Ferrovanadium from China and South Africa

Investigation Nos. 731-TA-986-987 (Third Review)

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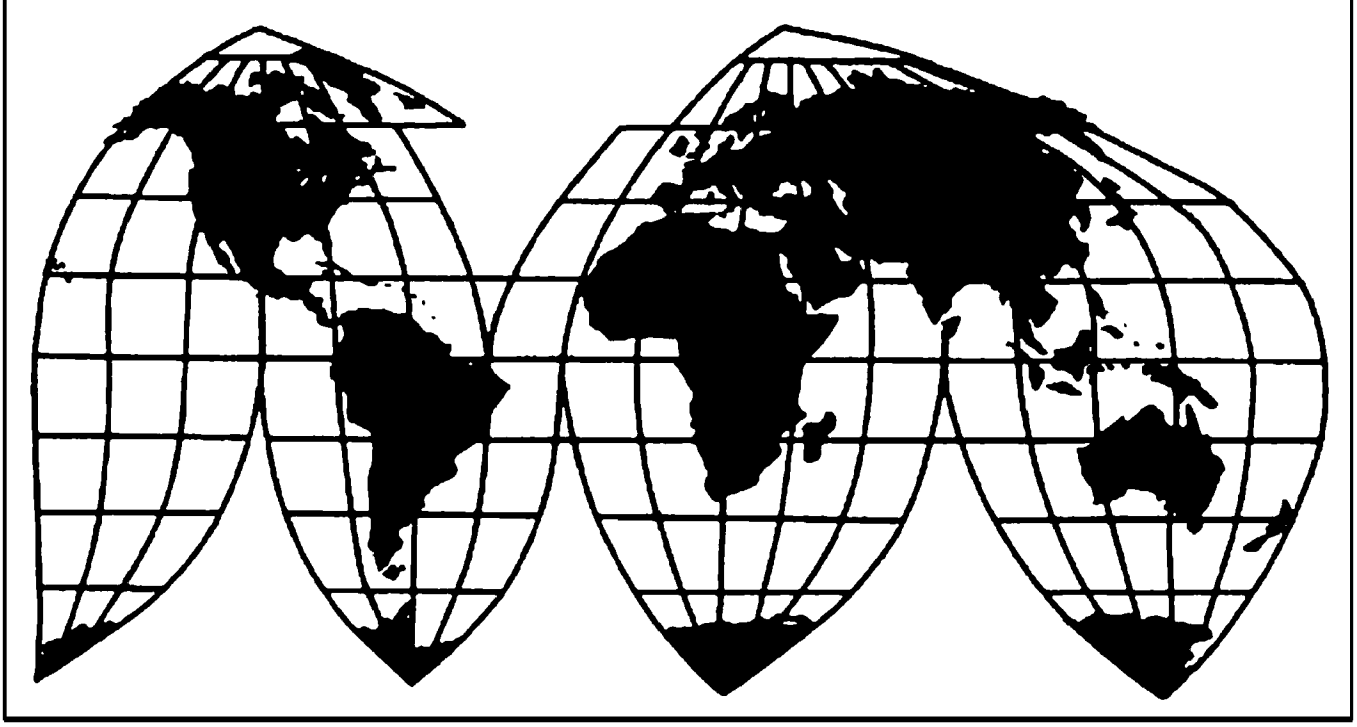
U.S. International Trade Commission



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UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation Nos. 731-TA-986-987 (Third Review)

Ferrovanadium from China and South Africa

DETERMINATION

On the basis of the record[1] developed in the subject five-year reviews, the United States International Trade Commission ("Commission") determines, pursuant to the Tariff Act of 1930 ("the Act"), that revocation of the antidumping duty orders on ferrovanadium from China and South Africa would be likely to lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time.

BACKGROUND

The Commission instituted these reviews on January 2, 2020 (85 FR 122) and determined on April 6, 2020 that it would conduct expedited reviews (85 FR 43258, July 16, 2020).

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

Views of the Commission

Based on the record in these five-year reviews, we determine under section 751(c) of the Tariff Act of 1930, as amended ("the Tariff Act"), that revocation of the antidumping duty orders on ferrovanadium from China and South Africa would likely lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time.

I. Background

Original Investigations: On November 26, 2001, the Ferroalloys Association Vanadium Committee and five of its members filed antidumping duty petitions concerning imports of ferrovanadium from China and South Africa.[1] The Commission made final affirmative determinations in January 2003.[2] U.S. Department of Commerce ("Commerce") published antidumping duty orders on ferrovanadium from both subject countries on January 28, 2003.[3]

First Reviews: The Commission instituted the first reviews in December 2007.[4] It conducted full reviews in light of information regarding possible changes in conditions of competition. It reached affirmative determinations in November 2008.[5] Commerce issued a continuation of the antidumping duty orders effective December 19, 2008.[6]

Second Reviews: The Commission instituted the second reviews in November 2013.[7] It conducted full reviews based on adequate group responses from the domestic interested parties and the respondent interested parties from South Africa. It reached affirmative determinations in January 2015.[8] Commerce issued a continuation of the orders effective February 18, 2015.[9]

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[1] *Ferrovanadium from China and South Africa,* Inv. Nos. 731-TA-986-987 (Final), USITC Pub. 3570 at 1 (Jan. 2003) ("*Original Determination*, USITC Pub. 3570").

[2] *Original Determination*, USITC Pub. 3570 at 3.

[3] 68 Fed. Reg. 4168 (Jan. 28, 2003); 68 Fed. Reg. 4169 (Jan. 28, 2003).

[4] 72 Fed. Reg. 67962 (Dec. 3, 2007).

[5] *Ferrovanadium from China and South Africa,* Inv. Nos. 731-TA-986-987 (Review), USITC Pub. 4046 at 1 (Nov. 2008) ("*First Review Determination*, USITC Pub. 4046").

[6] *Ferrovanadium from China and South Africa: Continuation of Antidumping Duty Orders*, 73 Fed. Reg. 77609 (Dec. 19, 2008).

[7] 78 Fed. Reg. 65706 (Nov. 1, 2013).

[8] *Ferrovanadium from China and South Africa*, Inv. Nos. 731-TA-986-987 (Second Review), USITC Pub. 4517 at 3 (Jan. 2015) ("*Second Review Determination*, USITC Pub. 4517").

[9] *Ferrovanadium from China and South Africa: Continuation of Antidumping Duty Orders*, 80 Fed. Reg. 8607 (Feb. 18, 2015).

Current Reviews. On January 2, 2020, the Commission instituted these third five-year reviews.[10] The Commission received a single response to its notice of institution, filed by the Vanadium Producers and Reclaimers Association ("VPRA" or "domestic interested parties"), a trade association whose members produce and/or wholesale domestically produced ferrovanadium.[11] Two of VPRA's three members, AMG Vanadium LLC ("AMG") and Evergreen Metallurgical LLC, d.b.a. Bear Metallurgical Company ("Bear"), are domestic producers of ferrovanadium.[12] The Commission determined that the domestic interested party group response to the notice of institution was adequate and that the respondent interested party group response was inadequate for each order under review. The Commission therefore determined on April 6, 2020 to expedite the reviews.[13] VPRA submitted comments pursuant to Commission rule 207.62(d) regarding the determination the Commission should reach in these expedited third reviews.[14]

U.S. industry data are based on information that VPRA submitted in its response to the notice of institution. VPRA estimates that two of its member firms – AMG and Bear – accounted for 100 percent of domestic ferrovanadium production in 2019.[15] U.S. import data and related information are based on Commerce official import statistics.[16] Foreign industry data and related information are based on questionnaire responses from the original investigations and prior reviews, information that VPRA submitted in the current reviews, as well as publicly available information.[17]

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[10] *Ferrovanadium from China and South Africa; Institution of Five-Year Reviews*, 85 Fed. Reg. 122 (Jan. 2, 2020).

[11] VPRA Response to the Notice of Institution at 1 (Feb. 3, 2020).

[12] Confidential Report, Memorandum INV-SS-037 (Mar. 25, 2020) ("CR") at I-2 n.5. VPRA's third member, U.S. Vanadium, LLC ("U.S. Vanadium"), is a U.S. wholesaler of ferrovanadium. *Id*.

[13] *Ferrovanadium from China and South Africa; Scheduling of Expedited Five-Year Reviews*, 85 Fed. Reg. 43258, 43259 (July 16, 2020).

[14] *See* VPRA's Final Comments (July 20, 2020).

[15] CR/PR at I-2 & Table I-1.

[16] CR/PR at Table I-4.

[17] *See e.g.,* CR/PR at Tables I-7 & I-9. We note that no producers of subject imports from China participated in the current reviews, or in any prior reviews.

II. Domestic Like Product and Industry

A. Domestic Like Product

In making its determination under section 751(c) of the Tariff Act, the Commission defines the "domestic like product" and the "industry."[18] The Tariff Act defines "domestic like product" as "a product which is like, or in the absence of like, most similar in characteristics and uses with, the article subject to an investigation under this subtitle."[19] The Commission's practice in five-year reviews is to examine the domestic like product definition from the original investigation and consider whether the record indicates any reason to revisit the prior findings.[20]

Commerce has defined the scope of the antidumping duty orders in these five-year reviews as follows:

> all ferrovanadium regardless of grade, chemistry, form, shape, or size. Ferrovanadium is an alloy of iron vanadium that is used chiefly as an additive in the manufacture of steel. The merchandise is commercially and scientifically identified as vanadium. It specifically excludes vanadium additives other than ferrovanadium such as nitride vanadium, vanadium-aluminum master alloys, vanadium chemicals, vanadium oxides, vanadium waste and scrap, and vanadium-bearing raw materials such as slag, boiler residues and fly ash.[21]

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[18] 19 U.S.C. § 1677(4)(A).

[19] 19 U.S.C. § 1677(10); *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); *Timken Co. v. United States*, 913 F. Supp. 580, 584 (Ct. Int'l Trade 1996); *Torrington Co. v. United States*, 747 F. Supp. 744, 748-49 (Ct. Int'l Trade 1990), *aff'd*, 938 F.2d 1278 (Fed. Cir. 1991); *see also* S. Rep. No. 249, 96th Cong., 1st Sess. 90-91 (1979).

[20] *See*, *e.g.*, *Internal Combustion Industrial Forklift Trucks from Japan*, Inv. No. 731-TA-377 (Second Review), USITC Pub. 3831 at 8-9 (Dec. 2005); *Crawfish Tail Meat from China*, Inv. No. 731-TA-752 (Review), USITC Pub. 3614 at 4 (July 2003); *Steel Concrete Reinforcing Bar from Turkey*, Inv. No. 731-TA-745 (Review), USITC Pub. 3577 at 4 (Feb. 2003).

[21] *Ferrovanadium from China and South Africa: Final Results of Expedited Third Sunset Reviews of the Antidumping Duty Orders*, 85 Fed. Reg. 26667 (May 5, 2020). Commerce indicated that the merchandise subject to the orders is currently classifiable under item number 7202.92.00 of the Harmonized Tariff Schedule of the United States. *Id*. Item numbers 2850.00.2000, 8112.40.3000, and 8112.40.6000 are specifically excluded. *Id*.

The scope of these expedited third reviews is identical to the scope of the original investigations and the first and second reviews.[22]

Ferrovanadium is commonly produced in grades having a vanadium content of 40-60 percent or 75-85 percent.[23] Regardless of grade, commercial practice is to quote the price of ferrovanadium on the basis of the contained vanadium content.[24] Ferrovanadium is typically sold in the United States in containers of 25 pounds of a specified content of contained vanadium ("pounds" hereafter refers to "pounds contained vanadium").[25] Ferrovanadium is used in high-strength low-alloy steels (also known as micro-alloy steels) that are used in steel for high-performance long-distance oil and gas pipelines, concrete reinforcing bars, structural shapes and plate for construction, and automobile components.[26] When vanadium combines with carbon and nitrogen in steel, it creates stable carbides and nitrides that improve the finished product's wear resistance, strength, and toughness.[27]

In the original investigations and prior reviews, the Commission defined a single domestic like product consisting of all ferrovanadium regardless of grade, corresponding to

[22] *See Original Determination*, USITC Pub. 3570 at 4; *First Review Determination*, USITC Pub. 4046 at 5; *Second Review Determination*, USITC Pub. 4517 at 5.

[23] CR/PR at I-8.

[24] CR/PR at I-8.

[25] CR/PR at I-8.

[26] CR/PR at I-8.

[27] CR/PR at I-8.

Commerce's scope definition.[28] The definition of the domestic like product was not disputed in the prior reviews.[29]

In these expedited third reviews, VPRA agrees with the Commission's definition of the domestic like product from the prior proceedings.[30] The record contains no information suggesting that the characteristics of domestically produced ferrovanadium have changed since the prior proceedings.[31] Accordingly, we define a single domestic like product consisting of all ferrovanadium regardless of grade, coextensive with the scope of the orders under review.

B. Domestic Industry

Section 771(4)(A) of the Tariff Act defines the relevant industry 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."[32] In defining the domestic industry, the Commission's general practice has been

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[28] *Original Determination*, USITC Pub. 3570 at 9; *First Review Determination*, USITC Pub. 4046 at 7; *Second Review Determination*, USITC Pub. 4517 at 5-6**.** In the original investigations, Petitioners argued for a single domestic like product consisting of all grades of ferrovanadium, coextensive with Commerce's scope. Respondents urged the Commission to define two domestic like products consisting of 45-percent and 80-percent grade ferrovanadium. The Commission rejected respondents' argument that 45-percent grade and 80-percent grade ferrovanadium were separate domestic like products, instead finding that all grades of ferrovanadium shared similar physical characteristics and were used principally as an alloying agent in the production of steel and iron castings. The Commission also observed that purchasers generally reported being able to use 45-percent grade and 80-percent grade ferrovanadium interchangeably, although some purchasers reported a preference for 80-percent grade ferrovanadium. The Commission recognized that, although the two major domestic producers of ferrovanadium used different manufacturing processes, both firms had the capability to produce both 45-percent and 80-percent grades of ferrovanadium. The Commission also found that the record evidence indicated there were at most minor differences in price and also some overlap in channels of distribution for 45-percent and 80-percent grade ferrovanadium. Given these considerations, the Commission did not find that any of the six factors indicated such clear dividing lines as to warrant a finding of separate like products, and therefore defined a single domestic like product consisting of ferrovanadium of all grades, coextensive with the scope of the investigations. *Original Determination*, USITC Pub. 3570 at 9.

[29] *See First Review Determination*, USITC Pub. 4046 at 7 & *Second Review Determination*, USITC Pub. 4517 at 6.

[30] VPRA Response to Notice of Institution at 62 (Feb. 3, 2020).

[31] *See generally* CR/PR at I-8 to I-10.

[32] 19 U.S.C. § 1677(4)(A). The definitions in 19 U.S.C. § 1677 are applicable to the entire subtitle containing the antidumping and countervailing duty laws, including 19 U.S.C. §§ 1675 and 1675a. *See* 19 U.S.C. § 1677.

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.

In the prior proceedings, the Commission found that tollees that produced vanadium pentoxide, a key intermediate product for producing ferrovanadium, were not domestic producers of the domestic like product since they did not produce ferrovanadium themselves; accordingly, the Commission defined the domestic industry to include all domestic producers of ferrovanadium and did not include tollees in the domestic industry.[33] Nonetheless, in the prior proceedings, the Commission considered the information provided by tollees in its impact analysis to measure U.S. shipments, U.S. consumption, inventories, and pricing of the domestic like product.[34] In the original investigations and first and second five-year reviews, the Commission found that no domestic producers of ferrovanadium were related parties.[35]

VPRA agrees with the Commission's definition of the domestic industry from the prior proceedings.[36] As in our prior determinations, we do not consider the tollees to be domestic producers because they are not actually producing the domestic like product, but an intermediate product. Thus, we do not include tollees in the domestic industry definition.[37] Moreover, as in the original investigations and previous reviews, we have considered the information pertaining to the domestic industry's tolling operations, although information in the current reviews is more limited than in the prior proceedings.[38] The record does not indicate that either of the known domestic producers of ferrovanadium is a related party.[39] Accordingly, we define the domestic industry to be all domestic producers of ferrovanadium, namely AMG and Bear.

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[33] *Original Determination*, USITC Pub. 3570 at 10-11; *First Review Determination*, USITC Pub. 4046 at 8-10; *Second Review Determination*, USITC Pub. 4517 at 7.

[34] *Original Determination*, USITC Pub. 3570 at 11, 20-23; *First Review Determination*, USITC Pub. 4046 at 10, 31-34; *Second Review Determination*, USITC Pub. 4517 at 7.

[35] *Original Determination*, USITC Pub. 3570 at 9-11; *First Review Determination*, USITC Pub. 4046 at 10 n.65; *Second Review Determination*, USITC Pub. 4517 at 7 n.32.

[36] VPRA Response to Notice of Institution at 62-63 (Feb. 3, 2020).

[37] VPRA indicates that domestic producer Bear toll-produced ferrovanadium during the current review period for Evraz Stratcor, Inc., Gulf Chemical, CCMA LLC, Glencore Ltd. ("Glencore"), SiderAlloys Intl. SA, and Traxys North America LLC. *See* VPRA Response to Notice of Institution at 8 n.20 (Feb. 3, 2020); VPRA Response to Request for Information to Supplement Response to Notice of Institution at 3 (Feb. 14, 2020).

[38] CR/PR at Table I-3.

[39] VPRA Response to Notice of Institution at 56 (Feb. 3, 2020).

