data for U.S. imports of ferrovanadium from Korea and all other sources. The quantity and value of imports from Korea increased by 112.8 percent and 69.3 percent, respectively, between 2013 and 2015. However, unit values of imports from Korea decreased by 20.4 percent, from $12.24 in 2013 to $9.74 in 2015. The top nonsubject sources of U.S. imports during 2013-15 were Austria, Canada, and the Czech Republic. Lower levels of ferrovanadium imports from these nonsubject sources (most notably ***) more than offset the increase in imports from Korea; thus, the total quantity of U.S. imports declined between 2013 and 2015 by approximately *** pounds of contained vanadium. The combined effect of lower import quantities and lower import unit values resulted in a value of total imports that was more than $*** lower in 2015 than in 2013.

Table IV-2
Ferrovanadium: U.S. imports by source, 2013-15

Item	Calendar year		
	2013	2014	2015
	Quantity (1,000 pounds contained vanadium)		
U.S. imports from.--			
Korea	784	1,243	1,669
Austria	880	861	1,375
Canada	1,119	1,917	1,062
Czech Republic	4,933	***	***
All other sources	467	536	325
Nonsubject	7,400	***	***
Total U.S. imports	8,184	***	***
	Value (1,000 dollars)		
U.S. imports from.--			
Korea	9,599	14,715	16,253
Austria	11,597	11,988	13,152
Canada	13,194	23,915	10,981
Czech Republic	53,144	41,166	23,157
All other sources	6,005	6,141	3,443
Nonsubject	83,939	83,210	50,734
Total U.S. imports	93,538	97,925	66,987
	Unit value (dollars per pound contained vanadium)		
U.S. imports from.--			
Korea	12.24	11.84	9.74
Austria	13.18	13.92	9.57
Canada	11.79	12.47	10.34
Czech Republic	10.77	***	***
All other sources	12.85	11.45	10.58
Nonsubject	11.34	***	***
Total U.S. imports	11.43	***	***

Table continued.

Table IV-2--*Continued*
Ferrovanadium: U.S. imports by source, 2013-15

Item	Calendar year		
	2013	2014	2015
	Share of quantity (percent)		
U.S. imports from.--			
Korea	9.6	***	***
Austria	10.8	***	***
Canada	13.7	***	***
Czech Republic	60.3	***	***
All other sources	5.7	***	***
Nonsubject	90.4	***	***
Total U.S. imports	100.0	***	***
	Share of value (percent)		
U.S. imports from.--			
Korea	10.3	***	***
Austria	12.4	***	***
Canada	14.1	***	***
Czech Republic	56.8	***	***
All other sources	6.4	***	***
Nonsubject	89.7	***	***
Total U.S. imports	100.0	***	***
	Ratio to U.S. production		
U.S. imports from.--			
Korea	10.9	***	***
Austria	12.2	***	***
Canada	15.5	***	***
Czech Republic	68.3	***	***
All other sources	6.5	***	***
Nonsubject	102.4	***	***
Total U.S. imports	113.3	***	***

Source: Official U.S. import statistics, using statistical reporting number 7202.92.0000, accessed April 7, 2016, and adjusted to include suppressed quantity data for U.S. imports from ***.

Figure IV-1
Ferrovanadium: U.S. import quantities and average unit values, 2013-15

* * * * * * *

Table IV-3 and figure IV-2 present monthly U.S. imports, by source during 2013-15.

Table IV-3
Ferrovanadium: Monthly U.S. imports, by source, 2013-15

Item	Korea	Austria	Canada	Czech Republic	Total imports
	Quantity (1,000 pounds contained vanadium)				
2013.--					
January	36	22	199	178	490
February	0	93	222	390	747
March	36	80	89	711	982
April	48	55	137	426	744
May	89	114	57	676	936
June	105	138	55	497	840
July	162	0	40	496	718
August	36	78	79	357	569
September	59	59	33	71	261
October	36	104	95	249	502
November	20	58	75	388	601
December	158	80	39	495	795
2014.--					
January	0	154	190	354	789
February	53	0	115	305	511
March	236	64	175	396	939
April	171	165	190	267	814
May	64	43	69	217	413
June	170	42	141	426	800
July	175	27	186	319	727
August	0	44	208	284	593
September	109	109	102	***	***
October	75	41	238	***	***
November	156	116	161	***	***
December	34	57	140	***	***
2015.--					
January	220	152	148	***	***
February	138	127	66	***	***
March	278	192	271	***	***
April	239	33	94	***	***
May	204	222	172	***	***
June	36	44	68	***	***
July	31	97	13	***	***
August	0	174	96	***	***
September	66	107	0	***	***
October	102	82	66	***	***
November	318	95	33	***	***
December	36	49	34	***	***

Source: Official U.S. import statistics, using statistical reporting number 7202.92.0000, accessed April 25, 2016, and adjusted to include suppressed quantity data for U.S. imports from ***.

Figure IV-2
Ferrovanadium: Three month moving average monthly U.S. import quantities, 2013-15

* * * * * * *

Table IV-4 presents U.S. importers' U.S. imports, by grade in 2015. The large majority of imports had a vanadium content of 75-85 percent.

Table IV-4
Ferrovanadium: U.S. importers' U.S. imports, by grade, 2015

* * * * * * *

NEGLIGIBILITY

The statute requires that an investigation be terminated without an injury determination if imports of the subject merchandise are found to be negligible.[4] Negligible imports are generally defined in the Tariff Act of 1930, 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 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.[5] Imports from Korea accounted for *** percent of total imports of ferrovanadium by quantity during 2015.

APPARENT U.S. CONSUMPTION AND MARKET SHARES

Table IV-5 presents data on apparent U.S. consumption and market shares for ferrovanadium. Apparent U.S. consumption, based on quantity, increased *** from 2013 to 2015, while apparent consumption based on value decreased by *** percent. U.S. producers' share of U.S. consumption, based on quantity, increased from 2013 to 2015 by *** percentage points. The market share of imports of ferrovanadium from Korea increased as well during this period, growing by *** percentage points, while the market share of imports from nonsubject sources decreased by *** percentage points.

---

[4] 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)).

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

Table IV-5
Ferrovanadium: U.S. shipments of domestic product, U.S. imports, apparent U.S. consumption, and market shares, 2013-15

Item	Calendar year		
	2013	2014	2015
	Quantity (1,000 pounds contained vanadium)		
U.S. producers/tollees' U.S. shipments	***	***	***
U.S. imports from.--			
Korea	784	1,243	1,669
All other sources	7,400	***	***
Total U.S. imports	8,184	***	***
Apparent U.S. consumption	***	***	***
	Value (1,000 dollars)		
U.S. producers/tollees' U.S. shipments	***	***	***
U.S. imports from.--			
Korea	9,599	14,715	16,253
All other sources	83,939	83,210	50,734
Total U.S. imports	93,538	97,925	66,987
Apparent U.S. consumption	***	***	***
	Share of quantity (percent)		
U.S. producers/tollees' U.S. shipments	***	***	***
U.S. imports from.--			
Korea	***	***	***
All other sources	***	***	***
Total U.S. imports	***	***	***
	Share of value (percent)		
U.S. producers/tollees' U.S. shipments	***	***	***
U.S. imports from.--			
Korea	***	***	***
All other sources	***	***	***
Total U.S. imports	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires and official U.S. import statistics.

PART V: PRICING DATA

FACTORS AFFECTING PRICES

Raw material costs

The primary inputs used in production of ferrovanadium in the United States are spent catalysts from oil refineries and residuals from combustion of fuel oil, which are either processed into vanadium pentoxide (which can be further processed to produce ferrovanadium) or are processed directly into ferrovanadium and other products. Vanadium pentoxide also is imported into the United States for toll conversion. Thus, U.S. production of ferrovanadium may be limited by the availability of the catalysts and residuals and imports of vanadium pentoxide (for further details on ferrovanadium production, see Part I).

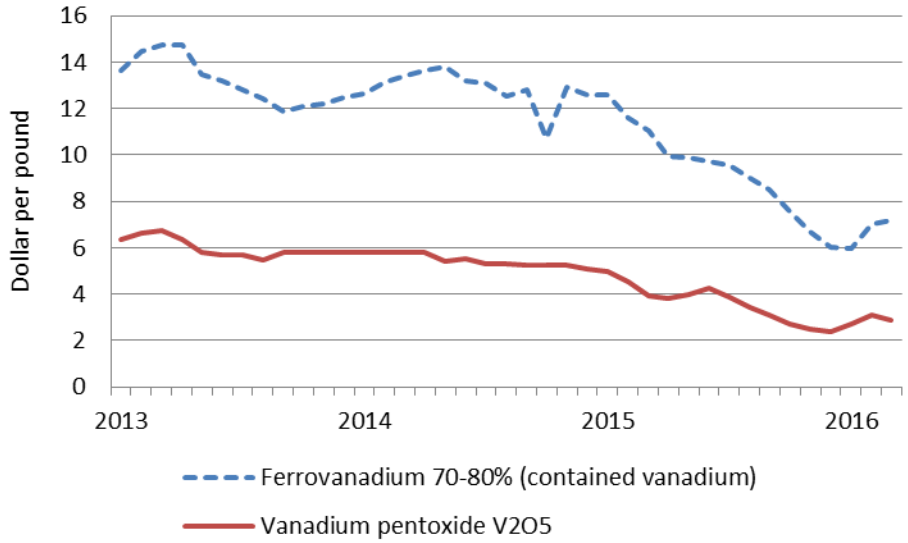
All five responding U.S. producers/tollees reported that raw material prices decreased since January 1, 2013, with two citing reduced demand for vanadium. Nine of 15 responding importers reported that imported raw material prices had decreased, three reported that imported raw material prices had not changed, and four reported that imported raw material prices had fluctuated. Importers that reported a decrease in raw material costs since January 2013 cited decreases in demand and worldwide consumption due to a slowdown in the steel industry.

Raw materials accounted for *** percent of cost of goods sold in 2013 and decreased steadily to *** percent in 2015.[1] Published price data for vanadium pentoxide, used in the production of ferrovanadium, and for ferrovanadium, are shown in figure V-1. Prices of ferrovanadium and vanadium pentoxide declined by 55.8 percent and 62.6 percent, respectively, from January 2013 to December 2015. Prices for ferrovanadium and vanadium pentoxide then increased by 20.1 and 5.5 percent from January 2016 to March 2016. Figure V-2 shows average prices published by Ryan's Notes, and these prices follow similar trends.

[1] The share of raw materials as a percentage of cost-of-goods sold is reported for the entire market, and includes data from both the producers and tollees.

Figure V-1

Ferrovanadium and vanadium pentoxide: Prices, dollars/pound by month, January 2013-March 2016



Note.-- The data presented are the average monthly prices on a monthly basis. Prices for ferrovanadium are reported on dollars per pound contained vanadium, and prices for vanadium are reported on dollars per pound.

Source: American Metal Market, retrieved April 21, 2016.

Figure V-2

Ferrovanadium: Ryan's Notes prices, dollars/pound contained vanadium reported twice weekly, January 2013-December 2015

* * * * * * *

U.S. inland transportation costs

Half of responding U.S. producers (3 of 6 firms) reported that they typically arrange transportation to their customers, and 10 of 13 responding importers reported that they typically arrange transportation to their customers. U.S. producers and importers reported that their U.S. inland transportation costs ranged from 1 to 2 percent.[2]

[2] U.S. tollee *** reported inland transportation costs as 100 percent; its data were not included in these figures.

PRICING PRACTICES

Pricing methods

U.S. producers/tollees and importers reported mainly using transaction-by-transaction negotiations, followed by contracts (table V-1).[3] Five of 6 responding U.S. producers/tollees and 9 of 15 responding importers reported using Ryan's Notes to set ferrovanadium prices. U.S. producer and importer *** and importer *** reported using Platts Metal Week.

Table V-1

Ferrovanadium: U.S. producers/tollees and importers reported price setting methods, by number of responding firms[1]

Method	U.S. producers	U.S. importers
Transaction-by-transaction	6	12
Contract	4	6
Set price list	0	1
Other	0	0

[1] 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.

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

U.S. producers/tollees reported selling most of their product through annual contracts, whereas U.S. importers reported selling the vast majority in the spot market (table V-2).

Table V-2

Ferrovanadium: U.S. producers/tollees' and importers' shares of U.S. commercial shipments by type of sale, 2015

* * * * * * *

Sales terms and discounts

U.S. producers and importers reported quoting prices both on an f.o.b. and a delivered basis. A plurality of responding U.S. producers and a majority of importers reported offering no discounts. A majority of U.S. producers and importers reported sales terms of net 30 days.

PRICE DATA

The Commission requested U.S. producers and importers to provide quarterly data for the total quantity and f.o.b. value of the following ferrovanadium products shipped to unrelated U.S. customers during 2013-15.

[3] Importer *** reported using only set price lists.

Product 1.-- Ferrovanadium containing 40-60 percent vanadium, 2" by down

Product 2.-- Ferrovanadium containing 75-85 percent vanadium, 2" by down

Six U.S. producers/tollees and 11 importers provided usable pricing data for sales of the requested products, although not all firms reported pricing for all products for all quarters.[4] Pricing data reported by these firms accounted for approximately all of U.S. producers' commercial shipments of ferrovanadium. In 2015, pricing data for product 1 accounted for *** percent of all commercial shipments of U.S.-produced ferrovanadium and pricing data for product 2 accounted for *** percent of all commercial shipments of U.S.-produced ferrovanadium. Pricing data reported by these firms accounted for approximately 73.5 percent of U.S. importers' commercial shipments of Korean-produced ferrovanadium in 2015. Importers of Korean-produced ferrovanadium only reported commercial sales of pricing product 2.

Price and quantity data are provided in terms of contained vanadium (CV). Price data for products 1-2 made in the United States or imported from Korea are presented in tables V-3 to V-4 and figure V-3 to V-4. Prices for ferrovanadium imported from nonsubject countries are presented in Appendix D.