III. Cumulation

A. Legal Standard

With respect to five-year reviews, section 752(a) of the Tariff Act provides as follows:

> the Commission may cumulatively assess the volume and effect of imports of the subject merchandise from all countries with respect to which reviews under section 1675(b) or (c) of this title were initiated on the same day, if such imports would be likely to compete with each other and with domestic like products in the United States market. The Commission shall not cumulatively assess the volume and effects of imports of the subject merchandise in a case in which it determines that such imports are likely to have no discernible adverse impact on the domestic industry.[40]

Cumulation therefore is discretionary in five-year reviews, unlike original investigations, which are governed by section 771(7)(G)(i) of the Tariff Act.[41] The Commission may exercise its discretion to cumulate, however, only if the reviews are initiated on the same day, the Commission determines that the subject imports are likely to compete with each other and the domestic like product in the U.S. market, and imports from each such subject country are not likely to have no discernible adverse impact on the domestic industry in the event of revocation. Our focus in five-year reviews is not only on present conditions of competition, but also on likely conditions of competition in the reasonably foreseeable future.

B. Prior Proceedings

In the original investigations, the Commission found that the statutory requirements for cumulation were satisfied. It also found there was a reasonable overlap of competition both between subject imports from China and South Africa and among imports from each subject country and the domestic like product. Accordingly, it determined to cumulate subject imports from both subject countries for purposes of its material injury analysis.[42]

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[40] 19 U.S.C. § 1675a(a)(7).

[41] 19 U.S.C. § 1677(7)(G)(i); *see also*, *e.g.*, *Nucor Corp. v. United States*, 601 F.3d 1291, 1293 (Fed. Cir. 2010) (Commission may reasonably consider likely differing conditions of competition in deciding whether to cumulate subject imports in five-year reviews); *Allegheny Ludlum Corp. v. United States*, 475 F. Supp. 2d 1370, 1378 (Ct. Int'l Trade 2006) (recognizing the wide latitude the Commission has in selecting the types of factors it considers relevant in deciding whether to exercise discretion to cumulate subject imports in five-year reviews); *Nucor Corp. v. United States*, 569 F. Supp. 2d 1328, 1337-38 (Ct. Int'l Trade 2008).

[42] *Original Determination*, USITC Pub. 3570 at 11-13.

In each of the prior reviews, the Commission found that imports from each subject country would likely not have no discernible adverse impact upon revocation.[43] The Commission also found that there would likely be a reasonable overlap of competition among subject imports from each subject country and the domestic like product, as well as between subject imports from each country.[44] Further, it found that subject imports from China and South Africa were likely to compete in the U.S. market under similar conditions of competition upon revocation.[45] Thus, in each review the Commission exercised its discretion to cumulate the subject imports from both subject countries.[46]

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[43] *First Review Determination*, USITC Pub. 4046 at 11-13; *Second Review Determination*, USITC Pub. 4517 at 9-12. In the first reviews, the Commission found that some increase in subject imports from China into the United States was likely upon revocation in light of the large and growing capacity, production, and exports of ferrovanadium by subject producers in China. *First Review Determination*, USITC Pub. 4046 at 13. Given these considerations in addition to evidence of underselling by subject imports from China even after issuance of the antidumping duty orders, the Commission found that subject imports from China likely would not have no discernible adverse impact on the domestic industry if the order were revoked. *Id*. The Commission also found in the first reviews that subject imports from South Africa likely would not have no discernible adverse impact in light of the large capacity, excess capacity, and export-orientation of subject producers in South Africa, and evidence of underselling by subject imports from South Africa even after issuance of the antidumping orders. *Id*.

In the second reviews, the Commission found that subject imports from China likely would not have no discernible adverse impact on the domestic industry, especially since the Chinese ferrovanadium industry had remained export-oriented during the period of review, showed a preference for exporting vanadium in the form of ferrovanadium, and that vanadium from China was still entering the United States after conversion from vanadium pentoxide into ferrovanadium in Korea. *Second Review Determination*, USITC Pub. 4517 at 10. The Commission also found that subject imports from South Africa likely would not have no discernible adverse impact given the South African industry's large and growing production of ferrovanadium and export orientation, the fact that a substantial portion of the South African industry's ferrovanadium was not under contract and was therefore available for shipment to the United States, the attractiveness of the U.S. market, and the continued participation by a South African producer's affiliate in the U.S. market. *Id.* at 10-12.

[44] *First Review Determination*, USITC Pub. 4046 at 13-15; *Second Review Determination*, USITC Pub. 4517 at 12-14.

[44] *First Review Determination*, USITC Pub. 4046 at 16; *Second Review Determination*, USITC Pub. 4517 at 14-15.

[45] *First Review Determination*, USITC Pub. 4046 at 16; *Second Review Determination*, USITC Pub. 4517 at 15.

[46] *First Review Determination*, USITC Pub. 4046 at 16; *Second Review Determination*, USITC Pub. 4517 at 15.

C. Analysis

In these reviews, the statutory threshold for cumulation is satisfied because all reviews were initiated on the same day: January 2, 2020.[47] In addition, we consider the following issues in deciding whether to exercise our discretion to cumulate the subject imports: (1) whether imports from any of the subject countries are precluded from cumulation because they are likely to have no discernible adverse impact on the domestic industry; (2) whether there is a likelihood of a reasonable overlap of competition among subject imports and the domestic like product; and (3) whether subject imports are likely to compete in the U.S. market under different conditions of competition.[48]

1. Likelihood of No Discernible Adverse Impact

The statute precludes cumulation if the Commission finds that subject imports from a country are likely to have no discernible adverse impact on the domestic industry.[49] Neither the statute nor the Uruguay Round Agreements Act ("URAA") Statement of Administrative Action ("SAA") provides specific guidance on what factors the Commission is to consider in determining that imports "are likely to have no discernible adverse impact" on the domestic industry.[50] With respect to this provision, the Commission generally considers the likely volume of subject imports and the likely impact of those imports on the domestic industry within a reasonably foreseeable time if the orders are revoked. Our analysis for each of the subject countries takes into account, among other things, the nature of the product and the behavior of subject imports in the original investigations.

Based on the record in the current reviews, we find that imports from neither of the subject countries are likely to have no discernible adverse impact on the domestic industry in the event of revocation of the corresponding orders.

China. In the original investigations, the volume of subject imports from China increased from 826,000 pounds in 1999 to 1.5 million pounds in 2000 before declining to 992,000 pounds in 2001; the volume of subject imports from China was lower in January-June

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[47] *Ferrovanadium from China and South Africa: Initiation of Five-Year Reviews*, 85 Fed. Reg. 67 (Jan. 2, 2020).

[48] VPRA argues that because the conditions that warranted cumulation of subject imports from both subject countries in the prior proceedings have not changed, the Commission should again exercise its discretion to cumulate all subject imports in these reviews. VPRA Response to Notice of Institution at 6-7 (Feb. 3, 2020); VPRA Final Comments at 2-3 (July 20, 2020).

[49] 19 U.S.C. § 1675a(a)(7).

[50] SAA, H.R. Rep. No. 103-316, vol. I at 887 (1994).

2002 ("interim 2002"), at 109,000 pounds than in January-June 2001 ("interim 2001"), at 712,000 pounds.[51] The market share of subject imports from China increased from 6.4 percent in 1999 to 11.3 percent in 2000 before declining to 8.3 percent in 2001; their market share was lower in interim 2002, at 1.7 percent, than in interim 2001, at 11.4 percent.[52]

Although the subject industry in China exported large quantities of ferrovanadium to the United States during the original investigations, its exports to the United States declined to minimal levels after imposition of the antidumping duty orders. In the first reviews, subject import volumes from China were 109,000 pounds in 2002, and only 1,000 pounds in 2005 and 2006.[53] In the second reviews, subject import volumes from China were 1,000 pounds in 2010.[54] In the current reviews, subject import volumes from China were 9,000 pounds in 2016.[55] The market share of subject imports from China was 0.9 percent in 2002, and zero or close to zero in every year since 2002, including the current period of review.[56]

In the original investigations, the Commission received usable data from two producers in China, Chengde Xinghua Vanadium Chemical Co., Ltd. ("Chengde") and Panzhihua Iron & Steel Group ("Panzhihua"), both of which accounted for approximately *** percent of total production in China in 2001, and nearly all ferrovanadium exports from China to the United States that year.[57] No producer from China participated in the first and second reviews, or in these current reviews.[58] According to VPRA, while Chengde and Panzhihua were the two largest ferrovanadium producers in China during 2014-2019, there were 40 other major ferrovanadium producers and over 100 smaller ferrovanadium producers in China during the current review period.[59]

China is the world's largest producer of ferrovanadium, estimated to account for approximately 52.0 percent of global production in 2016, the last full year that ferrovanadium production data was available.[60] Based on publicly available data, the Chinese industry's ferrovanadium production was 88.2 million pounds in 2014, 45.0 million pounds in 2015, and

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[51] *Original Determination*, USITC Pub. 3570 at Table C-1.

[52] *Original Determination*, USITC Pub. 3570 at Table C-1.

[53] *First Review Determination*, USITC Pub. 4046 at 12 n.72.

[54] *Second Review Determination*, USITC Pub. 4517 at Table I-8.

[55] CR/PR at Table I-4.

[56] CR/PR at Appendix C (historical data) & Tables I-4-5; *First Review Determination*, USITC Pub. 4046 at 12 n.72; *Second Review Determination*, USITC Pub. 4517 at 9-10.

[57] CR/PR at I-24.

[58] *Second Review Determination*, USITC Pub. 4517 at 10; CR/PR at I-24.

[59] VPRA Response to Notice of Institution at 14-15 & 57-58 (Feb. 3, 2020).

[60] *Derived from* CR/PR at Table I-11.

67.5 million pounds in 2016.[61] Information submitted by VPRA indicates that, during 2018-2019, subject producers in China significantly increased their production of vanadium, which is the key raw material input used for producing ferrovanadium, and have indicated plans to increase vanadium capacity in 2020.[62]

Global Trade Atlas data indicate that global exports of ferrovanadium from China were 15.6 million pounds in 2014, 17.1 million pounds in 2015, 15.2 million pounds in 2016, 11.3 million pounds in 2017, 13.6 million pounds in 2018, and 10.9 million pounds in 2019.[63] The Chinese industry's leading export markets for ferrovanadium during 2014-2019 were South Korea, Japan, the Netherlands, and Taiwan.[64] In 2019, China's Ministry of Finance removed certain export duties on ferrovanadium, which had been 15 percent in 2017 and 10 percent in 2018.[65] Additionally, VPRA maintains that, at least until May 2017 when an antidumping duty order was imposed on ferrovanadium imports from South Korea, vanadium from China entered the United States after conversion from vanadium pentoxide into ferrovanadium in South Korea.[66]

In light of the foregoing, including the large size and export orientation of the subject industry in China, we find that subject imports from China would likely not have no discernible adverse impact on the domestic industry if the antidumping duty order covering these imports were revoked.

South Africa. In the original investigations, the volume of subject imports from South Africa declined from 1.5 million pounds in 1999 to 1.1 million pounds in 2000, but then increased to 2.5 million pounds in 2001; the volume of subject imports from South Africa was lower in interim 2002, at 405,000 pounds, than interim 2001, at 931,000 pounds.[67] The market share of subject imports from South Africa declined from 11.4 percent in 1999 to 8.1 percent in

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[61] CR/PR at Table I-11. China is also the world's leading producer of vanadium, the main raw material input used to produce ferrovanadium. According to publicly available data, vanadium production in China was 120.2 million pounds in 2014, 112.7 million pounds in 2015, 101.2 million pounds in 2016, 100.1 million pounds in 2017, and 88.2 million pounds in 2018. CR at Table I-10.

[62] VPRA Response to Notice of Institution at 14-15 (Feb. 3, 2020); VPRA Final Comments at 6 (July 20, 2020).

[63] CR/PR at Table I-7.

[64] CR/PR at Table I-7.

[65] CR/PR at Table I-6.

[66] VPRA Response to Notice of Institution at 20-22 (Feb. 3, 2020).

[67] *Original Determination*, USITC Pub. 3570 at Table C-1.

2000 before increasing to 20.8 percent in 2001; their market share was lower in interim 2002, at 6.4 percent, than in interim 2001, at 14.9 percent.[68]

In the first reviews, subject imports from South Africa were 441,000 pounds in 2002 and 17,000 pounds in 2007.[69] In the second reviews, subject imports from South Africa were 11,000 pounds in interim 2014.[70] In the current reviews, subject imports from South Africa were 11,000 pounds in 2014 and 7,000 pounds in 2018.[71] The market share of subject imports from South Africa was 3.5 percent in 2002 and 0.1 percent or less in every year since 2002, including 2014-2019.[72]

No ferrovanadium producers from South Africa participated in the current reviews.[73] According to VPRA, the only two producers of subject merchandise from South Africa during 2014-2019 were the same two firms, Rhovan and Vanchem, which accounted for all ferrovanadium production in South Africa in the second reviews.[74]

South Africa is one of the world's largest producers of ferrovanadium, estimated to account for approximately 22.1 percent of global production in 2016, the last full year that ferrovanadium production data was available.[75] Based on publicly available data, the South African industry's ferrovanadium production was 41.9 million pounds in 2014, 33.1 million pounds in 2015, 28.7 million pounds in 2016, and 35.3 million pounds in 2017.[76]

Global Trade Atlas data indicate that global exports of ferrovanadium from South Africa were 13.1 million pounds in 2014, 12.8 million pounds in 2015, 7.0 million pounds in 2016, 6.3

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[68] *Original Determination*, USITC Pub. 3570 at Table C-1.

[69] *First Review Determination*, USITC Pub 4046 at 12 n.72.

[70] *Second Review Determination*, USITC Pub. 4517 at 10.

[71] CR/PR at Table I-4.

[72] CR/PR at Appendix C (historical data) & Tables I-4-5; *First Review Determination*, USITC Pub. 4046 at 12 n.72; *Second Review Determination*, USITC Pub. 4517 at 10.

[73] CR/PR at I-28.

[74] VPRA Response to Notice of Institution at 23 (Feb. 3, 2020).

[75] *Derived from* CR at Table I-11.

[76] CR/PR at Table I-11. South Africa is also one of the world's leading producers of vanadium, the main raw material input used to produce ferrovanadium. According to publicly available data, vanadium production in South Africa was 47.6 million pounds in 2014, 39.2 million pounds in 2015, 18.0 million pounds in 2016, 17.5 million pounds in 2017, and 17.0 million pounds in 2018. CR/PR at Table I-10. VPRA also submitted information indicating that Rhovan's production of vanadium pentoxide, an intermediate product for conversion to ferrovanadium, remained at similar levels during the current review period compared with the prior reviews, and that Vanchem is projected to increase substantially its production of, and capacity utilization for, vanadium after resuming operations in 2018. VPRA Response to Notice of Institution at 24-28 (Feb. 3, 2020); VPRA Final Comments at 7-8 (July 20, 2020).

million pounds in 2017, 5.9 million pounds in 2018, and 6.6 million pounds in 2019.[77] The South African industry's leading export markets for ferrovanadium during 2014-2019 were the Netherlands, Japan, Mexico, and Brazil.[78] Furthermore, VPRA maintains that the South African industry is focused on exporting ferrovanadium since there continues to be virtually no home market in South Africa, which was also the case in the second reviews.[79]

According to VPRA, as was the case during the second reviews, South African subject producer Rhovan through its affiliate Glencore Ltd. ("Glencore") has continued to serve the U.S. market indirectly by shipping vanadium pentoxide to the United States or Canada so it can be converted to ferrovanadium for sale in the United States.[80] VPRA has presented information that the volume of vanadium pentoxide imports from South Africa was significant during 2014-2019 and that ***.[81] Accordingly, VPRA maintains that the South African producers Rhovan and Vanchem would likely shift from production of vanadium pentoxide to ferrovanadium and serve the U.S. market directly rather than indirectly if the antidumping duty orders were revoked.[82]

In light of the foregoing, including the large size and high degree of export orientation of the subject industry in South Africa and the continued participation in the U.S. market of a South African producer's affiliate, we find that subject imports from South Africa would likely not have no discernible adverse impact on the domestic industry if the antidumping duty order covering these imports were revoked.

2. Likelihood of a Reasonable Overlap of Competition

The Commission generally has considered four factors intended to provide a framework for determining whether subject imports compete with each other and with the domestic like

[77] CR/PR at Table I-9.

[78] CR/PR at Table I-9.

[79] VPRA Response to Notice of Institution at 21-22 (Feb. 3, 2020); *Second Review Determination*, USITC Pub. 4517 at 11.

[80] VPRA Response to Notice of Institution at 28-29 (Feb. 3, 2020); VPRA Final Comments at 8-9 (July 20, 2020).

[81] VPRA Response to Notice of Institution at 28-29 (Feb. 3, 2020).

[82] VPRA Response to Notice of Institution at 28-29 (Feb. 3, 2020).

product.[83] Only a "reasonable overlap" of competition is required.[84] In five-year reviews, the relevant inquiry is whether there likely would be competition even if none currently exists because the subject imports are absent from the U.S. market.[85]

Fungibility. In the original investigations, the Commission found there was at least a moderate level of fungibility between domestic ferrovanadium and the subject imports and among imports from China and South Africa. U.S. producers, tollees, and importers reported that subject imports and the domestic like product were always or frequently interchangeable.[86]

In the first reviews, domestic producers and tollees reported that subject imports were always interchangeable with one another and with the domestic like product.[87] A majority of purchasers and importers also said that ferrovanadium was at least frequently interchangeable in all comparisons between the domestic like product and imports from both subject countries and in comparisons between subject imports from China and South Africa.[88] In the second reviews, the Commission found that the record continued to indicate that ferrovanadium from each subject country was fungible with the domestic like product and each other.[89]

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[83] The four factors generally considered by the Commission in assessing whether imports compete with each other and with the domestic like product are as follows: (1) the degree of fungibility between subject imports from different countries and between subject imports and the domestic like product, including consideration of specific customer requirements and other quality-related questions; (2) the presence of sales or offers to sell in the same geographical markets of imports from different countries and the domestic like product; (3) the existence of common or similar channels of distribution for subject imports from different countries and the domestic like product; and (4) whether subject imports are simultaneously present in the market with one another and the domestic like product. *See, e.g., Wieland Werke, AG v. United States*, 718 F. Supp. 50 (Ct. Int'l Trade 1989).