Table V-3

Ferrovanadium: Weighted-average f.o.b. prices and quantities of domestic and imported product 1 and margins of underselling/(overselling), by quarters, January 2013-December 2015

* * * * * * *

Table V-4

Ferrovanadium: Weighted-average f.o.b. prices and quantities of domestic and imported product 2 and margins of underselling/(overselling), by quarters, January 2013-December 2015

* * * * * * *

Figure V-3

Ferrovanadium: Weighted-average prices and quantities of domestic and imported product 1, by quarters, January 2013-December

* * * * * * *

[4] 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.

Figure V-4

Ferrovanadium: Weighted-average prices and quantities of domestic and imported product 2, by quarters, January 2013-December 2015

* * * * * * *

Price trends

Prices decreased during 2013-15. Table V-5 summarizes the price trends, by country and by product. For products 1 and 2, domestic price decreases were *** and *** percent from 2013 to 2015 while import price decreases were ***percent (table V-5).[5]

Table V-5

Ferrovanadium: Summary of weighted-average f.o.b. prices for products 1 and 2 from the United States and Korea

* * * * * * *

Price comparisons

As shown in table V-6, prices for ferrovanadium imported from Korea were below those for U.S.-produced product in 5 of 12 instances (707,166 pounds of contained vanadium); margins of underselling ranged from 3.9 to 7.0 percent. In the remaining 7 instances (992,957 pounds of contained vanadium), prices for ferrovanadium from Korea were between 0.4 and 9.9 percent above prices for the domestic product.

Table V-6

Ferrovanadium: Instances of underselling/overselling and the range and average of margins, by country, January 2013-December 2015

Source	Underselling				
	Number of quarters	Quantity (lbs CV)	Average margin (percent)	Margin range (percent)	
				Min	Max
Korea	5	707,166	5.3	3.9	7.0
Source	**(Overselling)**				
	Number of quarters	Quantity (lbs CV)	Average margin (percent)	Margin range (percent)	
				Min	Max
Korea	7	992,957	(4.0)	(0.4)	(9.9)

[1] These data include only quarters in which there is a comparison between the U.S. and subject product for pricing product 2. U.S. importers of Korean ferrovanadium did not report pricing data for pricing product 1.

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

[5] U.S. importers of Korean ferrovanadium did not report pricing data for pricing product 1.

LOST SALES AND LOST REVENUE

The Commission requested U.S. producers/tollees of ferrovanadium to report purchasers where they experienced instances of lost sales or revenue due to competition from imports of ferrovanadium from Korea from 2013 to 2015. Of the five responding U.S. producers/tollees, four reported that they did not have to reduce prices or roll back announced price increases. One U.S. producer, ***, submitted lost sales and lost revenue allegations. *** identified two firms where it lost sales or revenue (purchaser *** as a lost sales allegation and purchaser *** as both types of allegations). U.S. producers were also asked to provide information regarding the timing, method of sale, and product type related to the lost sales and lost revenue allegations. *** reported that the allegations against both purchasers consisted of spot sales, and *** also included contract sales.

Staff contacted two purchasers and received responses from ***. Responding purchasers reported purchasing *** pounds of ferrovanadium during 2013-15 (table V-7). During 2015, purchasers purchased *** percent from U.S. producers, *** percent from Korea, and *** percent from nonsubject countries. *** reported constant purchases from domestic producers and fluctuating purchases from all other sources.[6] ***.

Table V-7
Ferrovanadium: Purchasers' responses to purchasing patterns

* * * * * * *

[6] *** did not elaborate further on the purchasing trends.

PART VI: FINANCIAL EXPERIENCE OF U.S. PRODUCERS

BACKGROUND

AMG and Bear provided financial data on their operations producing and selling ferrovanadium and Bear[1] provided data on its operations toll-producing ferrovanadium from toller-provided raw material inputs.[2] Tollee firms, including Gulf, Evraz Stratcor, Glencore, and Traxys,[3] also provided financial data on their operations selling ferrovanadium that Bear toll-produced on their behalf. As noted earlier in this report, the operations of the individual firms differ, leading to a distinction between producer and tollee. For a more detailed description of the domestic producers' manufacturing processes, including a discussion of the vanadium-bearing inputs, see the discussion in Part I of this report.

OPERATIONS ON FERROVANADIUM BY AMG AND BEAR

This section of the report presents data on the commercial operations of AMG and Bear together with Bear's tolling operations and then presents those same data for the two firms separately (tables VI-1 and VI-2). Commercial sales *** rose *** between 2013 and 2014 and declined in 2015, largely because of lower unit sales values. Bear's tolling *** from 2013 to 2015 on a quantity and value basis. Total COGS increased as did selling, general and

---

[1] Firms were requested to report on the basis of a calendar year. ***.

[2] In the relationship between toller and tollee, the tollee provides the raw material inputs (here, vanadium pentoxide) to the toller, retaining title to the inputs, and the toller returns a guaranteed percentage of the input as finished product (here, ferrovanadium) to the tollee. The toller converts the input to the finished product and charges a tolling fee, which differs in concept and unit value from sales, and may arrange packaging and shipment on behalf of the tollee. Bear is contractually obligated to return a specified percentage of vanadium contained in the tollee-supplied vanadium pentoxides; Bear's commercial shipments are the excess of the guaranteed return from its tolling operations.

[3] Gulf acquired 100 percent of Bear in December 2005, an increase over the 49.5 percent share Gulf previously had during January 2002 to November 2005. Subsequent to Gulf's purchase of Bear, Gulf was purchased by Eramet. The financial statements of both firms are consolidated in Eramet's financial statements; within Eramet, Gulf is responsible for the production of the raw materials by recycling vanadium oxides and other metals from spent oil catalysts and for selling the finished product, while Bear is responsible for the production of the saleable products. Reportedly, because Gulf is not able to provide sufficient vanadium oxide to keep Bear at full production, Bear toll-produces ferrovanadium on behalf of other firms, from vanadium oxides produced or imported by these firms.

Stratcor was formed from U.S. Vanadium in 2004. The Evraz Group, S.A. purchased a *** interest in Strategic Minerals Corporation (the parent company of Stratcor, Inc.) in 2006, becoming Evraz Stratcor. The relationship with Bear in which the ferrovanadium that Statcor/Evraz sells is toll-produced by Bear from Stratcor-produced vanadium oxide began in 1993. This tolling arrangement was joined by East Metals AG. That firm's subsidiary, Evraz Metals North America (EMNA) arranged the tolling of Evraz Group vanadium oxides at Bear and sold ferrovanadium. EMNA was merged into Evraz Stratcor effective July 1, 2014.

administrative ("SG&A") expenses, leading to a declining operating income between 2013 and 2015.

Table VI-1 presents aggregated data on U.S. producers' operations in relation to ferrovanadium over the period examined, while table VI-2 presents selected company-specific financial data.

Table VI-1
Ferrovanadium: Results of operations of AMG and Bear, 2013-15

* * * * * * *

Table VI-2
Ferrovanadium: Results of operations of AMG and Bear, by firm, 2013-15

* * * * * * *

Net sales and tolling

As may be seen from the data in table VI-1, *** between 2013 and 2015. As presented in table VI-2,the quantity and value of ***.[4] Bear's commercial sales and transfers combined ***.[5]

Costs and expenses

Total COGS rose, driven by a ***, between 2013 and 2015. As ***.[6] [7] ***.[8] Cumulated raw material costs of AMG and Bear were ***. Cumulated SG&A expenses of AMG and Bear rose irregularly from 2013 to 2015, accounted for ***.

Profitability

Gross profit, operating income, and net income each ***.

Variance analysis

Given the *** in unit sales values and cost structure between Bear and AMG, a variance analysis is not being presented. Variance analyses are useful in quantifying the effects of

---

[4] See comment later regarding ***.
[5] ***.
***.
[6] ***. Petitioners' postconference brief, p. 23.
[7] ***. The ***.
[8] ***.
***.

changes in volume, unit prices, and unit costs on operating profitability when the product mix is generally homogeneous. As shown by the data in tables VI-1 and VI-2, that is not the case.

CAPITAL EXPENDITURES AND RESEARCH AND DEVELOPMENT EXPENSES

The capital expenditures and research and development (R&D) expenses of AMG and Bear are presented in table VI-3. Total capital expenditures fell irregularly from 2013 to 2015. These changes were from ***.

Table VI-3
Ferrovanadium: Capital expenditures and R&D expenses of AMG and Bear, 2013-15

* * * * * * *

The Commission's questionnaire requested responding firms to describe the nature, focus, and significance of the firm's capital expenditures and R&D expenses. AMG responded "***."[9] Bear stated "***."[10] The firm stated with respect to its R&D expenses "***."[11]

ASSETS AND RETURN ON INVESTMENT

The assets of AMG and Bear and the ratio of operating income to such assets are presented in table VI-4. This ratio mirrored the trends of the operating income and net income to sales ratio as presented in tables VI-1 and VI-2.

Table VI-4
Ferrovanadium: Total assets and ratio of operating income to assets of AMG and Bear, 2013-15

* * * * * * *

CAPITAL AND INVESTMENT

The Commission requested U.S. producers of ferrovanadium to describe any actual or potential negative effects on their return on investment or their growth, investment, ability to raise capital, existing development and production efforts (including efforts to develop a derivative or more advanced version of the product), or the scale of capital investments as a result of imports of ferrovanadium from Korea. Table VI-5a tabulates the responses on actual negative effects on investment, growth and development while table VI-5b presents responses on actual negative effects on growth of domestic producers.

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[9] Questionnaire response of AMG, section III-15.

[10] Petitioners' postconference brief describes projects in 2013-15. In 2013, Bear conducted ***. Petitioners' postconference brief, answers to questions by staff, question 13, pp. 21-22.

[11] ***.

Table VI-5a
Ferrovanadium: Negative effects of imports from subject sources reported by AMG and Bear on investment, growth, and development since January 1, 2013

* * * * * * *

Table VI-5b
Ferrovanadium: Narrative comments by AMG and Bear relating to actual and anticipated negative effects of imports on investment and growth and development since January 1, 2013

* * * * * * *

CONSOLIDATED FERROVANADIUM OPERATIONS OF AMG, BEAR, AND TOLLEES

The consolidated ferrovanadium operations of AMG, Bear, and tollee firms are presented in table VI-6. These data differ from those in table VI-1 in that they consist of the sales revenues earned and costs incurred by AMG, Bear, and tollee firms in selling ferrovanadum to independent third parties. In other words, while table VI-1 includes the revenues earned by Bear in toll-converting raw materials (provided by the tollee), table VI-6 instead substitutes the revenues earned by the tollee firms selling the finished ferrovanadium to other parties. The trends in tables VI-1 and VI-6 are substantially the same but the absolute values and per-unit values are higher in table VI-6, a reflection of the open market sales values and "fully loaded costs" in table VI-6, which result in a more representative presentation of a single entity's revenues matched with its production costs. The sales quantities in table VI-6 do not match the sales quantities in table VI-1 because: (1) several firms are included in Bear's tolling data but did not provide shipment or financial information to the Commission; (2) timing differences between tolling and the subsequent commercial sales; and (3) changes in inventory held by the commercial seller. The differences between the data in tables VI-1 and VI-6 are very small, however.

Table VI-6
Ferrovanadium: Results of operations of U.S. firms, 2013-15

* * * * * * *

AMG[12] and Gulf[13] process spent refinery catalysts. These firms charge the suppliers of these catalysts, chiefly petroleum refiners, for recycling the catalyst but reduce the recycling charge by a credit that is based on the current market value of the metals contained in the catalyst. Petitioners stated that as a result of declining vanadium prices (the credit), instead of choosing to recycle a refiner might choose a less expensive option and send the spent catalyst waste to a landfill.[14] As indicated by the data in table VI-6, the quantity and value of total net sales rose *** from 2013 to 2014 and fell in 2015, while the value increased between 2013 and 2014 and fell in 2015, reflecting lower sales quantity overall combined with a lower unit sales value. Total COGS (including raw materials, labor, and factory overhead of the producers, conversion costs incurred by tollees ***, and other costs incurred by tollees) fell from 2013 to 2014 but increased in 2015 to a higher amount as in 2013. These changes in sales value and costs translated into a *** increase in operating income in 2014 from 2013 but a *** fall in operating income to a loss in 2015.

[12] ***. ***.

[13] Evraz Stratcor, which primarily produced vanadium-aluminum master alloys, also is a ***.

[14] Petition, pp. 42-43. In petitioners' postconference brief, answers to questions by staff, question 10, pp. 16-17, ***.

PART VII: 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 volume and pricing of imports of the subject merchandise is presented in *Parts IV* and *V*; and information on the effects of imports of the subject merchandise on U.S. producers' existing development and production efforts is presented in *Part VI*. 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.

THE INDUSTRY IN KOREA

The Commission issued foreign producers' or exporters' questionnaires to two firms identified in the petition as possible producers and/or exporters of ferrovanadium from Korea, as well as to four firms believed to be tolling customers of Korean producers of ferrovanadium and/or exporters of Korean ferrovanadium to the United States. Useable responses to the

[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."

Commission's questionnaire were received from two firms: Korvan Ind. Co., Ltd. ("Korvan"), and Woojin Ind. Co., Ltd. ("Woojin").[3] The responding Korean producers are the only two known producers of ferrovanadium in Korea, even though they themselves estimated that they accounted for only approximately *** percent of overall production of ferrovanadium in Korea.

Table VII-1 presents summary data on producers in Korea by firm in 2015.