[84] *See Mukand Ltd. v. United States*, 937 F. Supp. 910, 916 (Ct. Int'l Trade 1996); *Wieland Werke,* 718 F. Supp. at 52 ("Completely overlapping markets are not required."); *United States Steel Group v. United States,* 873 F. Supp. 673, 685 (Ct. Int'l Trade 1994), *aff'd*, 96 F.3d 1352 (Fed. Cir. 1996). We note, however, that there have been investigations where the Commission has found an insufficient overlap in competition and has declined to cumulate subject imports. *See, e.g*., *Live Cattle from Canada and Mexico*, Inv. Nos. 701-TA-386 and 731-TA-812-13 (Preliminary), USITC Pub. 3155 at 15 (Feb. 1999), *aff'd sub nom, Ranchers-Cattlemen Action Legal Foundation v. United States*, 74 F. Supp. 2d 1353 (Ct. Int'l Trade 1999); *Static Random Access Memory Semiconductors from the Republic of Korea and Taiwan*, Inv. Nos. 731-TA-761-62 (Final), USITC Pub. 3098 at 13-15 (Apr. 1998).

[85] *See generally*, *Chefline Corp. v. United States*, 219 F. Supp. 2d 1313, 1314 (Ct. Int'l Trade 2002).

[86] *Original Determination*, USITC Pub. 3570 at 12.

[87] *First Review Determination*, USITC Pub. 4046 at 14.

[88] *First Review Determination*, USITC Pub. 4046 at 14.

[89] *Second Review Determination*, USITC Pub. 4517 at 11-12.

There is nothing in the record of these current reviews to indicate that the fungibility of ferrovanadium from all sources has changed from that observed in the original investigations and prior reviews.

Channels of Distribution. In the original investigations and first reviews, both the domestic producers and importers sold the great majority of their ferrovanadium to end users, principally steel companies and iron foundries.[90] In the second reviews, the Commission found that this pattern continued, with the vast majority of shipments from domestic producers, tollees, and importers of ferrovanadium destined for end users.[91]

There is similarly nothing in the record of these current reviews to indicate that the distribution pattern observed in the original investigations and prior reviews would change if the orders were revoked.

Geographic Overlap. In the original investigations, the Commission found that there was a significant geographical overlap among the subject merchandise from each subject country and the domestic like product.[92] In the prior reviews, the Commission found no information in the record that indicated that the geographic overlap of sales of the domestic like product and the subject imports would be significantly different from that observed in the original investigations.[93]

In these current reviews, all subject imports from China entered the U.S. market through Baltimore, Maryland, while all subject imports from South Africa entered the U.S. market through Baltimore, Maryland in 2014 and through Laredo, Texas in 2018.[94] There is nothing in the record of these current reviews that indicates that, were the orders revoked, there would be a change in the geographic overlap of sales of the domestic like product and the subject imports from that observed in the original investigations.

Simultaneous Presence in Market. In the original investigations, the Commission found that domestically produced ferrovanadium was present in the U.S. throughout the period of investigation.[95] It also found that subject imports from both subject countries were present in the U.S. market in each year between 1999 and 2002.[96] Consequently, it found that subject

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[90] *Original Determination*, USITC Pub. 3570 at 13; *First Review Determination*, USITC Pub. 4046 at 15.

[91] *Second Review Determination*, USITC Pub. 4517 at 14.

[92] *Original Determination*, USITC Pub. 3570 at 13.

[93] *First Review Determination*, USITC Pub. 4046 at 15; *Second Review Determination*, USITC Pub. 4517 at 14.

[94] CR/PR at I-24 & n.49.

[95] *Original Determination*, USITC Pub. 3570 at 13.

[96] *Original Determination*, USITC Pub. 3570 at 13.

imports from all countries and the domestic like product were simultaneously present in the U.S. market.[97]

In the prior reviews, the Commission found that the domestic like product was sold in the U.S. market throughout the first and second review periods.[98] It also found that only limited subject imports from both China and South Africa had entered the U.S. market during each of those review periods.[99] In both prior reviews, the Commission found that if the orders were revoked, the domestic like product and subject imports from China and South Africa would likely be present in the market simultaneously.[100]

There is nothing in the record of these current reviews that indicates that, were the orders revoked, there would be a change in the simultaneous presence observed in the original investigations.

Conclusion. The record in these expedited third reviews contains limited information concerning subject imports in the U.S. market during the period of review. The record, moreover, contains no information suggesting a change in the considerations that led the Commission in prior reviews to conclude that there would be a likely reasonable overlap of competition between and among imports from different subject sources and the domestic like product upon revocation. In light of this and the absence of any contrary argument, we find a likely reasonable overlap of competition between subject imports from China and South Africa and between subject imports and the domestic like product.

3. Likely Conditions of Competition

In determining whether to exercise our discretion to cumulate the subject imports, we assess whether subject imports from the subject countries would compete under similar or different conditions in the U.S. market if the orders under review were revoked.
As previously discussed, in each of the prior reviews, the Commission exercised its discretion to cumulate the subject imports from both subject countries.[101]

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[97] *Original Determination*, USITC Pub. 3570 at 13.

[98] *First Review Determination*, USITC Pub. 4046 at 15; *Second Review Determination*, USITC Pub. 4517 at 14.

[99] *First Review Determination*, USITC Pub. 4046 at 15; *Second Review Determination*, USITC Pub. 4517 at 14.

[100] *First Review Determination*, USITC Pub. 4046 at 15; *Second Review Determination*, USITC Pub. 4517 at 14.

[101] *First Review Determination*, USITC Pub. 4046 at 11; *Second Review Determination*, USITC Pub. 4517 at 18.

We similarly find that the record in these reviews does not indicate that there would likely be any significant difference in the conditions of competition among subject imports from different sources upon revocation of the orders. Accordingly, we exercise our discretion to cumulate subject imports from China and South Africa.

IV. Revocation of the Antidumping Duty Orders Would Likely Lead to Continuation or Recurrence of Material Injury Within a Reasonably Foreseeable Time

A. Legal Standards

In a five-year review conducted under section 751(c) of the Tariff Act, Commerce will revoke an antidumping or countervailing duty order unless: (1) it makes a determination that dumping or subsidization is likely to continue or recur and (2) the Commission makes a determination that revocation of the antidumping or countervailing duty order "would be likely to lead to continuation or recurrence of material injury within a reasonably foreseeable time."[102] The SAA states that "under the likelihood standard, the Commission will engage in a counterfactual analysis; it must decide the likely impact in the reasonably foreseeable future of an important change in the status quo – the revocation or termination of a proceeding and the elimination of its restraining effects on volumes and prices of imports."[103] Thus, the likelihood standard is prospective in nature.[104] The U.S. Court of International Trade has found that "likely," as used in the five-year review provisions of the Act, means "probable," and the Commission applies that standard in five-year reviews.[105]

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[102] 19 U.S.C. § 1675a(a).

[103] SAA at 883-84. The SAA states that "{t}he likelihood of injury standard applies regardless of the nature of the Commission's original determination (material injury, threat of material injury, or material retardation of an industry). Likewise, the standard applies to suspended investigations that were never completed." *Id*. at 883.

[104] While the SAA states that "a separate determination regarding current material injury is not necessary," it indicates that "the Commission may consider relevant factors such as current and likely continued depressed shipment levels and current and likely continued {sic} prices for the domestic like product in the U.S. market in making its determination of the likelihood of continuation or recurrence of material injury if the order is revoked." SAA at 884.

[105] *See NMB Singapore Ltd. v. United States*, 288 F. Supp. 2d 1306, 1352 (Ct. Int'l Trade 2003) ("'likely' means probable within the context of 19 U.S.C. § 1675(c) and 19 U.S.C. § 1675a(a)"), *aff'd mem.*, 140 Fed. Appx. 268 (Fed. Cir. 2005); *Nippon Steel Corp. v. United States*, 26 CIT 1416, 1419 (2002) (same); *Usinor Industeel, S.A. v. United States*, 26 CIT 1402, 1404 nn.3, 6 (2002) ("more likely than not" (Continued…)

The statute states that "the Commission shall consider that the effects of revocation or termination may not be imminent, but may manifest themselves only over a longer period of time."[106] According to the SAA, a "'reasonably foreseeable time' will vary from case-to-case, but normally will exceed the 'imminent' timeframe applicable in a threat of injury analysis in original investigations."[107]

Although the standard in a five-year review is not the same as the standard applied in an original investigation, it contains some of the same fundamental elements. The statute provides that the Commission is to "consider the likely volume, price effect, and impact of imports of the subject merchandise on the industry if the orders are revoked or the suspended investigation is terminated."[108] It directs the Commission to take into account its prior injury determination, whether any improvement in the state of the industry is related to the order or the suspension agreement under review, whether the industry is vulnerable to material injury if an order is revoked or a suspension agreement is terminated, and any findings by Commerce regarding duty absorption pursuant to 19 U.S.C. § 1675(a)(4).[109] The statute further provides that the presence or absence of any factor that the Commission is required to consider shall not necessarily give decisive guidance with respect to the Commission's determination.[110]

In evaluating the likely volume of imports of subject merchandise if an order under review is revoked and/or a suspended investigation is terminated, the Commission is directed to consider whether the likely volume of imports would be significant either in absolute terms

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standard is "consistent with the court's opinion;" "the court has not interpreted 'likely' to imply any particular degree of 'certainty'"); *Indorama Chemicals (Thailand) Ltd. v. United States*, 26 CIT 1059, 1070 (2002) ("standard is based on a likelihood of continuation or recurrence of injury, not a certainty"); *Usinor v. United States*, 26 CIT 767, 794 (2002) ("'likely' is tantamount to 'probable,' not merely 'possible'").

[106] 19 U.S.C. § 1675a(a)(5).

[107] SAA at 887. Among the factors that the Commission should consider in this regard are "the fungibility or differentiation within the product in question, the level of substitutability between the imported and domestic products, the channels of distribution used, the methods of contracting (such as spot sales or long-term contracts), and lead times for delivery of goods, as well as other factors that may only manifest themselves in the longer term, such as planned investment and the shifting of production facilities." *Id*.

[108] 19 U.S.C. § 1675a(a)(1).

[109] 19 U.S.C. § 1675a(a)(1). Commerce has not issued any duty absorption findings with respect to ferrovanadium from China and South Africa. CR/PR at I-6; *Commerce's Issues and Decision Memorandum for the Expedited Third Sunset Reviews of the Antidumping Duty Orders on Ferrovanadium from the Republic of South Africa and the People's Republic of China* at 3 (April 29, 2020).

[110] 19 U.S.C. § 1675a(a)(5). Although the Commission must consider all factors, no one factor is necessarily dispositive. SAA at 886.

or relative to production or consumption in the United States.[111] In doing so, the Commission must consider "all relevant economic factors," including four enumerated factors: (1) any likely increase in production capacity or existing unused production capacity in the exporting country; (2) existing inventories of the subject merchandise, or likely increases in inventories; (3) the existence of barriers to the importation of the subject merchandise into countries other than the United States; and (4) 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.[112]

In evaluating the likely price effects of subject imports if an order under review is revoked and/or a suspended investigation is terminated, the Commission is directed to consider whether there is likely to be significant underselling by the subject imports as compared to the domestic like product and whether the subject imports are likely to enter the United States at prices that otherwise would have a significant depressing or suppressing effect on the price of the domestic like product.[113]

In evaluating the likely impact of imports of subject merchandise if an order under review is revoked and/or a suspended investigation is terminated, the Commission is directed to consider all relevant economic factors that are likely to have a bearing on the state of the industry in the United States, including but not limited to the following: (1) likely declines in output, sales, market share, profits, productivity, return on investments, and utilization of capacity; (2) likely negative effects on cash flow, inventories, employment, wages, growth, ability to raise capital, and investment; and (3) likely negative effects on the existing development and production efforts of the industry, including efforts to develop a derivative or more advanced version of the domestic like product.[114] All relevant economic factors are to be considered within the context of the business cycle and the conditions of competition that are distinctive to the industry. As instructed by the statute, we have considered the extent to

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[111] 19 U.S.C. § 1675a(a)(2).

[112] 19 U.S.C. § 1675a(a)(2)(A-D).

[113] *See* 19 U.S.C. § 1675a(a)(3). The SAA states that "{c}onsistent with its practice in investigations, in considering the likely price effects of imports in the event of revocation and termination, the Commission may rely on circumstantial, as well as direct, evidence of the adverse effects of unfairly traded imports on domestic prices." SAA at 886.

[114] 19 U.S.C. § 1675a(a)(4).

which any improvement in the state of the domestic industry is related to the orders under review and whether the industry is vulnerable to material injury upon revocation.[115]

No respondent interested party participated in these expedited reviews. The record, therefore, contains limited new information with respect to the ferrovanadium industries in China and South Africa. There also is limited information on the domestic ferrovanadium market during the period of review. Accordingly, for our determination, we rely as appropriate on the facts available from the prior proceedings and the limited new information on the record in these reviews.

B. Conditions of Competition and the Business Cycle

In evaluating the likely impact of the subject imports on the domestic industry if an order is revoked, the statute directs the Commission to consider all relevant economic factors "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[116] The following conditions of competition inform our determinations.

1. Demand Conditions

The Original Investigations. In the original investigations, the Commission found that demand for ferrovanadium generally followed demand for steel products, and that demand was relatively stable at the beginning of the period of investigation before declining towards the end.[117] Apparent U.S. consumption of ferrovanadium was relatively steady at 13.0 million pounds in 1999 and 2000, but then decreased to 11.9 million pounds in 2001; it was 6.3 million pounds in interim 2001 and 6.4 million pounds in interim 2002.[118]

The First Reviews. In the first reviews, the Commission found that demand for ferrovanadium continued to follow demand for steel products.[119] It found that there were few applications in which other products (typically ferroniobium) can be substituted for ferrovanadium, and then only when the substitution can be justified on a price basis.[120] It also

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[115] The SAA states that in assessing whether the domestic industry is vulnerable to injury if the order is revoked, the Commission "considers, in addition to imports, other factors that may be contributing to overall injury. While these factors, in some cases, may account for the injury to the domestic industry, they may also demonstrate that an industry is facing difficulties from a variety of sources and is vulnerable to dumped or subsidized imports." SAA at 885.

[116] 19 U.S.C. § 1675a(a)(4).

[117] *Original Determination*, USITC Pub. 3570 at 14.

[118] *Original Determination*, USITC Pub. 3570 at 14.

[119] *First Review Determination*, USITC Pub. 4046 at 20.

[120] *First Review Determination*, USITC Pub. 4046 at 20.

found that apparent U.S. consumption of ferrovanadium fluctuated but was higher at the end of the period of review than at the beginning.[121] Apparent U.S. consumption of ferrovanadium was 12.6 million pounds in 2002, 11.6 million pounds in 2003, 15.4 million pounds in 2004, 12.4 million pounds in 2005, 13.4 million pounds in 2006, and 13.3 million pounds in 2007.[122]

The Second Reviews. In the second reviews, the Commission found that demand for ferrovanadium continued to follow demand for steel products, and that domestic ferrovanadium industry was affected by the sharp decline in steel production from 2008 to 2009.[123] The Commission found that there continued to be few substitutes for ferrovanadium and that demand for ferrovanadium was relatively inelastic.[124] The Commission also found that apparent U.S. consumption fell sharply, from 14.9 million pounds in 2008 to 8.6 million pounds in 2009, but then increased overall, from 13.4 million pounds in 2010 to 15.3 million pounds in 2013.[125]

The Current Reviews. There is no new information on the record of the current reviews to indicate that the relative inelasticity of demand for ferrovanadium or apparent U.S. consumption for ferrovanadium being driven by demand for steel products has changed since the prior proceedings.[126] Apparent U.S. consumption for ferrovanadium was lower in 2019, at *** pounds, than at the end of the second reviews in 2013.[127]

2. Supply Conditions

The Original Investigations. In the original investigations, the Commission identified three producers of ferrovanadium in the U.S. market – Bear, Shieldalloy Metallurgical Corp. ("Shieldalloy"), and International Specialty Alloys ("ISA") – and explained that two tollees

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[121] *First Review Determination*, USITC Pub. 4046 at 20.

[122] *First Review Determination*, USITC Pub. 4046 at 20.

[123] *Second Review Determination*, USITC Pub. 4517 at 18. The Commission found that, while the U.S. steel industry had recovered from the decline due to the recession early in the period of review, the European industry had not recovered as quickly. *Id*. The Commission noted that China and Taiwan, where growth in demand had recently been robust, accounted for almost half of global consumption of vanadium in 2013. *Id*. at 19. The Commission found that the U.S. steel industry consumed a larger percentage of vanadium per ton of steel produced compared to steel industries in many other countries. *Id*. The Commission observed that steel that incorporates ferrovanadium, particularly high strength, low-alloy steel, was used more in the United States than in many other countries and this segment of the market was continuing to expand. *Id*.

[124] *Second Review Determination*, USITC Pub. 4517 at 19, 26.

[125] *Second Review Determination*, USITC Pub. 4517 at 18.

[126] VPRA Final Comments at 3-4 (July 20, 2020).

[127] CR/PR at Table I-5.

arranged for one of those producers (Bear) to toll produce ferrovanadium for them.[128] The domestic industry was the largest supplier of ferrovanadium in the U.S. market throughout the period of investigation, followed by cumulated subject imports and nonsubject imports.[129]

The First Reviews. In the first reviews, the Commission identified two domestic producers of ferrovanadium, Bear and Metallurg Vanadium Corp. ("Metvan"), and explained that two tollees continued to arrange for Bear to toll produce ferrovanadium for them.[130] It found that the domestic industry was the largest supplier to the U.S. market, although nonsubject imports also had a large market share.[131] It observed that cumulated subject imports had only a limited presence in the U.S. market since imposition of the antidumping duty orders.[132] It also found that about 50 percent of ferrovanadium imports from nonsubject countries had originated in the Czech Republic while nonsubject imports from Korea had grown over the period of review and were almost as large as imports from the Czech Republic by 2007.[133]

The Second Reviews. In the second reviews, the Commission identified AMG (formerly Metvan) and Bear as the only two domestic producers of ferrovanadium, and observed that a substantial portion of domestic ferrovanadium production continued to be produced using tolling agreements.[134] It observed that the domestic industry's production capacity increased during the period of review while its production and capacity utilization declined.[135] It found that the domestic industry's share of apparent U.S. consumption was lower in 2013, at 46.9 percent, than it was in 2008, at 58.5 percent.[136] By contrast, it observed that the share of apparent U.S. consumption held by nonsubject imports was higher in 2013, at 53.1 percent, than in 2008, at 41.5 percent.[137] It found that cumulated subject imports remained essentially absent from the U.S. market during the period of review and had been since the original investigations.[138]

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[128] *Original Determination*, USITC Pub. 3570 at 14-17.
[129] *Original Determination*, USITC Pub. 3570 at 17-18.
[130] *First Review Determination*, USITC Pub. 4046 at 22.
[131] *First Review Determination*, USITC Pub. 4046 at 21.
[132] *First Review Determination*, USITC Pub. 4046 at 21.
[133] *First Review Determination*, USITC Pub. 4046 at 22.
[134] *Second Review Determination*, USITC Pub. 4517 at 7, 19.
[135] *Second Review Determination*, USITC Pub. 4517 at 19-20.
[136] *Second Review Determination*, USITC Pub. 4517 at 20.
[137] *Second Review Determination*, USITC Pub. 4517 at 20.
[138] *Second Review Determination*, USITC Pub. 4517 at 20, 26.

The Current Reviews. In the current reviews, AMG and Bear accounted for 100 percent of domestic production of ferrovanadium, as they did in the second reviews.[139] The domestic industry was the second largest supplier to the U.S. ferrovanadium market in the current reviews, with a *** percent share of apparent U.S. consumption in 2019.[140] The limited information available in these expedited third reviews indicates that the domestic industry's tolling operations and revenues were *** than in the prior proceedings since one of Bear's major tollees, Gulf Chemical and Metallurgical Corp. ("Gulf"), filed for bankruptcy in 2016.[141]

There were several domestic industry developments during the current reviews. In September 2016, Bear was acquired by Yilmaden Holding A.S., a Turkish company.[142] Bear's tollee Gulf filed for bankruptcy in 2016 and ceased operations in 2017.[143] In August 2019, AMG broke ground on a new facility in Ohio, which eventually will double its capacity to produce ferrovanadium.[144] In September 2019, AMG's parent company, AMG Advanced Metallurgical Group N.V., announced that it had entered into a long-term agreement to supply 100 percent of the available ferrovanadium production from AMG's existing and future facilities to the trading company Glencore AG.[145] Under this agreement, AMG will ***.[146]

Nonsubject imports were the largest supply source in the U.S. market in the current reviews, accounting for *** percent of apparent U.S. consumption in 2019.[147] The Czech

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[139] VPRA Response to Notice of Institution at 62-63 (Feb. 3, 2020); *Second Review Determination*, USITC Pub. 4517 at 7, 19.

[140] CR/PR at Table I-5.

[141] *See, e.g.*, VPRA Response to Notice of Institution at 51-53 (Feb. 3, 2020); VPRA Final Comments at 14-15 (July 20, 2020); CR/PR at Table I-3. As noted above, Bear toll-produced ferrovanadium for Evraz Stratcor, Inc., Gulf Chemical, CCMA LLC, Glencore Ltd., SiderAlloys Intl. SA, and Traxys North America LLC. *See* VPRA Response to Notice of Institution at 8 n.20 (Feb. 3, 2020); VPRA Response to Request for Information to Supplement Response to Notice of Institution at 3 (Feb. 14, 2020). There is very limited information on domestic producers' tolling operations in the record of the current reviews. VPRA reports that U.S. ferrovanadium producers' 2019 shipments of toll-produced product, *i.e.*, toll produced ferrovanadium returned to tollees, was *** pounds, valued at ***, and total revenue from tolling operations was *** in 2019. CR/PR at Table I-3.

[142] CR/PR at Table I-2.

[143] CR/PR at Table I-2; VPRA Response to Notice of Institution at 2 n.3 (Feb. 3, 2020). In 2017, Gulf was acquired by Gladieux Metals Recycling LLC. According to VPRA, Gladieux is "currently making necessary improvements," at the facility and while it is not currently in commercial operation, Gladieux may begin production in 2020. VPRA Response to Notice of Institution at 2 n.3 (Feb. 3, 2020).

[144] CR/PR at Table I-2; VPRA Response to Notice of Institution at 49 (Feb. 3, 2020).

[145] CR/PR at Table I-2.

[146] CR/PR at Table I-2.

[147] CR/PR at Table I-5.

Republic, Canada, and Austria were the leading sources for nonsubject imports in 2019.[148] In May 2017, an antidumping order was imposed on imports of ferrovanadium from Korea.[149]

Cumulated subject imports were the smallest supply source in the U.S. market in the current reviews. The only volumes of cumulated subject imports in the current reviews were in 2014, 2016, and 2018, ranging from 7,000 to 11,000 pounds.[150] In 2019, cumulated subject imports accounted for *** percent of apparent U.S. consumption.[151]

3. Substitutability and Other Conditions

The Original Investigations. In the original investigations, the Commission found that domestically produced ferrovanadium and subject imports were generally substitutable, and that most purchasers bought ferrovanadium at the lowest possible price.[152] The Commission also found that ferrovanadium is typically bought and sold on the basis of the weight of the contained vanadium, and noted petitioners' argument that the price is typically the same regardless of the grade.[153] The Commission also observed that pricing data on ferrovanadium were widely available through published sources such as *Ryan's Notes* and *American Metal Market*, which were used in the U.S. market as benchmarks for pricing formulas in sales contracts as well as for spot sales.[154]

The First Reviews. In the first reviews, the Commission found that there was a high degree of substitutability between subject imports and the domestic like product, and that price was an important factor in purchasing decisions for ferrovanadium.[155] The Commission observed that ferrovanadium was typically priced based on vanadium content and sold via spot sales or contracts.[156] The Commission also found that contract prices for ferrovanadium are based on reference prices from industry publications such as *Ryan's Notes* or *Metal Bulletin*.[157]

The Second Reviews. In the second reviews, the Commission found that domestically produced ferrovanadium and subject imports were highly substitutable, and that price was the

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[148] CR/PR at Table I-4.
[149] CR/PR at I-5.
[150] CR/PR at Table I-4.
[151] CR/PR at Table I-5.
[152] *Original Determination*, USITC Pub. 3570 at 15.
[153] *Original Determination*, USITC Pub. 3570 at 17.
[154] *Original Determination*, USITC Pub. 3570 at 17.
[155] *First Review Determination*, USITC Pub. 4046 at 22, 29.
[156] *First Review Determination*, USITC Pub. 4046 at 29.
[157] *First Review Determination*, USITC Pub. 4046 at 29.

key factor in purchasing decisions.[158] The Commission also found that, consistent with its observations from the original investigations and first reviews, prices published in industry publications such as *Ryan's Notes* and *American Metal Market* are used in the U.S. market as benchmarks for pricing formulas in sales contracts and spot sales.[159] The Commission also observed that spot prices for ferrovanadium affect contract prices quickly as contract prices are adjusted monthly based upon spot prices, and that contracts are typically negotiated in the fourth quarter of the year for the following year.[160]

The Current Reviews. There is no new information on the record of the current reviews to indicate that the conditions of competition concerning substitutability of subject merchandise from China and South Africa and the domestic like product or the importance of price in purchasing decisions have changed since the prior proceedings.[161] We therefore find a high degree of substitutability between cumulated subject imports and the domestic like product and that price is an important factor in purchasing decisions.

As discussed above, the Commission found in the prior proceedings that pricing data on ferrovanadium are widely available through published sources such as *Ryan's Notes* and *Metals Week*, which are used in the U.S. market as benchmarks for pricing formulas in sales contracts as well as for spot sales, and that spot prices affect contract benchmarks quickly as contract prices are adjusted monthly based upon spot prices.[162] In these expedited third reviews, there is no new information on the record to suggest any changes in these particular conditions of competition.[163]

C. Likely Volume of Subject Imports

1. The Original Investigations.

In the original investigations, the Commission found that the volume of cumulated subject imports increased from 2.3 million pounds in 1999 to 2.5 million pounds in 2000 and

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[158] *Second Review Determination*, USITC Pub. 4517 at 21.

[159] *Second Review Determination*, USITC Pub. 4517 at 21.

[160] *Second Review Determination*, USITC Pub. 4517 at 21.

[161] *See* VPRA's Final Comments at 3 (July 20, 2020); *Original Determination*, USITC Pub. 3570 at 15; *First Review Determination*, USITC Pub. 4046 at 29; *Second Review Determination*, USITC Pub. 4517 at 20.

[162] *Original Determination*, USITC Pub. 3570 at 17; *First Review Determination*, USITC Pub. 4046 at 29; *Second Review Determination*, USITC Pub. 4517 at 20-21.

[163] *See* VPRA Response to Notice of Institution at 9-10 (Feb. 3, 2020).

then to 3.5 million pounds in 2001.[164] Cumulated subject import volume was 1.6 million pounds in interim (January-June) 2001 and 0.5 million pounds in interim 2002.[165] The market share of cumulated subject imports increased from 17.8 percent in 1999 to 19.4 percent in 2000 and then to 29.2 percent in 2001; cumulated subject imports' market share was lower at 8.1 percent of apparent U.S. consumption in interim 2002 than it was in interim 2001 at 26.3 percent.[166] The Commission found that the domestic industry lost market share over the period of investigation, with the industry's market share declining from 67.2 percent in 1999 to 57.6 percent in 2000 and then to 52.8 percent in 2001; the domestic industry's market share was 55.9 percent in interim 2001 and 55.5 percent in interim 2002.[167] Based upon these data, the Commission found that both the absolute and relative volume of cumulated subject imports, and the increases in subject import volume, were significant.[168]

2. The First Reviews

In the first reviews, the Commission found that the ferrovanadium industries in the subject countries were substantial and that subject producers in China and South Africa had substantial unused capacity available. It noted that subject producers in China and South Africa were significant world-wide exporters of ferrovanadium and that the U.S. market for ferrovanadium was attractive because its published spot prices were generally significantly higher than spot prices in Europe and Asia.[169] Given subject producers' substantial new and unused production capacity, export orientation, and sizeable inventories, the Commission found that subject producers would likely direct substantial quantities of ferrovanadium to the U.S. market should the antidumping duty orders be revoked. Accordingly, the Commission concluded that there likely would be a significant increase in cumulated subject imports both in absolute terms and relative to U.S. consumption upon revocation.[170]

3. The Second Reviews

In the second reviews, the Commission found that the orders had a disciplining effect on the volume of cumulated subject imports, which decreased significantly since the imposition of

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[164] *Original Determination*, USITC Pub. 3570 at 17.
[165] *Original Determination*, USITC Pub. 3570 at 17.
[166] *Original Determination*, USITC Pub. 3570 at 17.
[167] *Original Determination*, USITC Pub. 3570 at 18.
[168] *Original Determination*, USITC Pub. 3570 at 18.
[169] *First Review Determination*, USITC Pub. 4046 at 25.
[170] *First Review Determination*, USITC Pub. 4046 at 26-27.

the orders in 2003.[171] The Commission observed that the information available indicated that the subject industries in China and South Africa were large, growing, and export oriented.[172] It also found that, despite being largely absent from the U.S. market during the period of review, cumulated subject imports would likely reenter the market without the restraining effect of the orders, especially since the United States remained a relatively attractive market for exports of ferrovanadium with higher spot prices and robust demand.[173] Accordingly, the Commission determined that the likely volume of cumulated subject imports, both in absolute terms and relative to consumption and production in the United States, would be significant if the orders were revoked.[174]

4. The Current Reviews

Towards the end of the original period of investigation, cumulated subject imports had captured nearly *** of the domestic ferrovanadium market.[175] The volume and market share of cumulated subject imports declined sharply following the original period of investigation; cumulated subject imports largely ceased entering the U.S. market after imposition of the orders on January 28, 2003.[176] During the current period of review, the only cumulated subject imports were 11,000 pounds in 2014, 9,000 pounds in 2016, and 7,000 pounds in 2018.[177] Moreover, cumulated subject imports' share of apparent U.S. consumption has remained at *** percent or less since 2002, including 2014-2019.[178] We find the limited presence of cumulated subject imports in the U.S. market during these reviews, which continues the trend from prior reviews, is a function of the discipline of the orders.

The record contains only limited data concerning the ferrovanadium industries in the subject countries because no producer or exporter of subject merchandise participated in these reviews. Most of the contemporaneous information about the subject industries is based largely on information submitted by VPRA, which provided published data on the cumulated subject industries and identified producers in the cumulated subject countries believed to have exported ferrovanadium during the current review period.[179]

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[171] *Second Review Determination*, USITC Pub. 4517 at 22.
[172] *Second Review Determination*, USITC Pub. 4517 at 22-25.
[173] *Second Review Determination*, USITC Pub. 4517 at 24.
[174] *Second Review Determination*, USITC Pub. 4517 at 25.
[175] CR/PR at Table I-5.
[176] CR/PR at Appendix C (historical data).
[177] CR/PR at Table I-4.
[178] CR/PR at Tables C-1, C-2, and I-5.
[179] VPRA Response to Notice of Institution at 14-15 & 23-24 (Feb. 3, 2020).

The information available in the current record indicate that the cumulated subject industries continue to produce large and growing volumes of subject merchandise. In 2016, the last full year that ferrovanadium production data was available for China, the cumulated subject countries accounted for almost 75 percent of global production of ferrovanadium.[180] VPRA has provided information indicating that Chengde and Panzhihua, the two largest ferrovanadium producers in China in the prior reviews, remained the largest Chinese producers of ferrovanadium during 2014-2019, and that there were 40 other major ferrovanadium producers in China and over 100 small-scale operations during the current review period.[181] Information submitted by VPRA indicates that subject producers in China during 2018-2019 significantly increased their production of vanadium, the key raw material input used for producing ferrovanadium, and have plans to increase their vanadium capacity in 2020.[182] According to VPRA, the only two producers of subject merchandise from South Africa during 2014-2019 were the same two firms, Rhovan and Vanchem, which accounted for all ferrovanadium production in South Africa in the prior reviews.[183] VPRA also has submitted information that Rhovan's production of vanadium pentoxide, an intermediate product for conversion to ferrovanadium, remained at similar levels during the current review period compared with the prior reviews, and that Vanchem is projected to increase substantially its production and capacity utilization for vanadium after resuming operations in 2018.[184]

The available data also indicate that the ferrovanadium industries in the cumulated subject countries remain export oriented. Available GTA data indicate that cumulated exports of ferrovanadium from the subject countries in 2019 were 17.5 million pounds, ***.[185] Moreover, both subject countries were leading global exporters of ferrovanadium during 2014-2019.[186] VPRA has provided information that, as in the prior reviews, home market demand for ferrovanadium in South Africa is limited thereby providing additional incentive for cumulated subject producers to ship additional exports of ferrovanadium to the United States upon

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[180] *Derived from* CR/PR at Table I-11.

[181] VPRA Response to Notice of Institution at 14-15 (Feb. 3, 2020).

[182] VPRA Response to Notice of Institution at 14-15 (Feb. 3, 2020); VPRA Final Comments at 6 (July 20, 2020).

[183] VPRA Response to Notice of Institution at 23 (Feb. 3, 2020).

[184] VPRA Response to Notice of Institution at 24-28 (Feb. 3, 2020); VPRA Final Comments at 7-8 (July 20, 2020).

[185] CR/PR at Tables I-5, I-7, and I-9.

[186] CR/PR at Table I-12.

revocation.[187] As discussed above, there is information in the current record that the Chinese government eliminated certain export duties on ferrovanadium in 2019 thereby providing further incentive for subject producers in China to increase their exports of ferrovanadium to the U.S. market.[188]

Information provided by VPRA indicates that ferrovanadium prices in the U.S. market continue to be higher than ferrovanadium prices in other markets including Europe, providing a further incentive for cumulated subject producers to increase production or to direct exports currently shipped to other markets to the U.S. market if the orders were revoked.[189] The subject producers' continued participation in the U.S. market by indirectly serving U.S. demand for ferrovanadium during the period of review provides further evidence of the attractiveness of the U.S. market. VPRA maintains that Glencore and other tollees *** during the current reviews.[190] According to VPRA, vanadium from China continued to enter the United States after toll conversion to ferrovanadium in South Korea at least until May 2017 when an antidumping duty order was imposed on ferrovanadium imports from South Korea.[191]

In light of the foregoing, we find that the subject producers are likely, absent the restraining effects of the orders, to direct significant volumes of ferrovanadium to the U.S. market, as they did during the original period of investigation. We therefore conclude that the likely volume of cumulated subject imports, both in absolute terms and relative to consumption in the United States, would likely be significant if the orders were revoked.[192]

D. Likely Price Effects

1. Original Investigations

In the original investigations, the Commission found that domestically produced ferrovanadium and cumulated subject imports were generally substitutable, and that price was the key factor in purchasing decisions.[193] The Commission noted that its price comparison data

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[187] VPRA Response to Notice of Institution at 30-31 (Feb. 3, 2020); *Second Review Determination*, USITC Pub. 4517 at 23-24.