Table VII-1
Ferrovanadium: Summary data on firms in Korea, by firm, 2015

* * * * * * *

Both Korvan and Woojin convert vanadium pentoxide, imported primarily from China, into ferrovanadium.[4] Petitioners believe that vanadium pentoxide produced in China remains the primary raw material source for Korean ferrovanadium exported to the United States. They further believe Korean producers obtain vanadium pentoxide from other sources, such as Brazil. In addition, petitioners state there may be at least four firms in Korea that recycle vanadium from waste materials to produce vanadium pentoxide, representing a supplemental, Korea-based source of raw materials for Korvan's or Woojin's ferrovanadium production.[5]

No Korean producer reported any changes in operations since January 2013. Woojin noted that its production ***. Table VII-2 presents information on the ferrovanadium operations of the two responding producers and exporters in Korea, and table VII-3 presents data on their production by grade in 2015.

Table VII-2
Ferrovanadium: Data on the industry in Korea, 2013-15, and projections for calendar years 2016 and 2017

* * * * * * *

Table VII-3
Ferrovanadium: Korean producers' production, by grade, 2015

* * * * * * *

[3] For data on the number of responding foreign firms and their share of U.S. imports from Korea, please refer to Part I, "Summary Data and Data Sources."

[4] Petitioners' postconference brief, p. 30, and *Ferrovanadium from China and South Africa Second Sunset Review Publication, Inv. Nos. 731-TA-986-987 (Second Review),* Publication 5417, January 2015, p.IV-16.

[5] Petitioners' postconference brief, p. 30.

In addition to ferrovanadium, Korvan also produces ferromolybdenum ***. In 2015, ferrovanadium represented approximately *** of Korvan's total sales. *** determine the firm's ability to shift production capacity between products. Table VII-4 presents Korean producers' overall capacity and production on the same equipment as ferrovanadium.

Table VII-4

Ferrovanadium: Korean producers' overall capacity and production on the same equipment as subject production, 2013-15

* * * * * * *

Table VII-5 presents data on Korea's top export markets for ferrovanadium.

Table VII-5

Ferrovanadium: Korean exports by destination market, 2013-15

Item	Calendar year		
	2013	2014	2015
	Quantity (1,000 pounds)		
Korea's exports to the United States	913	1,746	2,234
Korea's exports to other major destination markets.-- Netherlands	561	434	2,415
Sweden	0	0	462
Belgium	0	138	390
Japan	831	255	324
Mexico	0	0	221
India	9	66	165
Finland	0	0	146
United Kingdom	0	0	88
All other destination markets	586	415	349
Total Korea exports	2,899	3,054	6,795
	Value (1,000 dollars)		
Korea's exports to the United States	8,324	15,896	15,729
Korea's exports to other major destination markets.-- Netherlands	5,413	3,909	17,206
Sweden	0	0	3,474
Belgium	0	1,294	2,524
Japan	7,064	1,880	1,942
Mexico	0	0	1,618
India	91	615	831
Finland	0	0	1,094
United Kingdom	0	0	698
All other destination markets	5,539	3,721	2,285
Total Korea exports	26,431	27,314	47,401

Table continued.

Table VII-5--Continued

Ferrovanadium: Korean exports by destination market, 2013-15

Item	Calendar year		
	2013	2014	2015
	Unit value (dollars per pound)		
Korea's exports to the United States	9.1	9.1	7.0
Korea's exports to other major destination markets.-- Netherlands	9.7	9.0	7.1
Sweden	0.0	0.0	7.5
Belgium	0.0	9.4	6.5
Japan	8.5	7.4	6.0
Mexico	0.0	0.0	7.3
India	10.3	9.3	5.0
Finland	0.0	0.0	7.5
United Kingdom	0.0	0.0	7.9
All other destination markets	9.5	9.0	6.5
Total China exports	9.1	8.9	7.0
	Share of quantity (percent)		
Korea's exports to the United States	31.5	57.2	32.9
Korea's exports to other major destination markets.-- Netherlands	19.3	14.2	35.5
Sweden	0.0	0.0	6.8
Belgium	0.0	4.5	5.7
Japan	28.6	8.3	4.8
Mexico	0.0	0.0	3.3
India	0.3	2.2	2.4
Finland	0.0	0.0	2.1
United Kingdom	0.0	0.0	1.3
All other destination markets	20.2	13.6	5.1
Total China exports	100.0	100.0	100.0

Source: Official Korean exports statistics under HTS subheading 7202.92 as reported by Korea Customs and Trade Development Institution in the GTIS/GTA database, accessed April 12, 2016.

U.S. INVENTORIES OF IMPORTED MERCHANDISE

Table VII-6 presents data on U.S. importers' reported inventories of ferrovanadium.

Table VII-6

Ferrovanadium: U.S. importers' end-of-period inventories of imports by source, 2013-15

* * * * * * *

U.S. IMPORTERS' OUTSTANDING ORDERS

The Commission requested importers to indicate whether they imported or arranged for the importation of ferrovanadium from Korea or from other sources after December 31, 2015. Five responding importers reported that they arranged such shipments. Table VII-7 presents data reported by U.S. importers concerning their arranged imports of ferrovanadium.

Table VII-7
Ferrovanadium: Arranged imports (1,000 pounds contained vanadium), January 2016 through December 2016

* * * * * * *

ANTIDUMPING OR COUNTERVAILING DUTY ORDERS IN THIRD-COUNTRY MARKETS

There are no known trade remedy actions on ferrovanadium in third-country markets.

INFORMATION ON NONSUBJECT COUNTRIES

As discussed in Part IV, the three largest nonsubject sources of ferrovanadium have been the Czech Republic, Austria, and Canada. Those three countries were the source of 93 percent of U.S. nonsubject imports of ferrovanadium during 2013-15.[6] The industries in those three countries are discussed below, as well as the ferrovanadium industry in Russia and the vanadium pentoxide industry in Brazil.

The industry in the Czech Republic

There is a single producer of ferrovanadium in the Czech Republic, Evraz Nikom, which is a subsidiary of Evraz plc, the parent company of Evraz Stratcor. Evraz Nikom produces ferrovanadium from vanadium pentoxide produced in Russia by Evraz Vanady Tula, which uses vanadium slag from Evraz' steel-producing subsidiary, Evraz NTMK.[7] Evraz Nikom has an annual capacity of 10 million pounds of ferrovanadium (8 million pounds of contained vanadium).[8] As shown in Table VII-10, Evraz Nikom exports to several European Union countries, as well as the United States, Japan and Korea.

The industry in Russia

In Russia, the only producer of ferrovanadium is Evraz Vanady Tula, which, as noted above, produces vanadium pentoxide from steelmaking slag from Evraz NTMK. In addition to the vanadium pentoxide that it exports to its corporate affiliate in the Czech Republic, Evraz Vanady Tula has an annual capacity of 15 million pounds of ferrovanadium (12 million pounds of contained vanadium).[9]

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[6] As discussed in Part I of this report, U.S. imports from two other large global suppliers, China and South Africa, are subject to antidumping duties.

[7] Evraz, https://www.evraz.com/products/business/vanadium/nikom/, accessed April 26, 2016.

[8] Evraz, https://www.evraz.com/products/business/vanadium/nikom/, accessed April 26, 2016.

[9] Evraz, https://www.evraz.com/products/business/vanadium/vanady_tula/, accessed Apr. 26, 2016.

The industry in Austria

There is a single producer of ferrovanadium in Austria, Treibacher Industrie AG, which is an integrated producer of ferrovanadium, processing vanadium slag to recover vanadium pentoxide and refining the vanadium pentoxide to produce ferrovanadium and vanadium chemicals and other alloys. Treibacher also produces numerous alloys and chemicals of other metallic elements. A major source of vanadium slag for Treibacher was Evraz Highveld in South Africa, but Evraz Highveld has been shut down since July 2015 and is in "business rescue" pending likely liquidation.[10] [11] As shown in Table VII-8, exports from Austria are primarily to other European countries and to Korea.

The industry in Canada

There is a single producer of ferrovanadium in Canada, Masterloy Products Company, located in Ottawa. Masterloy processes customer supplied vanadium pentoxide into 80% ferrovanadium as well as customer supplied molybdenum oxide into 70% ferromolybdenum.[12] As shown in table VII-9, Canada's exports of ferrovanadium are nearly exclusively to the United States. Vanadium pentoxide, which has a U.S. duty rate of 5.5 percent, can be imported duty-free into Canada, converted there into ferrovanadium that can be imported into the United States duty-free under NAFTA.

The industry in Brazil

Although there is no known production of ferrovanadium in Brazil, that country has increased in importance as a source of vanadium pentoxide. A new primary vanadium mine and vanadium pentoxide producer, Largo Resources Ltd.'s Maracas Menchen Mine, under development for several years, began shipments of vanadium pentoxide in September 2014.[13] Toronto-based Largo has an offtake agreement with Glencore Plc for all of the output from Maracas for the first six years.[14] During 2015, 12.8 million pounds of vanadium pentoxide (7.2 million pounds of contained vanadium) were exported from Brazil, with 5.7 million pounds (3.2

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[10] "Business rescue," in South Africa, "aims to facilitate the rehabilitation of a company that is "financially distressed" by providing for: the temporary supervision of the company and management of its affairs, business and property by a business rescue practitioner, a temporary moratorium ("stay") on the rights of claimants against the company or in respect of property in its possession and the development and implementation (if approved) of a business rescue plan to rescue the company by restructuring its business, property, debt, affairs, other liabilities and equity." Fin24, http://www.fin24.com/Entrepreneurs/Resources/Business-rescue-explained-20150119, Accessed April 26, 2016.

[11] *Evraz Highveld winddown could take up to three years,* Metal Bulletin, April 5, 2016.

[12] Masterloy Products Company, http://www.masterloy.com/index.html, accessed April 25, 2016.

[13] *Largo makes first ferrovanadium shipment from Brazil project*, AMM, September 3, 2014.

[14] *Largo makes first ferrovanadium shipment from Brazil project*, AMM, September 3, 2014.

million pounds of contained vanadium) exported to Korea.[15] Brazil recently became the largest source of imports of vanadium pentoxide for Korea, with imports from Brazil exceeding those from China in 2015.[16]

Table VII-8

Ferrovanadium: Austrian exports (constructed) by destination market, 2013-15

Item	Calendar year		
	2013	2014	2015
	Quantity (1,000 pounds)		
Austria's exports to the United States	1,408	1,355	2,135
Austria's exports to other major destination markets.-- Germany	5,568	6,462	5,371
South Korea	2,601	2,884	2,081
Netherlands	768	590	1,273
Slovenia	548	717	685
Brazil	583	375	661
Turkey	659	838	657
Italy	641	846	611
Czech Republic	551	507	441
All other destination markets	2,495	2,597	1,795
Total Austria exports (constructed)	15,822	17,169	15,709
	Value (1,000 dollars)		
Austria's exports to the United States	11,017	11,785	12,470
Austria's exports to other major destination markets.-- Germany	49,924	50,654	34,988
South Korea	24,013	25,308	14,095
Netherlands	4,729	3,800	7,990
Slovenia	5,235	6,348	4,629
Brazil	5,781	3,343	4,845
Turkey	6,657	7,671	4,963
Italy	6,063	7,423	4,262
Czech Republic	5,510	4,565	3,101
All other destination markets	26,490	24,801	13,475
Total Austria exports (constructed)	145,419	145,700	104,819

Table continued.

[15] GTIS, accessed March 25, 2016.

[16] GTIS, accessed March 25, 2016.

Table VII-8—Continued

Ferrovanadium: Austrian exports (constructed) by destination market, 2013-15

Item	Calendar year		
	2013	2014	2015
	Unit value (dollars per pound)		
Austria's exports to the United States	7.82	8.70	5.84
Austria's exports to other major destination markets.-- Germany	8.97	7.84	6.51
South Korea	9.23	8.78	6.77
Netherlands	6.16	6.44	6.28
Slovenia	9.55	8.86	6.76
Brazil	9.92	8.92	7.33
Turkey	10.10	9.16	7.55
Italy	9.46	8.78	6.97
Czech Republic	10.00	9.00	7.03
All other destination markets	10.62	9.55	7.51
Total Austria exports (constructed)	9.19	8.49	6.67
	Share of quantity (percent)		
Austria's exports to the United States	8.9	7.9	13.6
Austria's exports to other major destination markets.-- Germany	35.2	37.6	34.2
South Korea	16.4	16.8	13.2
Netherlands	4.9	3.4	8.1
Slovenia	3.5	4.2	4.4
Brazil	3.7	2.2	4.2
Turkey	4.2	4.9	4.2
Italy	4.0	4.9	3.9
Czech Republic	3.5	3.0	2.8
All other destination markets	15.8	15.1	11.4
Total Austria exports (constructed)	100.0	100.0	100.0

Source: Austria export statistics constructed by pulling official import statistic from Austria reported by various national authorities in the GTIS GTA database using HTS subheading 7202.92, accessed April 12, 2016.

Table VII-9

Ferrovanadium: Canadian exports by destination market, 2013-15

Item	Calendar year		
	2013	2014	2015
	Quantity (1,000 pounds)		
Canada's exports to the United States	1,404	2,421	1,343
Canada's exports to other major destination markets.--			
Norway	0	0	0
China	0	0	0
Germany	0	0	0
Total Canada exports	1,404	2,421	1,343
	Value (1,000 dollars)		
Canada's exports to the United States	13,201	23,905	10,982
Canada's exports to other major destination markets.--			
Norway	0	0	0
China	0	0	0
Germany	3	0	0
Total Canada exports	13,204	23,905	10,982
	Unit value (dollars per pound)		
Canada's exports to the United States	9.40	9.87	8.18
Canada's exports to other major destination markets.--			
Norway	0.00	0.00	14.51
China	9.98	0.00	0.00
Germany	16.22	0.00	0.00
Total Canada exports	9.40	9.87	8.18
	Share of quantity (percent)		
Canada's exports to the United States	100.0	100.0	100.0
Canada's exports to other major destination markets.--			
Norway	0.0	0.0	0.0
China	0.0	0.0	0.0
Germany	0.0	0.0	0.0
Total Canada exports	100.0	100.0	100.0

Source: Official Canadian exports statistics under HTS subheading 7202.92 as reported by Statistics Canada in the GTIS/GTA database, accessed April 12, 2016.