[188] CR/PR at Table I-6; VPRA Final Comments at 7 (July 20, 2020).

[189] VPRA Response to Notice of Institution at 30-31, 54, and Exh. 1 (Feb. 3, 2020).

[190] VPRA Response to Notice of Institution at 21-22 & 28-29 (Feb. 3, 2020).

[191] VPRA Response to Notice of Institution at 20-22 (Feb. 3, 2020).

[192] Because of the expedited nature of these reviews, the record does not contain information about inventories of the subject merchandise or the capacity of the subject producers for product shifting during the current period of review.

[193] *Original Determination*, USITC Pub. 3570 at 18.

indicated mostly overselling.[194] Consequently, the Commission did not find significant underselling.[195] On the other hand, the Commission observed that prices for both the domestic like product and the subject merchandise declined over the period of investigation.[196] In light of the highly substitutable nature of the products and the increasing volume of subject imports, the Commission found that subject imports depressed domestic prices to a significant degree.[197] The Commission noted that its finding of significant price depression was further supported by the confirmed lost sales and revenue allegations of the domestic industry.[198]

2. The First Reviews

In the first reviews, the Commission found that the likely significant quantities of low-priced subject imports from China and South Africa would likely limit the domestic industry's ability to raise prices commensurately with increased costs in the event of revocation.[199] While acknowledging that domestic ferrovanadium prices had generally increased since the orders had been in place, the Commission found that, absent the orders, competitive conditions would return to those prevailing prior to the imposition of the orders.[200] Given the high degree of substitutability between the domestic like product and cumulated subject imports, producers in the subject countries would have the incentive to lower their prices to recapture U.S. market share.[201] The Commission also found that cumulated subject imports would likely enter the United States at prices that would significantly depress or suppress U.S. prices if the orders were revoked.[202]

3. The Second Reviews

In the second reviews, the Commission found that, given the importance of price in purchasing decisions and the inelasticity of demand for ferrovanadium, the increasing volumes of cumulated subject imports were likely to place downward pressure on prices and in turn cause the domestic industry to consider either reducing its prices or foregoing price increases in

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[194] *Original Determination*, USITC Pub. 3570 at 19.
[195] *Original Determination*, USITC Pub. 3570 at 19.
[196] *Original Determination*, USITC Pub. 3570 at 19.
[197] *Original Determination*, USITC Pub. 3570 at 19-20.
[198] *Original Determination*, USITC Pub. 3570 at 19.
[199] *First Review Determination*, USITC Pub. 4046 at 30.
[200] *First Review Determination*, USITC Pub. 4046 at 30-31.
[201] *First Review Determination*, USITC Pub. 4046 at 31.
[202] *First Review Determination*, USITC Pub. 4046 at 31.

order to maintain market share.[203] It therefore concluded that the likely significant volume of cumulated imports of ferrovanadium from China and South Africa would likely have significant price depressing or suppressing effects if the antidumping duty orders were revoked.[204]

4. The Current Reviews

In these reviews, we continue to find, for the reasons stated in section III.B.3., that the domestic like product and cumulated subject imports are highly substitutable and that price is an important factor in purchasing decisions.[205] As we found in the prior reviews, demand for ferrovanadium is relatively inelastic, and consequently, even relatively modest volumes of cumulated subject imports could have significant price-suppressing or price-depressing effects.[206] In light of these considerations, we find that the increasing volumes of cumulated subject imports are likely to place downward pressure on prices and in turn cause the domestic industry to either reduce its prices or forego price increases in order to maintain market share. We therefore conclude that the likely significant volume of cumulated subject imports would likely have significant price depressing or suppressing effects or result in lost market share if the antidumping duty orders were revoked.

E. Likely Impact[207]

1. The Original Investigations

In the original investigations, the Commission found that as the volume of cumulated subject imports increased, the domestic industry's condition worsened, as evidenced by

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[203] *Second Review Determination*, USITC Pub. 4517 at 26-27.

[204] *Second Review Determination*, USITC Pub. 4517 at 26-27.

[205] The record does not contain current pricing comparisons because of the expedited nature of these reviews.

[206] *Second Review Determination*, USITC Pub. 4517 at 19. The record in these expedited third reviews contains no information to the contrary.

[207] Under the statute, "the Commission may consider the magnitude of the margin of dumping" in making its determination in a five-year review. 19 U.S.C. § 1675a(a)(6). The statute defines the "magnitude of the margin of dumping" to be used by the Commission in a five-year review as "the dumping margin or margins determined by the administering authority under section 1675a(c)(3) of this title." 19 U.S.C. § 1677(35)(C)(iv); see also SAA at 887. Commerce expedited its determinations in both reviews and made affirmative determinations. With regard to subject imports from China, Commerce found likely dumping margins of up to 66.71 percent for all entities. *Ferrovanadium from China and South Africa: Final Results of Expedited Third Sunset Reviews of the Antidumping Duty Orders*, 85 Fed. Reg. 26667 (May 5, 2020). With respect to subject imports from South Africa, Commerce found likely dumping margins of up to 116.0 percent for all entities. *Id*.

declines in a number of output and employment-related performance indicators between 1999 and 2001.[208] The Commission also noted that the domestic industry sustained financial losses throughout the period of investigation.[209] The domestic industry's worsened operating losses in 2001 coincided with the dramatic increase in subject import volume.[210] The Commission attributed domestic producers' continued performance declines in interim 2002 to the release of the significant subject import inventories held by U.S. importers through the end of 2001, even while actual subject import volume declined after the filing of the petition.[211] The Commission found there were significant increases in the volume and market share of the subject imports and that subject imports had a significant depressing effect on domestic prices.[212] Explaining that large volumes of subject imports and depressed prices in the U.S. market led to deterioration in the overall condition of the domestic industry during the period of investigation, the Commission concluded that cumulated subject imports were having a significant adverse impact on the domestic industry.[213]

2. The First Reviews

In the first reviews, the Commission found the domestic industry was not vulnerable given its improved performance during the period of review.[214] However, the Commission emphasized that increases in demand in the U.S. market sufficient to fully absorb a substantial increase in supply by cumulated subject imports was not likely.[215] The Commission found that the impending resumption of vanadium mining and vanadium pentoxide production in Australia coupled with the opening of a new ferrovanadium facility in Australia also increased the likelihood that, if the antidumping duty orders were revoked, subject producers in China and South Africa would ship a significant volume of ferrovanadium to the U.S. market; it reasoned that subject producers would do so to make use of the newly available supplies of vanadium-bearing intermediate products and because of competition in non-U.S. markets where they currently exported.[216] Thus, the Commission found that revocation of the antidumping duty orders on the cumulated subject imports would likely have a significant adverse impact on the

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[208] *Original Determination*, USITC Pub. 3570 at 21.
[209] *Original Determination*, USITC Pub. 3570 at 21.
[210] *Original Determination*, USITC Pub. 3570 at 22.
[211] *Original Determination*, USITC Pub. 3570 at 22.
[212] *Original Determination*, USITC Pub. 3570 at 22.
[213] *Original Determination*, USITC Pub. 3570 at 21-22.
[214] *First Review Determination*, USITC Pub. 4046 at 33.
[215] *First Review Determination*, USITC Pub. 4046 at 34.
[216] *First Review Determination*, USITC Pub. 4046 at 34.

domestic industry's output, sales, market share, employment, profits, and return on investment.[217]

3. The Second Reviews

In the second reviews, the Commission found that the domestic industry's performance indicators during the period of review, as well as recent and likely demand trends, indicated that the industry was not currently in a vulnerable condition.[218] Nonetheless, the Commission found that the domestic industry was not in such a strong condition, nor were likely demand conditions sufficiently strong, that the domestic industry could withstand significantly increased cumulated subject imports without likely sustaining significant adverse effects.[219] The Commission reiterated that additional volumes of cumulated subject imports would enter the market in a manner that would likely have significant depressing or suppressing effects on prices of the domestic like product, and that to compete the domestic industry would need to cut prices, forego needed price increases, or lose sales.[220] The Commission also found that the resulting loss of revenues would likely cause deterioration in the financial performance of the domestic industry, which would result in likely reductions in employment and, ultimately, likely losses in domestic industry output and market share.[221] Therefore, the Commission found that revocation of the orders would likely have a significant adverse impact on the domestic industry.[222] The Commission also considered the role of factors other than cumulated subject imports. It found that the continued presence of nonsubject imports in the U.S. market would not preclude subject imports from taking market share from the domestic industry or forcing the domestic industry to lower prices in order to compete, as occurred during the original investigations.[223] Finally, the Commission observed that the moderately increased level of demand likely in the reasonably foreseeable future, while likely to affect the domestic industry's condition positively, would not preclude the domestic industry from incurring an adverse impact due to the likely significant volume and price effects of the cumulated subject imports.[224]

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[217] *First Review Determination*, USITC Pub. 4046 at 34.
[218] *Second Review Determination*, USITC Pub. 4517 at 29-31.
[219] *Second Review Determination*, USITC Pub. 4517 at 31.
[220] *Second Review Determination*, USITC Pub. 4517 at 31.
[221] *Second Review Determination*, USITC Pub. 4517 at 31.
[222] *Second Review Determination*, USITC Pub. 4517 at 31.
[223] *Second Review Determination*, USITC Pub. 4517 at 31.
[224] *Second Review Determination*, USITC Pub. 4517 at 32.

4. The Current Reviews

In these expedited third reviews, the information available on the domestic industry's condition is limited to that which VPRA provided in its response to the notice of institution. In 2019, the domestic industry's capacity was *** pounds in 2019, its production was *** pounds, and its capacity utilization rate was *** percent.[225] The industry's U.S. shipments were *** pounds.[226] The industry's net sales revenue was $***, and its ratio of COGS to net sales was *** percent.[227] Its gross *** was $***, and its operating *** was $***, resulting in a ratio of operating income to net sales of *** percent.[228] Given the limited data on record in this expedited review, we find that the evidence is insufficient for us to make a finding on whether the domestic industry is vulnerable to the continuation or recurrence of material injury should the order be revoked.[229]

As discussed above, we have found that, upon revocation of the orders, cumulated subject import volume would likely be significant and cumulated subject imports would likely have significant price effects. Based on the information on the record, we further find that the likely significant volume and price effects of the cumulated subject imports would likely have a significant adverse impact on the domestic industry's production, capacity utilization, employment, shipments, revenues, and market share. The likely declines in these factors would, in turn, likely have a direct adverse impact on the domestic industry's profitability.

We have also considered the role of factors other than cumulated subject imports, including the presence of nonsubject imports, so as not to attribute likely injury from other factors to the subject imports. As previously discussed, nonsubject imports have increased their presence in the U.S. market and supplied the largest share of the market since the first

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[225] CR/PR at Table I-3.

[226] CR/PR at Table I-3.

[227] CR/PR at Table I-3.

[228] CR/PR at Table I-3.

[229] The limited data indicate the financial condition of the industry was *** in 2019. Because of the expedited nature of these reviews, we do not have domestic producer financial data for the full period of review. However, we note several recent developments based on information submitted in these reviews that suggest improved prospects: for example, according to VPRA, Bear had reported ***; and Gulf Chemicals, formerly Bear's largest tollee, was acquired by another company, Gladieux Metals Recycling, which is reportedly making improvements, and has plans to restart the former Gulf facility in Freeport, Texas, in 2020. Similarly, AMG has announced expansion plans for its production in Ohio which would double production capacity by 2021, and has signed an exclusive contract to supply 100 percent of its production to Glencore AG for the next five years. *See* VPRA Response to Notice of Institution at 50-60 (Feb. 3, 2020) & CR/PR at Table I-2.

reviews.[230] Nonsubject imports fluctuated over the period, but declined overall from 2014 to 2019[231]; they accounted for *** percent share of apparent U.S. consumption in 2019, which was higher than their share of apparent U.S. consumption in 2013, at 53.1 percent.[232] There is no indication or argument on the record of these reviews that the presence of nonsubject imports would prevent cumulated subject imports from China and South Africa from significantly increasing their presence in the U.S. market in the event of revocation of the antidumping and countervailing duty orders, given the large size and export orientation of the subject industries and the relative attractiveness of the U.S. market. Moreover, given the high degree of substitutability between the subject imports and the domestic like product, and the fact that the domestic industry is currently the second largest supplier to the U.S. market,[233] any increase in cumulated subject import volume and market penetration is likely to come at the expense of both nonsubject imports and the domestic industry. In light of these considerations, we find that the effects we have attributed to the cumulated subject imports are distinguishable from any effects likely from nonsubject imports in the event of revocation.

Accordingly, we conclude that, if the antidumping duty orders were revoked, cumulated subject imports from China and South Africa would likely have a significant adverse impact on the domestic industry within a reasonably foreseeable time.

V. Conclusion

For the above reasons, we determine that revocation of the antidumping duty orders on ferrovanadium from China and South Africa would likely lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time.

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[230] CR/PR at Table I-5.

[231] The volume of nonsubject imports was *** pounds in 2014, *** pounds in 2015, *** pounds in 2016, *** pounds in 2017, *** pounds in 2018, and *** pounds in 2019. CR/PR at Table I-4.

[232] CR/PR at Tables I-4 & I-5.

[233] As discussed above, the domestic industry's share of apparent U.S. consumption was *** percent in 2019. CR/PR at Table I-5.

Information obtained in these reviews

Background

On January 2, 2020, the U.S. International Trade Commission ("Commission") gave notice, pursuant to section 751(c) of the Tariff Act of 1930, as amended ("the Act"),[1] that it had instituted reviews to determine whether revocation of the antidumping duty orders on ferrovanadium from China and South Africa would be likely to lead to the continuation or recurrence of material injury.[2] All interested parties were requested to respond to this notice by submitting certain information requested by the Commission.[3] [4] The following tabulation presents information relating to the background and schedule of this proceeding:

Effective date	Action
January 1, 2020	Notice of institution by Commerce (85 FR 67, January 2, 2020)
January 2, 2020	Notice of initiation by Commission (85 FR 122, January 2, 2020)
April 6, 2020	Commission's vote on adequacy
May 5, 2020	Commerce's results of its expedited reviews
August 7, 2020	Commission's determinations and views

[1] 19 U.S.C. 1675(c).

[2] 85 FR 122, January 2, 2020. In accordance with section 751(c) of the Act, the U.S. Department of Commerce ("Commerce") published a notice of initiation of a five-year review of the subject antidumping duty orders. 85 FR 67, January 2, 2020. Pertinent Federal Register notices are referenced in app. A, and may be found at the Commission's website (www.usitc.gov).

[3] As part of their response to the notice of institution, interested parties were requested to provide company-specific information. That information is presented in app. B. Summary data compiled in prior proceedings is presented in app. C.

[4] Interested parties were also requested to provide a list of three to five leading purchasers in the U.S. market for the subject merchandise. Presented in app. D are the responses received from purchaser surveys transmitted to the purchasers identified in this proceeding.

Responses to the Commission's notice of institution

Individual responses

The Commission received one submission in response to its notice of institution in the subject reviews. It was filed on behalf of the Vanadium Producers and Reclaimers Association ("VPRA") (referred to herein as "domestic interested party"), a trade association a majority of whose members manufacture, produce or wholesale ferrovanadium.[5]

A complete response to the Commission's notice of institution requires that the responding interested party submit to the Commission all the information listed in the notice. Responding firms are given an opportunity to remedy and explain any deficiencies in their responses. A summary of the number of responses and estimates of coverage for each is shown in table I-1.

Table I-1
Ferrovanadium: Summary of responses to the Commission's notice of institution

Type of interested party	Completed responses	
	Number of firms	Coverage
Domestic:		
U.S. trade association	1	100%

Note: In its response to the notice of institution, the domestic interested party stated that it believes that its members AMG and Bear were the only producers of ferrovanadium in the U.S. during 2019. Domestic interested party's response to the notice of institution, February 3, 2020, p. 3.

[5] The members of VPRA are as follows: AMG Vanadium LLC ("AMG"), Evergreen Metallurgical LLC, d.b.a. Bear Metallurgical Company ("Bear"), and U.S. Vanadium, LLC ("U.S. Vanadium"). AMG and Bear are U.S. producers of ferrovanadium and wholesalers of domestically produced ferrovanadium in the United States. U.S. Vanadium has periodically been a wholesaler of domestically produced ferrovanadium in the United States. Domestic interested party's response to the notice of institution, February 3, 2020, p. 1.

Party comments on adequacy

The Commission received party comments on the adequacy of responses to the notice of institution and whether the Commission should conduct expedited or full reviews from the domestic interested party VPRA. VPRA requests that the Commission conduct expedited reviews of the antidumping duty orders on ferrovanadium.[6]

The original investigations and subsequent reviews

The original investigations

The original investigations resulted from petitions filed on November 26, 2001 with Commerce and the Commission by the Ferroalloys Association Vanadium Committee and its following members: Bear Metallurgical Co., Butler, Pennsylvania; Shieldalloy Metallurgical Corp., Cambridge, Ohio ("Shieldalloy"); Gulf Chemical & Metallurgical Corp., Freeport, Texas ("Gulf"); U.S. Vanadium Corp., Danbury, Connecticut ("USV"); and CS Metals of Louisiana, Convent, Louisiana.[7] On November 29, 2002, Commerce determined that imports of ferrovanadium from China and South Africa were being sold at less than fair value ("LTFV").[8] The Commission determined on January 13, 2003 that the domestic industry was materially injured by reason of LTFV imports of ferrovanadium from China and South Africa.[9] On January 28, 2003, Commerce issued its antidumping duty orders with the final weighted-average dumping margins ranging from 12.97 to 66.71 percent on subject imports of ferrovanadium from China and a final weighted-average dumping margin of 116.00 percent on subject imports of ferrovanadium from South Africa.[10]

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[6] Domestic interested party's comments on adequacy, March 16, 2020, p. 2.