Table VII-10

Ferrovanadium: Czech Republic exports by destination market, 2013-15

Item	Calendar year		
	2013	2014	2015
	Quantity (1,000 pounds)		
Czech Republic's exports to the United States	6,393	4,674	2,822
Czech Republic's exports to other major destination markets.--			
Germany	321	1,413	2,651
Japan	1,334	1,202	1,797
Spain	1,003	1,375	1,082
Sweden	1,175	1,475	926
Korea South	44	0	895
Netherlands	88	88	750
Italy	82	397	478
Turkey	265	163	353
All other destination markets	3,335	2,560	1,875
Total Czech Republic exports	14,040	13,345	13,629
	Value (1,000 dollars)		
Czech Republic's exports to the United States	52,187	39,996	17,751
Czech Republic's exports to other major destination markets.--			
Germany	3,024	12,991	17,038
Japan	11,624	10,077	11,125
Spain	8,585	11,858	7,325
Sweden	10,609	12,671	5,739
Korea South	430	0	5,098
Netherlands	730	761	4,937
Italy	741	3,463	3,056
Turkey	2,396	1,336	1,751
All other destination markets	30,936	21,746	11,900
Total Czech Republic exports	121,262	114,899	85,720

Table continued.

Table VII-10--Continued

Ferrovanadium: Czech Republic exports by destination market, 2013-15

Item	Calendar year		
	2013	2014	2015
	Unit value (dollars per pound)		
Czech Republic's exports to the United States	8.16	8.56	6.29
Czech Republic's exports to other major destination markets.--			
Germany	9.43	9.20	6.43
Japan	8.71	8.39	6.19
Spain	8.56	8.63	6.77
Sweden	9.03	8.59	6.20
Korea South	9.74	0.00	5.70
Netherlands	8.28	8.62	6.59
Italy	9.03	8.73	6.39
Turkey	9.06	8.19	4.96
All other destination markets	9.28	8.50	6.34
Total Czech Republic exports	8.64	8.61	6.29
	Share of quantity (percent)		
Czech Republic's exports to the United States	45.5	35.0	20.7
Czech Republic's exports to other major destination markets.--			
Germany	2.3	10.6	19.4
Japan	9.5	9.0	13.2
Spain	7.1	10.3	7.9
Sweden	8.4	11.1	6.8
Korea South	0.3	0.0	6.6
Netherlands	0.6	0.7	5.5
Italy	0.6	3.0	3.5
Turkey	1.9	1.2	2.6
All other destination markets	23.8	19.2	13.8
Total Czech Republic exports	100.0	100.0	100.0

Source: Official Czech exports statistics under HTS subheading 7202.92 as reported by Eurostat in the GTIS/GTA database, accessed April 12, 2016.

Table VII-11

Ferrovanadium: Global exports by exporter, 2013-15

Item	Calendar year		
	2013	2014	2015
	Quantity (1,000 pounds)		
United States	1,736	1,990	1,612
Korea	2,899	3,054	6,795
All other major exporting countries.--China	13,392	15,578	17,071
Austria	15,822	17,169	15,709
Czech Republic	14,040	13,345	13,629
South Africa	16,908	17,195	12,752
Russia	3,123	2,282	2,517
Canada	1,404	2,421	1,343
Belgium	440	528	872
Japan	1,632	1,545	692
Germany	856	1,213	581
Italy	171	783	419
All other exporting countries	2,816	2,813	1,872
Total global exports	75,240	79,917	75,864
	Value (1,000 dollars)		
United States	18,198	19,735	12,630
Korea	26,431	27,314	47,401
All other major exporting countries.--China	123,103	136,027	124,311
Austria	145,419	145,700	104,819
Czech Republic	121,262	114,899	85,720
South Africa	170,349	157,146	89,399
Russia	30,353	20,244	15,600
Canada	13,204	23,905	10,982
Belgium	4,653	5,007	6,223
Japan	10,715	9,544	4,214
Germany	10,535	12,529	4,450
Italy	1,583	5,480	2,797
All other exporting countries	26,209	29,046	11,711
Total global exports	702,014	706,576	520,255

Table continued.

Table VII-11--Continued

Ferrovanadium: Global exports by exporter, 2013-15

Item	Calendar year		
	2013	2014	2015
	Unit value (dollars per pound)		
United States	10.48	9.92	7.83
Korea	9.12	8.94	6.98
All other major exporting countries.--China	9.19	8.73	7.28
Austria	9.19	8.49	6.67
Czech Republic	8.64	8.61	6.29
South Africa	10.08	9.14	7.01
Russia	9.72	8.87	6.20
Canada	9.40	9.87	8.18
Belgium	10.59	9.48	7.14
Japan	6.57	6.18	6.09
Germany	12.31	10.33	7.66
Italy	9.25	7.00	6.68
All other exporting countries	9.31	10.33	6.26
Total global exports	9.33	8.84	6.86
	Share of quantity (percent)		
United States	2.3	2.5	2.1
Korea	3.9	3.8	9.0
All other major exporting countries.--China	17.8	19.5	22.5
Austria	21.0	21.5	20.7
Czech Republic	18.7	16.7	18.0
South Africa	22.5	21.5	16.8
Russia	4.2	2.9	3.3
Canada	1.9	3.0	1.8
Belgium	0.6	0.7	1.1
Japan	2.2	1.9	0.9
Germany	1.1	1.5	0.8
Italy	0.2	1.0	0.6
All other exporting countries	3.7	3.5	2.5
Total global exports	100.0	100.0	100.0

Source: Official exports statistics under HTS subheading 7202.92 as reported by various national statistical authorities in the GTIS/GTA database, accessed April 19, 2016, switching out reported exports from the Netherlands with other countries' reported imports from Austria (constructed exports).

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
81 FR 18888 April 1, 2016	*Ferrovanadium From Korea; Institution of Antidumping Duty Investigation and Scheduling of Preliminary Phase Investigation*	https://www.gpo.gov/fdsys/pkg/FR-2016-04-01/pdf/2016-07416.pdf
81 FR 24059 April 25, 2016	*Ferrovanadium From the Republic of Korea: Initiation of Less-Than-Fair-Value Investigation*	https://www.gpo.gov/fdsys/pkg/FR-2016-04-25/pdf/2016-09537.pdf

APPENDIX B

CALENDAR OF THE PUBLIC STAFF CONFERENCE

CALENDAR OF PUBLIC PRELIMINARY CONFERENCE

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

Subject: Ferrovanadium from Korea

Inv. No.: 731-TA-1315 (Preliminary)

Date and Time: April 18, 2016 - 9:30 a.m.

A session was held in connection with this preliminary phase investigation in Main Hearing Room (room 101), 500 E Street, S.W., Washington, DC.

OPENING REMARKS:

Petitioners (**John B. Totaro, Jr.**, Neville Peterson, LLP)
Respondent (**J. Scott Maberry**, Sheppard Mullin Richter & Hampton LLP)

In Support to the Imposition of Antidumping Duty Order:

Neville Peterson, LLP
Washington, DC
on behalf of

Vanadium Producers and Reclaimers Association ("VPRA")
AMG Vanadium, LLC
Bear Metallurgical
Gulf Chemical & Metallurgical Corporation
Evraz Stractor, Inc.