[7] Ferrovanadium from China and South Africa, Inv. Nos. 731-TA-986 and 987 (Final), USITC Publication 3570, January 2003 ("Original publication"), p. I-1.

[8] 67 FR 71136, and 67 FR 71137, November 29, 2002.

[9] 68 FR 2361, January 16, 2003.

[10] 68 FR 4168 and 68 FR 4169, January 28, 2003.

The first five-year reviews

On March 7, 2008, the Commission determined that it would conduct full reviews of the antidumping duty orders on ferrovanadium from China and South Africa.[11] On April 9, 2008, Commerce determined that revocation of the antidumping duty orders on ferrovanadium from China and South Africa would be likely to lead to continuation or recurrence of dumping.[12] On November 24, 2008, the Commission determined that material injury would be likely to continue or recur within a reasonably foreseeable time.[13] Following affirmative determinations in the five-year reviews by Commerce and the Commission, effective December 19, 2008, Commerce issued a continuation of the antidumping duty orders on imports of ferrovanadium from China and South Africa.[14]

The second five-year reviews

On February 4, 2014, the Commission determined that it would conduct full reviews of the antidumping duty orders on ferrovanadium from China and South Africa.[15] On March 13, 2014, Commerce determined that revocation of the antidumping duty orders on ferrovanadium from China and South Africa would be likely to lead to continuation or recurrence of dumping.[16] On January 28, 2015, the Commission determined that material injury would be likely to continue or recur within a reasonably foreseeable time.[17] Following affirmative determinations in the five-year reviews by Commerce and the Commission, effective February 18, 2015, Commerce issued a continuation of the antidumping duty orders on imports of ferrovanadium from China and South Africa.[18]

Previous and related investigations

Ferrovanadium has been subject to two related antidumping duty investigations. On March 1, 1994, Shieldalloy, New York, New York, filed a petition alleging that an industry in the United States was materially injured and threatened with material injury by reason of LTFV

[11] 73 FR 14484, March 18, 2008.
[12] 73 FR 19192, April 9, 2008.
[13] 73 FR 72837, December 1, 2008.
[14] 73 FR 77609, December 19, 2008.
[15] 79 FR 9000, February 14, 2014.
[16] 79 FR 14216, March 13, 2014.
[17] 80 FR 5787, February 3, 2015.
[18] 80 FR 8607, February 18, 2015.

imports of ferrovanadium and nitrided vanadium from Russia. Following 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.[19]

In August 2012, the Commission completed its third 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.[20] 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.[21]

On March 28, 2016, AMG, Cambridge, Ohio; Bear, Butler, Pennsylvania; Gulf, Freeport, Texas; and Evraz Stratcor, Inc. ("Evraz Stratcor"), Hot Springs, Arkansas, (collectively the Vanadium Producers and Reclaimers Association, VPRA[22]), filed a petition 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.[23] On March 23, 2017, Commerce determined that imports of ferrovanadium from Korea were being, or were likely to have been, sold in the United States at LTFV.[24] The Commission determined on May 8, 2017, that the domestic industry was materially injured by reason of imports of ferrovanadium from Korea.[25] Following affirmative determinations by Commerce and the Commission, Commerce issued antidumping duty orders on imports of ferrovanadium from Korea, effective May 15, 2017.[26]

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[19] 60 FR 35550, July 10, 1995.

[20] 77 FR 51825, August 27, 2012.

[21] 77 FR 54897, September 6, 2012.

[22] In 2019, U.S. Vanadium Holding Company LLC acquired Evraz Stratcor and operates via its wholly-owned subsidiary U.S. Vanadium LLC. Following this acquisition, U.S. Vanadium LLC replaced Evraz Stratcor as a member of VPRA. Domestic Interested party's response to the notice of institution, February 3, 2020, p. 3.

[23] Ferrovanadium from Korea, Inv. No. 731-TA-1315 (Final), USITC Publication 4683, May 2017, p. I-1.

[24] 82 FR 14874, March 23, 2017.

[25] 82 FR 22156, May 12, 2017.

[26] 82 FR 22309, May 15, 2017.

Commerce's five-year reviews

Commerce is conducting expedited reviews with respect to the orders on imports of ferrovanadium from China and South Africa and intends to issue the final results of these reviews based on the facts available not later than May 1, 2020.[27] Commerce's Issues and Decision Memoranda, published concurrently with Commerce's final results, contains complete and up-to-date information regarding the background and history of the orders, including scope rulings, duty absorption, changed circumstances reviews, and anti-circumvention. A complete version of the Issues and Decision Memoranda can be accessed at http://enforcement.trade.gov/frn/. The Memoranda will also include any decisions that may have been pending at the issuance of this report. Any foreign producers/exporters that are not currently subject to the antidumping duty orders on imports of Ferrovanadium from China and South Africa are noted in the sections titled "The original investigations" and "U.S. imports," if applicable.

[27] Letter from Steven Presing, Acting Director, Office VII, AD/CVD Operations, Enforcement and Compliance, U.S. Department of Commerce to Nannette Christ, Director of Investigations, February 25, 2020.

The product

Commerce's scope

Commerce has defined the scope as follows:

> {A}ll ferrovanadium regardless of grade, chemistry, form, shape, or size. Ferrovanadium is an alloy of iron and vanadium that is used chiefly as an additive in the manufacture of steel. The merchandise is commercially and scientifically identified as vanadium. It specifically excludes vanadium additives other than ferrovanadium, such as nitride vanadium, vanadium-aluminum master alloys, vanadium chemicals, vanadium oxides, vanadium waste and scrap, and vanadium-bearing raw materials such as slag, boiler residues and fly ash. Merchandise under the following Harmonized Tariff Schedule of the United States ("HTSUS") item numbers 2850.00.2000, 8112.40.3000, and 8112.40.6000 are specifically excluded. Ferrovanadium is classified under HTSUS item number 7202.92.00. Although the HTSUS item number is provided for convenience and Customs purposes, the Department's written description of the scope of these orders remains dispositive. [28]

U.S. tariff treatment

Ferrovanadium is classifiable in the Harmonized Tariff Schedule of the United States ("HTSUS") under subheading 7202.92.00 and reported for statistical purposes under statistical reporting number 7202.92.0000. The normal trade relations import duty (applicable to both China and South Africa) is 4.2 percent ad valorem.[29] The subject ferrovanadium imported under HTS subheadings 2850.00.20 (covering certain vanadium compounds), 8112.92.70 (unwrought vanadium; waste and scrap; and powders), and 8112.99.20 (other, including articles of vanadium) are specifically excluded from Commerce's scope. Ferrovanadium imported from China is subject to an additional 25 percent ad valorem duty under Section 301 of the Trade Act

[28] 80 FR 8607, February 18, 2018.

[29] HTSUS (2020) Revision 4, USITC Publication 5029, February 2020, ch. 72, p. 11.

of 1974.[30] Decisions on the tariff classification and treatment of imported goods are within the authority of U.S. Customs and Border Protection.

Description and uses[31]

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. 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. Vanadium is used in steel to impart strength, toughness, and wear resistance. The formation of vanadium-rich carbides and nitrides imparts the strength to steel; the addition of only a few kilograms of vanadium per ton of steel increases the strength of the steel by as much as 25 percent. Apart from its strengthening characteristic, vanadium also inhibits corrosion and oxidation.[32]

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 a 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. The second most common production method is recovery from

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[30] See U.S. notes 20(e) and 20(f) to subchapter III of chapter 99. HTSUS (2020) Revision 4, USITC Publication 5029, February 2020, pp. 99-III-23, 99-III-23, 99-III-42.

[31] Unless otherwise noted, this information is based on Ferrovanadium from China and South Africa, Investigation Nos. 731-TA-986-987 (Second Review), USITC Publication 4517, January 2015 ("Second review publication"), pp. I-12-I-13.

[32] Kelley, K.D., Scott, C.T., Polyak, D.E., and Kimball, B.E., 2017, Vanadium, chap. U of Schulz, K.J., DeYoung, J.H., Jr., Seal, R.R., II, and Bradley, D.C., eds., Critical mineral resources of the United States—Economic and environmental geology and prospects for future supply: U.S. Geological Survey Professional Paper 1802, p. U1– U36, https://doi.org/10.3133/pp1802U, accessed March 9, 2020.

vanadium-containing ore. Most ore production is in China and South Africa. 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 source of about 15 percent of vanadium worldwide and is the primary vanadium source in the United States.

Manufacturing process[33]

The manufacturing process to produce ferrovanadium is determined by the raw material 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.[34]

Ferrovanadium production in the United States

Bear's operations are based on the production of ferrovanadium for a processing fee (toll production), using vanadium pentoxide provided by its customers. 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. The contents are ignited with a fuse and the reaction proceeds quickly, with the oxidation (burning) of aluminum providing the heat. The oxygen in the vanadium pentoxide attaches to the aluminum and the vanadium attaches to the iron in the steel scrap. The result is molten ferrovanadium and an aluminum oxide-rich slag. After cooling, both are crushed and sized for sale. The ferrovanadium is packaged in individual containers, usually of 25 pounds of vanadium, or in 2,000-pound supersacks. Slag is sold for use as flux in steelmaking operations.

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[33] Unless otherwise noted, this information is based on the second review publication, pp. I-13-I-17.

[34] In terms of quantity, the dominant use for vanadium pentoxide is in the production of ferrovanadium. The oxide is heated with scrap iron and ferrosilicon, with lime added to form a calcium silicate slag. Aluminum may also be used, producing the iron-vanadium alloy along with alumina as a byproduct. Vanadiumcorp Resources Inc., https://www.vanadiumcorp.com/investors/faq/, accessed March 7, 2020.

Gulf is primarily a processor of spent catalysts from oil refineries. Catalyst contains recoverable cobalt, molybdenum, nickel, and vanadium, and Gulf's operation depends upon the profitable 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 (now owned by U.S. Vanadium) produces vanadium pentoxide as well as a variety of vanadium chemicals from vanadium ashes, residues, and other raw materials including vanadium-containing slag. [35] 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 catalyst 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 content of vanadium, the product is packaged similarly to 80-percent product, in individual cans or paper sacks, typically of 25 pounds of vanadium content, or in 2,000-pound supersacks.

Spent oil refinery catalyst, 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 Resource Conservation and Recovery Act (RCRA): hydrotreating catalysts (RCRA waste K171) and hydrorefining catalysts (RCRA waste K172). Receivers and processors of hazardous waste must be licensed and comply with RCRA regulations with respect to handling, processing, and record-keeping related to the hazardous wastes.

Ferrovanadium production outside the United States

The source material for the majority of global vanadium production is titaniferous magnetite ore, which is an iron ore that contains titanium and vanadium. The principal locations where this ore was mined in commercially substantial quantities were China, Russia, and South Africa.

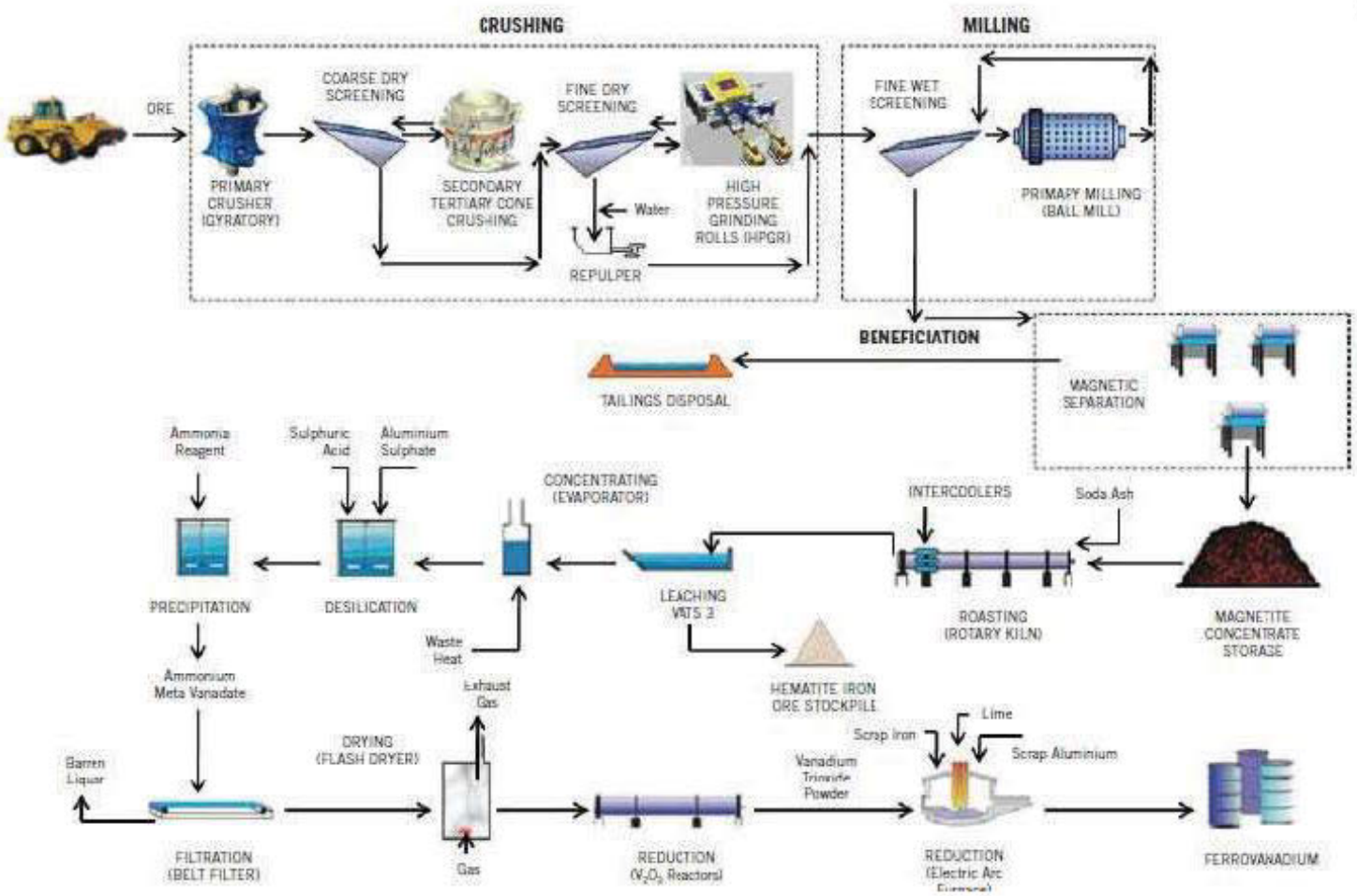
[35] This facility was purchased by U.S. Vanadium in October 2019.

The majority of foreign producers recover vanadium as a co-product in steelmaking, while a handful produce vanadium directly from ore without also producing steel. During steelmaking, the iron produced contains about 1.5 percent vanadium, which is removed as slag. The slag in South Africa contains up to 25 percent vanadium pentoxide while the slag in China contains 14-22 percent.

Whether the raw material is slag or vanadium-containing ore the basic extractive process for recovering the vanadium is similar. The vanadium in such raw materials is in a highly oxidized form. Conversion involves “salt roasting,” a process in which the vanadium-bearing material is mixed with a chemical such as sodium chloride and roasted. After the oxidized vanadium is converted to a water-soluble salt through the roasting process, it is leached, precipitated, and refined to a vanadium oxide. Production of ferrovanadium from the vanadium oxide (such as vanadium pentoxide or vanadium trioxide) is similar to Bear’s production process described above. The process of producing ferrovanadium from vanadium-bearing ore is illustrated in figure I-1 which shows the production process at the Windimurra project in Australia (more details on this mine in the global market section of this report).

Figure I-1

Ferrovanadium: Production process



Source: Atlantic Ltd. and Midwest Vanadium Pty Ltd., presentation, November 29, 2013, p. 7, http://atlanticltd.com.au/upload/documents/InvestorRelations/presentations/131129AGMPresentation.pdf, accessed February 25, 2020.

The industry in the United States

U.S. producers

During the final phase of the original investigations, the Commission received U.S. producer questionnaires from five firms, which accounted for all U.S. production and shipments of ferrovanadium during 2001.[36] During the first five-year reviews, the Commission received U.S. producer questionnaires from four firms, which accounted for the great bulk of U.S. production and shipments of ferrovanadium during the review period.[37] During the second five-year reviews, the Commission received U.S. producer questionnaires from eight firms, which accounted for all U.S. production and nearly all U.S. shipments of ferrovanadium during January 2008 through June 2014.[38]

In response to the Commission's notice of institution in these current reviews, the domestic interested party provided a list of two known and currently operating U.S. producers of ferrovanadium, which accounted for all production of ferrovanadium in the United States during 2019.[39]

Recent developments

Since the Commission's last five-year reviews, the following developments have occurred in the ferrovanadium industry (table I-2).

[36] Original publication, p. III-1.

[37] Ferrovanadium from China and South Africa, Investigation Nos. 731-TA-986-987 (Review), USITC Publication 4046, November 2008 ("First review publication"), p. I-13. U.S. industry data consisted of two producers and two tollees. Ibid.

[38] Second review publication, p. I-18. U.S. industry data consisted of two producers and six tollees. Ibid.

[39] Domestic interested party's response to the notice of institution, February 3, 2020, p. 58. In 2019, Bear continued to toll produce ferrovanadium for the following tollees: ***. Domestic interested party's response to cure request, February 14, 2020, p. 3.

Table I-2
Ferrovanadium: Recent developments in the U.S. industry

Year	Item	Firm	Event
2016	Bankruptcy	Gulf	Gulf (owner of U.S. producer Bear), a subsidiary of the Eramet Group, operated a processing facility that recycled spent petroleum catalysts and recovered metals including vanadium at its Freeport plant in Texas. In June 2016, Gulf filed for bankruptcy protection but was unable to find a purchaser and decided to cease operations.[1]
2016	Acquisition	Bear	In September 2016, Bear was acquired by Yilmaden Holding (Elazig,Turkey). Following that acquisition, Bear began operating under the name Evergreen Metallurgical LLC, d.b.a. Bear Metallurgical Company.[2]
2017	Acquisition	Gulf.	In 2017, Gulf Chemical and Metallurgical Corp. was acquired by Gladieux Metals Recycling LLC. According to the domestic interested party, Gladieux is “currently making necessary improvements,” at the facility and while it is not currently in commercial operation, Gladieux may begin production in 2020.[3]
2017	Supply agreement	Bear	In June 2017, Bear completed a program to qualify vanadium feedstock from Evraz Stratcor ’s vanadium oxide facility in Hot Springs, Arkansas. Bear stated that this opened up new possibilities for vanadium raw material feed as Bear had sourced vanadium feedstock from Gulf prior to its closing.[4]
2017	Expansion	AMG	In June 2018, AMG signed a long-term multi-year agreement with a customer to process and recycle spent catalysts (used to make inputs for ferrovanadium production) from a major oil refinery in North America. In order to meet increasing demand from both existing and new customers, AMG planned an expansion of its spent catalyst recycling operations in Cambridge, Ohio. The $35 million expansion project was expected to increase AMG’s spent catalyst recycling capacity by approximately 30 percent.[5]

Table continued on next page.

Table I-2--Continued
Ferrovanadium: Recent developments in the U.S. industry

2019	Expansion	AMG	In June 2019, AMG purchased a site to build its second spent catalyst recycling facility in Southeast Ohio. The company was building a new roasting and ferroalloy production facility to meet growing demand from the global refining and steel industries by nearly doubling its spent catalyst recycling capacity and annual ferrovanadium and ferronickel-molybdenum production capacity. The new facility will be similar to AMG's existing plant in Cambridge, Ohio and construction is expected to be completed by late 2021.[6]
2019	Acquisition	U.S. Vanadium	In October 2019, U.S. Vanadium acquired Evraz Stratcor, which owns and operates a Hot Springs, Arkansas facility that produces high-purity vanadium oxides and downstream vanadium chemicals for customers in the catalyst, chemical, petrochemical, titanium, and energy storage industries. According to U.S. Vanadium, from 2008 to 2018, production at the Hot Springs facility declined from full capacity to very low levels. U.S. Vanadium brought production back online through tolling contracts and plans to restore the facility's production operations to its full nameplate processing capacity of approximately 12 million pounds of vanadium pentoxide per year.[7]
2019	Supply agreement	AMG	In September 2019, AMG's parent, AMG Advanced Metallurgical Group N.V., announced that it had entered into a long-term agreement to supply 100 percent of the available ferrovanadium production from AMG's existing and future facilities to the trading company Glencore. Under this agreement, AMG will ***.[8]

[1] "Polyak, Desiree E., "Vanadium (Advance Release)," 2016 Minerals Yearbook, August 2018, p. 81.2.

[2] "Yilmaden Holding," *Bear Metallurgical Company*, August 8, 2017, http://www.bearmet.com/news_pressReleasesDetail.asp?NewsPublicationsID=21, retrieved March 6, 2020.

[3] Domestic interested party's response to the notice of institution, February 3, 2020, p. 2.

[4] 2017 Annual Report, YILDIRIM Group, March 18, 2018, p.44, http://www.yildirimholding.com/Sunumlar/2017/en17.pdf, retrieved March 7, 2020.

[5] "AMG announces long-term spent catalyst recycling agreement and recycling capacity expansion," *AMG Advanced Metallurgical Group N.V.*, February 21, 2018, https://amg-v.com/feb-21-18-news/, retrieved March 5, 2020.

[6] "AMG Vanadium Building New Plant in Muskingum County," *AMG Advanced Metallurgical Group N.V.*, June 19, 2019, https://amg-v.com/June-19-19-news/, retrieved March 5, 2020.

[7] "U.S. Vanadium acquires sole high-purity vanadium producer in U.S." U.*S. Vanadium LLC,* news release, October 14, 2019, https://usvanadium.com/news/f/us-vanadium-acquires-sole-high-purity-vanadium-producer-in-us, retrieved March 7, 2019.

[8] Domestic interested party's response to the notice of institution, February 3, 2020, p. 50.

Source: Cited sources.

U.S. producers' trade and financial data

The Commission asked domestic interested parties to provide trade and financial data in their response to the notice of institution in the current five-year reviews.[40] Table I-3 presents a compilation of the data submitted from all responding U.S. producers as well as trade and financial data submitted by U.S. producers and tollees in the original investigations and prior five-year reviews.

[40] Individual company trade and financial data are presented in app. B.

Table I-3
Ferrovanadium: Trade and financial data submitted by U.S. producers and tollees, 2001, 2007, 2013, and 2019

Item	2001	2007	2013	2019
Capacity (1,000 pounds contained vanadium)	***	***	***	***
Production (1,000 pounds contained vanadium)	***	***	***	***
Capacity utilization (percent)	***	***	***	***
U.S. shipments:				
Quantity (1,000 pounds contained vanadium)	6,274	8,444	7,187	***
Value ($1,000)	23,735	134,686	87,651	***
Unit value (dollars per pound contained vanadium)	3.78	15.95	12.20	***
Net sales ($1,000)	***	122,259	***	***
COGS ($1,000)	***	***	***	***
COGS/net sales (percent)	***	***	***	***
Gross profit (loss) ($1,000)	***	***	***	***
SG&A expenses ($1,000)	***	***	***	***
Operating income (loss) ($1,000)	***	***	***	***
Operating income (loss)/net sales (percent)	***	***	***	***

Note: For a discussion of data coverage, please see “U.S. producers” section.
Note: For all years, capacity, production, and financial (except net sales) data are for U.S. producers only. For 2001, 2007, and 2013, U.S. shipments and net sales include U.S. producers and tollees. For 2019, U.S. shipments and net sales include U.S. producers’ commercial shipments only. The domestic interested party also reported 2019 shipments of toll-produced product, i.e., tolled merchandise returned to tollees, of *** pounds contained vanadium valued at ***. The total revenue from tolling operations, i.e., inclusive of packaging, was ***.

Source: For the years 2001, 2007 and 2013, data are compiled using data submitted in the Commission’s original investigations, first five-year reviews and second five-year reviews. *See app. C*. For the year 2019, data are compiled using data submitted by the domestic interested party. Domestic interested party’s response to the notice of institution, February 3, 2020, exh. 23.

Definitions of the domestic like product and domestic industry

The domestic like product is defined as the domestically produced product or products which are like, or in the absence of like, most similar in characteristics and uses with, the subject merchandise. The domestic industry is defined as the U.S. producers as a whole of the domestic like product, or those producers whose collective output of the domestic like product constitutes a major proportion of the total domestic production of the product. Under the related parties provision, the Commission may exclude a related party for purposes of its injury determination if "appropriate circumstances" exist.[41]

In its original determinations and its full first and second five-year review determinations, the Commission found a single domestic like product consisting of ferrovanadium of all grades coextensive with Commerce's scope and defined the domestic industry as all U.S. producers of the domestic like product.[42]

U.S. imports and apparent U.S. consumption

U.S. importers

During the final phase of the original investigations, the Commission received usable U.S. importer questionnaires from 12 firms, which provided less-than-complete coverage of U.S. imports of ferrovanadium. Import data presented in the original investigations are based on official Commerce statistics.[43]

During the first five-year reviews, the Commission received usable U.S. importer questionnaires from six firms, which accounted for 100 percent of U.S. imports of ferrovanadium from China and South Africa during 2007. Import data presented in the first reviews are based on adjusted official Commerce statistics.[44]

During the second five-year reviews, the Commission received U.S. importer questionnaires from 12 firms, which accounted for all known U.S. imports of ferrovanadium

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[41] Section 771(4)(B) of the Tariff Act of 1930, 19 U.S.C. § 1677(4)(B).

[42] 85 FR 122, January 2, 2020.The Commission did not include tollees in the domestic industry in its original determinations or full first and second five-year review determinations but considered the information provided by tollees to measure U.S. shipments, U.S. consumption, inventories, and pricing of the domestic like product. One Commissioner defined a different domestic industry in the original investigation. Ibid.

[43] Original publication, pp. IV-1—IV-2 and table IV-1.

[44] First review publication, pp. I-4, IV-1.

from China and South Africa between January 2008 and June 2014. Import data presented in the second reviews are based on adjusted official Commerce statistics.[45]

Although the Commission did not receive responses from any respondent interested parties in these current reviews, in its response to the Commission's notice of institution, the domestic interested party provided a list of four potential U.S. importers of ferrovanadium.[46]

U.S. imports

Table I-4 presents the quantity, value, and unit value of U.S. imports from China and South Africa as well as leading nonsubject sources of U.S. imports (shown in descending order of 2019 imports by quantity).

[45] Second review publication, p. IV-1.

[46] Domestic interested party's response to the notice of institution, February, 3, 2020, p. 57.

Table I-4
Ferrovanadium: U.S. imports, 2014-19

Item	2014	2015	2016	2017	2018	2019
	Quantity (1,000 pounds contained vanadium)					
China	--	--	9	--	--	--
South Africa	11	--	--	--	7	--
Subtotal, subject	11	--	9	--	7	--
Czech Republic	***	***	***	***	***	***
Canada	1,917	1,062	249	1,357	1,844	2,075
Austria	861	1,375	1,997	2,996	3,727	1,237
Russia	133	276	570	1,665	455	334
South Korea	1,243	1,612	532	--	19	--
All other sources	392	49	150	183	838	1,337
Subtotal, nonsubject	***	***	***	***	***	***
Total imports	***	***	***	***	***	***
	Landed, duty-paid value ($1,000)					
China	--	--	132	--	--	--
South Africa	130	--	--	--	326	--
Subtotal, subject	130	--	132	--	326	--
Czech Republic	41,166	23,157	21,361	19,948	33,729	47,942
Canada	23,915	10,981	2,173	17,207	41,533	50,786
Austria	11,988	13,150	16,767	40,625	124,594	31,198
Russia	1,600	2,779	4,504	19,248	14,749	5,230
South Korea	14,715	15,636	3,806	--	658	--
All other sources	4,410	664	1,630	2,158	23,822	33,395
Subtotal, nonsubject	97,794	66,367	50,243	99,185	239,085	168,551
Total imports	97,925	66,367	50,375	99,185	239,411	168,551

Table continued on next page.

Table I-4--Continued
Ferrovanadium: U.S. imports, 2014-19

Item	2014	2015	2016	2017	2018	2019
	Unit value (dollars per pound contained vanadium)					
China	--	--	14.03	--	--	--
South Africa	12.19	--	0	--	47.50	--
Subtotal, subject	12.20	--	14.03	--	46.50	--
Czech Republic	--	--	--	--	--	--
Canada	12.47	10.34	8.72	12.68	22.52	24.47
Austria	13.92	9.56	8.39	13.56	33.43	25.22
Russia	12.01	10.07	7.90	11.56	32.38	15.67
South Korea	11.84	9.70	7.15	--	33.90	--
All other sources	11.24	13.49	10.86	11.80	28.44	24.97
Subtotal, nonsubject	***	***	***	***	***	***
Total imports	***	***	***	***	***	***

Note: Because of rounding, figure may not add to total shown. Figures shown as “0” represent values greater than zero, but less than “500.”
Note: Census has suppressed the quantities of U.S. imports of ferrovanadium from the Czech Republic since September 2014. Quantity data for the Czech Republic are based on ***. *** for December 2019 are not available. Unit values for the Czech Republic are not presented due to mixed data methods. Subtotal nonsubject and total import unit value calculations do not include the Czech Republic.

Source: U.S. imports are compiled using official Commerce statistics under HTS statistical reporting number 7202.92.0000, adjusted with ***.

Apparent U.S. consumption and market shares

Table I-5 presents data on U.S. producers' and tollees' U.S. shipments, U.S. imports, apparent U.S. consumption, and market shares.

Table I-5
Ferrovanadium: U.S. producers' and tollees' U.S. shipments, U.S. imports, apparent U.S. consumption, and market shares, 2001, 2007, 2013, and 2019

Item	2001	2007	2013	2019
	Quantity (1,000 pounds contained vanadium)			
U.S. producers' U.S. shipments	6,274	8,444	7,187	***
U.S. imports from—				
China	992	0	0	--
South Africa	2,475	17	0	--
Subtotal, subject	3,466	17	0	--
All other sources	2,150	4,866	8,125	***
Total imports	5,617	4,883	8,125	***
Apparent U.S. consumption	11,891	13,327	15,312	***
	Value (1,000 dollars)			
U.S. producers' U.S. shipments	23,735	134,686	87,651	***
U.S. imports from—				
China	3,744	0	0	--
South Africa	9,588	350	0	--
Subtotal, subject	13,333	350	0	--
All other sources	8,362	64,120	92,923	168,551
Total imports	21,695	64,470	92,923	168,551
Apparent U.S. consumption	45,430	199,156	180,574	***

Table continued on next page.

Table I-5--Continued
Ferrovanadium: U.S. producers' and tollees' U.S. shipments, U.S. imports, apparent U.S. consumption, and market shares 2001, 2007, 2013, and 2019

	Share of consumption based on quantity (percent)			
U.S. producer's share	52.8	63.4	46.9	***
U.S. imports from.--				
China	8.3	0.0	0.0	--
South Africa	20.8	0.1	0.0	--
Subtotal, subject	29.2	0.1	0.0	--
All other sources	18.1	36.5	53.1	***
Total imports	47.2	36.6	53.1	***
	Share of consumption based on value (percent)			
U.S. producer's share	52.2	67.6	48.5	***
U.S. imports from.--				
China	8.2	0.0	0.0	--
South Africa	21.1	0.2	0.0	--
Subtotal, subject	29.3	0.2	0.0	--
All other sources	18.4	32.2	51.5	***
Total imports	47.8	32.4	51.5	***

Note: For a discussion of data coverage, please see "U.S. producers" and "U.S. importers" sections. Figures shown as "0" represent values greater than zero, but less than "500." Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

Source: For the years 2001, 2007 and 2013, data are compiled using data submitted in the Commission's original investigations, first five-year reviews and second five-year reviews. See app. C. For the year 2019, U.S. producers' U.S. shipments are compiled from the domestic interested party's response to the Commission's notice of institution and U.S. imports are compiled using official Commerce statistics under HTS statistical reporting number 7202.92.0000, adjusted with ***.

Cumulation considerations

In assessing whether imports should be cumulated, the Commission determines whether U.S. imports from the subject countries compete with each other and with the domestic like product and has generally considered four factors: (1) fungibility, (2) presence of sales or offers to sell in the same geographical markets, (3) common or similar channels of

distribution, and (4) simultaneous presence in the market. Additional information concerning geographical markets and simultaneous presence in the market is presented below.[47]

Imports from China were reported in 2 of the 72 months between 2014 and 2019. Imports from South Africa were reported in 2 of the 72 months between 2014 and 2019. No imports from China or South Africa were reported in 2019.[48]

During 2014-19, all imports of ferrovanadium from China entered through eastern borders of entry. Imports of ferrovanadium from South Africa entered through eastern and southern borders of entry.[49]

The industry in China

During the final phase of the original investigations, the Commission received foreign producer/exporter questionnaires from two firms, which accounted for approximately *** percent of production of ferrovanadium in China during 2001, and nearly all ferrovanadium exports from China to the United States during 2001.[50]

During the first and second five-year reviews, the Commission did not receive foreign producer/exporter questionnaires from any firm.[51]

Although the Commission did not receive responses from any respondent interested parties in these five-year reviews, the domestic interested party provided a list of three possible producers of ferrovanadium in China.[52]

China is the world's leading producer of vanadium, estimated to account for approximately 50 percent of global production. The domestic interested party reported that Panzhihua and Chengde remain the largest Chinese producers of ferrovanadium. VPRA and other industry sources estimate that there are approximately 40 other major producers of

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[47] In addition, available information concerning subject country producers and the global market is presented in the next section of this report.

[48] Imports of ferrovanadium from China were reported in June 2016 and June 2018. Imports of ferrovanadium from South Africa were reported in March 2014 and October 2018.

[49] During 2014-19 all imports of ferrovanadium from China entered through Baltimore, Maryland, while imports from South Africa entered through Baltimore, Maryland in 2014 and Laredo, Texas in 2018.

[50] Investigation Nos. 731-TA-986 and 987 (Final): Ferrovanadium from China and South Africa, Confidential Report, INV-Z-197, December 11, 2002 ("Original confidential report"), pp. VII-1-VII-2; and Second review publication, p. IV-11.

[51] Investigation Nos. 731-TA-986-987 (Second Review): Ferrovanadium from China and South Africa, Confidential Report, INV-MM-127, December 16, 2014 ("Second review confidential report"), p. IV-6.

[52] Domestic interested party's response to the notice of institution, February 3, 2020, p. 57.

ferrovanadium in China, including Jianlong. The domestic interested party noted that for several of these producers, vanadium production in 2019 was significantly higher compared to 2018, including Panzhihua, Chengde, Jianlong, and Sichuan Chuanwei, and that several Chinese producers plan to increase their capacity in 2020 in response to higher prices and increased demand from the steel industry.[53]

According to CRU, regulatory issues in China caused disruptions to the ferrovanadium market in 2017 and 2018. Chinese demand for ferrovanadium was affected by updates to the standards for construction rebar. When Chinese authorities announced the new rebar regulations in January 2018, mandating sweeping changes to existing operational practices and future micro-alloying requirements (sharply driving up vanadium consumption per ton of rebar), traders and producers flocked to the market to buy up any material ahead of the November 2018 deadline when the new rules would come into force.[54] According to recent reports, the implementation of the new high-strength rebar standards by the Standardization Administration of China has been enforced more gradually than originally expected. Larger rebar mills began implementation in 2018; however, smaller mills have been slower to implement the new standards.[55] Table I-6 presents recent developments in the Chinese industry.