Jane Neal, Senior Vice President, AMG Vanadium, LLC

Mark Anderson, Vice President of Global Marketing and Sales, AMG Vanadium, LLC

David F. Carey, General Manager, Bear Metallurgical

Eric Kopta, Sales Manager, Bear Metallurgical

In Support to the Imposition of Antidumping Duty Order (continued):

Gerardo Valdes, Director of Metal Sales and Catalyst Recycling Service, Gulf Chemical & Metallurgical Corporation

Jennifer Lutz, Senior Economist, Economic Consulting Services, LLC

John B. Totaro, Jr.) – OF COUNSEL

In Opposition to the Imposition of Antidumping Duty Order:

Sheppard Mullin Richter & Hampton LLP
Washington, DC
on behalf of

Korvan

J. Scott Maberry) – OF COUNSEL

REBUTTAL/CLOSING REMARKS:

Petitioners (**John B. Totaro, Jr.**, Neville Peterson, LLP)
Respondent (**J. Scott Maberry**, Sheppard Mullin Richter & Hampton LLP)

END-

APPENDIX C

SUMMARY DATA

Table C-1
Ferrovanadium: Summary data concerning the U.S. market, 2013-15
(Quantity=1,000 pounds contained vanadium; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per pound contained vanadium; Period changes=percent--exceptions noted)

	Reported data			Period changes		
	Calendar year			Calendar year		
	2013	2014	2015	2013-15	2013-14	2014-15
U.S. consumption quantity:						
Amount	***	***	***	***	***	***
Producers' share (fn1)	***	***	***	***	***	***
Importers' share (fn1):						
Korea	***	***	***	***	***	***
All others sources	***	***	***	***	***	***
Total imports	***	***	***	***	***	***
U.S. consumption value:						
Amount	***	***	***	***	***	***
Producers' share (fn1)	***	***	***	***	***	***
Importers' share (fn1):						
Korea	***	***	***	***	***	***
All others sources	***	***	***	***	***	***
Total imports	***	***	***	***	***	***
U.S. imports from:						
Korea:						
Quantity	784	1,243	1,669	112.8	58.5	34.2
Value	9,599	14,715	16,253	69.3	53.3	10.5
Unit value	$12.24	$11.84	$9.74	(20.4)	(3.3)	(17.7)
Ending inventory quantity	***	***	***	***	***	***
All other sources:						
Quantity	7,400	***	***	***	***	***
Value	83,939	83,210	50,734	(39.6)	(0.9)	(39.0)
Unit value	$11.34	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	***
Total imports:						
Quantity	8,184	***	***	***	***	***
Value	93,538	97,925	66,987	(28.4)	4.7	(31.6)
Unit value	$11.43	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	***
U.S. producers':						
Average capacity quantity	***	***	***	***	***	***
Production quantity	***	***	***	***	***	***
Capacity utilization (fn1)	***	***	***	***	***	***
U.S. shipments:						
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)	***	***	***	***	***	***
Productivity (pounds per hour)	***	***	***	***	***	***
Unit labor costs	***	***	***	***	***	***
Net sales:						
Quantity	***	***	***	***	***	***
Value	***	***	***	***	***	***
Unit value	***	***	***	***	***	***
Cost of goods sold (COGS)	***	***	***	***	***	***
Gross profit or (loss)	***	***	***	***	***	***
SG&A expenses	***	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***	***
Net income or (loss)	***	***	***	***	***	***
Capital expenditures	***	***	***	***	***	***
Unit COGS	***	***	***	***	***	***
Unit SG&A expenses	***	***	***	***	***	***
Unit operating income or (loss)	***	***	***	***	***	***
Unit net income or (loss)	***	***	***	***	***	***
COGS/sales (fn1)	***	***	***	***	***	***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	***
Net income or (loss)/sales (fn1)	***	***	***	***	***	***

Notes:

fn1.--Reported data are in percent and period changes are in percentage points.

Source: Compiled from data submitted in response to Commission questionnaires, and modified official U.S. import statistics (see Part IV).

APPENDIX D

NONSUBJECT COUNTRY PRICE DATA

Three importers reported price data for sales of ferrovanadium from Austria, two importers reported price data for product from Canada, and two importers reported pricing data for product from Czech Republic. There were no reported price data for pricing product 1 from Canada or Czech Republic. In 2015, Austrian price data reported by these firms accounted for 1.2 percent of U.S. commercial shipments from nonsubject sources, 13 percent of U.S. commercial shipments from Canada, and 69.3 percent of U.S. commercial shipments from the Czech Republic. These price items and accompanying data are comparable to those presented in tables V-3 to V-4. Price and quantity data for Austria, Canada, and Czech Republic are shown in tables D-1 to D-2 and in figure D-1 to D-2 (with domestic and subject sources).

In comparing nonsubject country pricing data with U.S. producer pricing data, prices for product imported from Austria were lower than prices for U.S.-produced product in 3 instances and higher in 21 instances; prices for product imported from Canada were higher than prices for U.S.-produced product all 12 instances; prices for product imported from Czech Republic were lower in 7 instances and higher in 5 instances. In comparing nonsubject country pricing data with Korean pricing data, prices for product imported from Austria were lower than prices for product imported from Korea in 2 instances and higher in 10 instances; prices for product imported from Canada were lower than prices for product imported from Korea in 4 instances and higher in 8 instances; prices for product imported from Czech Republic were lower than prices for product imported from Korea in 7 instances and higher in 5 instances. A summary of price differentials is presented in table D-3.

Table D-1

Ferrovanadium: Weighted-average f.o.b. prices and quantities of imported product 1, by quarters, January 2013-December 2015

* * * * * * *

Table D-2

Ferrovanadium: Weighted-average f.o.b. prices and quantities of imported product 2, by quarters, January 2013-December 2015

* * * * * * *

Figure D-1

Ferrovanadium: Weighted-average f.o.b. prices and quantities of domestic and imported product 1, by quarters, January 2013-December 2015

* * * * * * *

Figure D-1

Ferrovanadium: Weighted-average f.o.b. prices and quantities of domestic and imported product 2, by quarters, January 2013-December 2015

* * * * * * *

Table D-3

Ferrovanadium: Summary of price differentials, by country, January 2013-December 2015

Comparison	Total number of comparisons	Nonsubject lower than the comparison source		Nonsubject higher than the comparison source	
		Number of quarters	Quantity (lbs CV)	Number of quarters	Quantity (lbs CV)
Nonsubject vs United States.--					
Austria vs. United States	24	3	***	21	***
Canada vs. United States	12	0	***	12	***
Czech Republic vs. United States	12	7	***	5	***
Nonsubject vs Subject.--					
Austria vs. Korea	12	2	***	10	***
Canada vs. Korea	12	4	***	8	***
Czech Republic vs. Korea	12	7	***	5	***

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