[53] Ibid., pp. 14-15 and exh. 4.

[54] "Vanadium prices face a turbulent 2019," CRU, April 5, 2019, https://www.crugroup.com/knowledge-and-insights/insights/2019/vanadium-prices-face-a-turbulent-2019/, accessed March, 5, 2020.

[55] Polyak, Désirée, 2020 Mineral Commodity Summaries: Vanadium, United States Geological Survey, January 2020, pp. 180-181.

Table I-6
Ferrovanadium: Recent developments in the Chinese industry

Year	Item	Firm	Event
2015	Plant closings	Multiple	In July 2015, several ferrovanadium smelters halted operations in response to high production costs as well as a lack of purchasing from steelmakers. The closed smelters included Jinzhou Guangda Ferroalloys Co. Ltd. and Sichuan Guangyuan Wangcang Ltd.[1]
2017	New regulations	Multiple	In February 2017, the Standardization Administration of China released a new high strength rebar standard that would decrease the use of substandard steels in construction to make buildings in China more earthquake resistant. The implementation date for the new standard was expected to be November 1, 2018. The new rebar standard would eliminate the low strength Grade 2 rebar and the SAC authorized Grade 3, Grade 4, and Grade 5 high strength standards. The newly authorized standards would have 0.03% vanadium content in Grade 3, 0.06% vanadium content in Grade 4, and more than 0.1% vanadium content in Grade 5 rebar. The increase of vanadium in rebar was expected to increase the overall consumption of vanadium in China by approximately 10,000 metric tons per year. However, this consumption increase estimate was expected to vary depending on the enforcement of these new rebar standards.[2]
2017	New regulations	Multiple	In August 2017, it was announced that 24 types of materials, including vanadium slag, would be prohibited from entering China. The announcement was issued by five agencies, including the Ministry of Environmental Protection and the Ministry of Commerce, in an effort to comply with new environmental regulations. The ban on vanadium slag imports was expected to reduce the amount of raw material available for Chinese vanadium pentoxide production.[3]
2017	Excess capacity	Pangang	Pangang's capacity to produce ferrovanadium *** to increase production in the future.[4]
2019	Export duties	Multiple	In 2019, the Ministry of Finance removed export duties on ferrovanadium (with a maximum vanadium content of 75 percent). The export duties on ferrovanadium had been 10 percent in 2018 and 15 percent in 2017.[5]

Notes continued on next page.

[1] "Polyak, Desiree E., "Vanadium (Advance Release)," 2015 Minerals Yearbook, March 2016, p. 81.2.
[2] "Polyak, Desiree E., "Vanadium (Advance Release)," 2017 Minerals Yearbook, February 2020, p. 81.3.
[3] "Polyak, Desiree E., "Vanadium (Advance Release)," 2017 Minerals Yearbook, February 2020, p. 81.3.
[4] Domestic interested party's response to the notice of institution, February 3, 2020, p. 15.
[5] China to keep ferro-alloys, metals tariffs: Update, *Argus Media,* December 24, 2019, https://www.argusmedia.com/en/news/2040157-china-to-keep-ferroalloys-metals-tariffs-update, accessed March 6, 2020.

Source: Cited sources.

Table I-7 presents exports of ferrovanadium from China (by export destination in descending order of quantity for 2019).

Table I-7
Ferrovanadium: Exports of ferrovanadium from China, by destination, 2014-19

Item	Calendar year					
	2014	2015	2016	2017	2018	2019
	Quantity (1,000 pounds)					
South Korea	2,959	3,541	2,150	2,194	3,674	3,662
Japan	3,088	2,982	3,234	2,917	3,604	3,021
Netherlands	5,776	7,187	5,247	3,395	3,415	2,050
Taiwan	2,161	1,517	2,444	1,312	1,735	1,419
Canada	0	0	66	643	345	390
Oman	44	0	0	0	0	159
India	820	517	428	174	351	68
United Arab Emirates	132	33	280	0	0	49
Indonesia	0	0	163	265	0	36
Belgium	0	22	176	0	176	22
All other	598	1,272	1,060	439	266	49
Total	15,578	17,071	15,248	11,339	13,566	10,925

Note.--Because of rounding, figures may not add to totals shown. Figures shown as "0" represent values greater than zero, but less than "500."

Source: Global Trade Information Services, Inc., Global Trade Atlas, HTS subheading 7202.92.

The industry in South Africa

During the final phase of the original investigations, the Commission received foreign producer/exporter questionnaires from three firms and two of these firms accounted for approximately *** percent of production of ferrovanadium in South Africa and approximately *** percent of ferrovanadium exports from South Africa to the United States during 2001.[56]

During the first five-year reviews, the Commission received foreign producer/exporter questionnaires from two firms, which accounted for approximately *** percent of production of ferrovanadium in South Africa and approximately *** percent of ferrovanadium exports from South Africa to the United States during 2007.[57]

During the second five-year reviews, the Commission received foreign producer/exporter questionnaires from two firms, which accounted for all production of ferrovanadium in South Africa during 2013, however, neither firm reported exporting ferrovanadium to the United States in 2013.[58]

Although the Commission did not receive responses from any respondent interested parties in these five-year reviews, the domestic interested party provided a list of two possible producers of ferrovanadium in South Africa.[59]

[56] Original confidential report, pp. VII-2-4.

[57] Investigation Nos. 731-TA-986 and 987 (Review): Ferrovanadium from China and South Africa, Confidential Report, INV-FF-137, October 29, 2008 ("First review confidential report"), p. IV-11.

[58] Second review publication, p. IV-9.

[59] Domestic interested party's response to the notice of institution, February 3, 2020, p. 57.

Table I-8 presents events in the South Africa industry since the last five-year reviews.

Table I-8
Ferrovanadium: Recent developments in the South African industry

Year	Item	Firm	Event
2015	Bankruptcy	EVRAZ Highveld Steel and Vanadium Ltd.	On April 13, 2015, EVRAZ Highveld Steel and Vanadium Ltd. was placed under business rescue procedures to avoid liquidation. The rescue procedures were expected to either result in Highveld being refinanced or restructured or, if that was not possible, to undergo liquidation under the supervision of a business rescue practitioner to maximize the return to creditors.[1]
2017	Acquisition	EVRAZ Highveld Steel and Vanadium Ltd.	In February 2017, EVRAZ announced that it would seek to sell individual components of Highveld Steel and Vanadium Ltd. In June, ArcelorMittal South Africa and Highveld Structural Mill Pty Ltd. (a subsidiary of EVRAZ Highveld Steel and Vanadium Ltd.) officially restarted the heavy structural mill. The terms of their agreement were that ArcelorMittal would provide the raw steel and Highveld would toll process the final product. The remainder of the plant was transformed into the Highveld Industrial Park which consisted of 17 businesses that have rented the space. Highveld further expected to sell the two iron plants, the steel plant, and the flat products mill. The park also had a fully equipped vanadium slag crushing plant, which was designed to process vanadium from titaniferous ore deposits. [2]
2018	Production	Rhowan Glencore	Rhowan Glencore, South Africa's leading producer of ferrovanadium, reported steady production during the review period. The firm reported its vanadium production in terms of vanadium pentoxide production, a portion of which it converts to ferrovanadium, but does not report provide production specific to ferrovanadium. Rhovan produced 20.8 million pounds of vanadium pentoxide in 2014, 20.2 million pounds in 2018, and 10.2 million pounds in the first half of 2019.[3]

Table continued next page.

Table I-8 -- Continued
Ferrovanadium: Recent developments in the South Africa industry

2018	Acquisition	Vanchem Vanadium Products (Pty) Ltd.	During the last review, the Vanchem plant was owned by Duferco and processed ore feed and slag from EVRAZ Highveld. However, after the Highveld facility closed in 2015 (see above), it eliminated Vanchem's source of raw materials for ferrovanadium. This led to Vanchem being placed on care and maintenance status and it entered business rescue in 2015.[4] In the third quarter of 2018, Vanchem restarted vanadium production after establishing a new source of raw materials.[5]
2019	Acquisition	Vanchem Vanadium Products (Pty) Ltd.	In November 2019, Bushveld Minerals Limited acquired the vanadium production business of Vanchem Vanadium as well as the ferrovanadium production business of South African Japan Vanadium Proprietary Limited (a wholly owned subsidiary of Vanchem Vanadium). Vanchem is currently producing 2.1 million pounds of vanadium per year. [6]

[1] "Polyak, Desiree E., "Vanadium (Advance Release)," 2015 Minerals Yearbook, November 2016, p. 81.3.
[2] "Polyak, Desiree E., "Vanadium (Advance Release)," 2017 Minerals Yearbook, February 2020, p. 81.4.
[3] Domestic interested party's response to the notice of institution, February 3, 2020, p. 25.
[4] Domestic interested party's response to the notice of institution, February 3, 2020, p. 25.
[5] Domestic interested party's response to the notice of institution, February 3, 2020, p. 25.
[6] Domestic interested party's response to the notice of institution, February 3, 2020, p. 26.

Source: Cited sources.

Table I-9 presents exports of ferrovanadium from South Africa (by export destination in descending order of quantity for 2019).

Table I-9
Ferrovanadium: Exports of ferrovanadium from South Africa, by destination, 2014-19

Item	Calendar year					
	2014	2015	2016	2017	2018	2019
	Quantity (1,000 pounds)					
Netherlands	7,361	7,430	4,656	3,664	3,446	3,481
Japan	4,642	3,434	688	891	1,334	1,411
Mexico	529	0	0	817	543	816
Brazil	176	0	451	579	66	507
Argentina	90	62	0	0	211	99
Australia	44	88	117	44	90	88
United States	0	0	91	0	0	88
Colombia	0	0	0	24	67	44
Switzerland	265	0	0	0	9	22
Belgium	0	1	0	0	0	0
All other	4,088	1,737	958	315	106	1
Total	13,107	12,752	6,961	6,334	5,863	6,557

Note.--Because of rounding, figures may not add to totals shown. Figures shown as “0” represent values greater than zero, but less than “500.”

Source: Global Trade Information Services, Inc., Global Trade Atlas, HTS subheading 7202.92.

Antidumping or countervailing duty orders in third-country markets

Based on available information, ferrovanadium from China and South Africa has not been subject to other antidumping or countervailing duty investigations outside the United States.

The global market[60]

Production

Most of the world's supply of vanadium was derived from either primary or coproduction.[61] As of 2018, the most recent for which data are available, most of the vanadium recovered from ores, concentrates, or slag was in four countries. The leading vanadium-producing nations China, Russia, South Africa, and Brazil, in order of magnitude by quantity, provided essentially all of the world's vanadium in 2018. Production from these sources is shown in table I-10. China, the world's leading producer, accounted for more than 50 percent of global output in 2018, mostly through coproduction. South Africa produced about 11 percent of the world's vanadium feedstock in 2018, mostly from only two producers, Bushveld Minerals and Glencore.[62] Secondary production of vanadium is known to occur in Canada, Germany, Japan, and the United States, as well as several other European countries, but available information is insufficient to make reliable estimates. [63]

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[60] Unless otherwise noted, this information is based on the second review publication, pp. IV-12-VI-24 and Ferrovanadium from Korea, Investigation No. 731-TA-1315 (Final), USITC Publication 4683, May 2017, pp. VII-9-VII-15.

[61] Primary production occurs from mined ore as mineral concentrates derived from vanadiferous titanomagnetite. Coproduction refers to vanadium slags that are produced during steelmaking.

[62] Vanadium Overview, *Bushveld Minerals,* http://www.bushveldminerals.com/about-vanadium/, retrieved March 8, 2020.

[63] Secondary vanadium production occurs from various industrial waste materials, such as vanadium-bearing fly ash, petroleum residues, and spent catalysts. Polyak, Desiree E., "Vanadium (Advance Release)," 2017 Minerals Yearbook, February 2020, p. 81.1.

Table I-10
Vanadium: Production by country, 2014-18

Country	2014	2015	2016	2017	2018
	Quantity (1,000 pounds contained vanadium)				
Brazil	1,274	7,174	9,835	11,477	12,125
China	120,152	112,656	101,192	100,090	88,185
Russia	33,345	35,274	35,274	39,683	39,683
South Africa	47,580	39,216	17,996	17,547	16,976
Total	202,384	194,227	164,244	168,874	156,969

Note: In addition to the countries listed, a small amount of vanadium was produced in Australia from titanomagnetite ores.

Source: U.S. Geological Survey.

In 2016, the last full year that ferrovanadium production data was available, China was the leading producer, accounting for about half of global production, followed by South Africa, Russia, Austria and the Czech Republic (see table I-11).

Table I-11
Ferrovanadium: Production by country, 2014-17

Country	2014	2015	2016	2017[1]
	Quantity (1,000 pounds)			
Austria[1]	17,637	17,637	15,432	17,637
Canada	2,866	2,866	2,205	1,764
China	88,185	44,974	67,461	---
Czech Republic[1]	13,448	13,669	13,889	14,551
India	2,273	1,938	2,791	2,934
Japan	9,700	8,818	8,818	---
Russia	25,133	24,251	19,842	27,752
South Africa	41,888	33,069	28,660	35,274
Total[2]	170,045	115,916	129,777	---

[1] Production data for Austria and Czech Republic and all data in 2017 were from the British Geological Survey.
[2] Does not include Austria and Czech Republic

Source: U.S. Geological Survey and British Geological Survey

Although most ferrovanadium production is in China, Russia, and South Africa, there are producers in other areas as noted below.

Australia

There are currently no operating vanadium mines in Australia although new projects are potentially advancing toward production. The most recent mining activity for vanadium in Australia was carried out at Atlantic Ltd's Windimurra Vanadium Project, which was suspended in 2014. Windimurra vanadium facility was restarted in 2012 (after being closed for several years), and the facility produced small quantities of ferrovanadium for approximately one year until the plant's operations were suspended in February 2014 due to fire. At that time, the Windimurra plant was "scheduled to be rebuilt by February 2015 with the post-rebuild full production level estimated at 5,300 to 5,700 short tons (13.1 million pounds) of contained vanadium per year. The Windimurra facility remains on care and maintenance status with a structured program in place to maintain the infrastructure assets in operating conditions.[64]

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.

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. Toronto-based Largo has an offtake agreement with Glencore Plc for all of the output from Maracas for the first six years.

Canada

There is a single producer of ferrovanadium in Canada, Masterloy Products Company, located in Ottawa. Masterloy processes customer supplied vanadium pentoxide into 80 percent ferrovanadium as well as customer supplied molybdenum oxide into 70 percent ferromolybdenum. Canada exports most of its ferrovanadium to the United States. Vanadium pentoxide imported to the United Stateshas a duty rate of 5.5 percent. However, it can be

[64] Domestic interested party's response to the notice of institution, February 3, 2020, p. 55.

imported duty free into Canada, converted there into ferrovanadium and imported into the United States duty-free under NAFTA.

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 (in Russia). Evraz Nikom has an annual capacity of 10 million pounds of ferrovanadium (8 million pounds of contained vanadium).

Japan

JFE Material Co., Ltd. recovers and reuses metals from industrial waste, including vanadium, molybdenum, and nickel, as ferroalloys. The main sources of these metals are spent desulfurization catalysts which are recovered from oil refineries, and boiler ash from thermal power plants using petroleum-based heavy fuels.[65]

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).

Global exports

Table IV-12 presents the leading exporting countries of ferrovanadium during 2014-19 (in descending order of quantity for 2018. 2018 was the most recent full year of export data available; ferrovanadium exports from Netherlands and Belgium were not available for 2019.[66]

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[65] JFE Material Co., Ltd. website, https://www.jfe-material.co.jp/en/metalrecovery/, retrieved March 5, 2020.

[66] The exports from the Netherlands most likely originated in other countries as it is a prime European shipping hub with no known producers of ferrovanadium. In addition, it is unclear if export data for New Zealand is accurate since there are no known ferrovanadium producers in New Zealand. ***. Domestic interested party's response to the notice of institution, February 3, 2020, p. 25.

Table I-12
Ferrovanadium: Global exports by major sources, 2014-19

Exporter	2014	2015	2016	2017	2018	2019
	Quantity (1,000 pounds)					
United States	1,990	1,664	2,154	1,692	4,662	2,714
Top exporters:						
New Zealand	0	0	4,542	2,471	32,577	28,885
Netherlands	17,528	17,233	18,230	14,233	27,506	---
Austria	34,806	31,953	12,788	19,000	17,825	6,996
Czech Republic	13,345	13,629	13,798	14,443	14,011	14,678
China	15,578	17,071	15,248	11,339	13,566	10,925
South Africa	17,195	12,752	6,961	6,334	5,863	6,557
South Korea	3,054	6,795	6,017	7,322	5,745	5,698
Belgium	524	846	1,220	1,758	2,396	---
Canada	2,421	1,343	767	1,805	1,983	2,835
Russia	2,282	2,517	5,089	3,236	1,651	2,907
All other	6,318	3,613	4,401	5,900	9,356	4,368
Total	115,043	109,415	91,214	89,533	137,141	86,562
	Value (1,000 dollars)					
United States	19,735	13,006	14,096	17,695	55,805	31,306
Top exporters:						
New Zealand	0	3	4,518	857	36,986	19,153
Netherlands	112,964	118,523	114,638	131,668	356,474	---
Austria	291,399	213,058	74,186	196,209	437,874	125,501
Czech Republic	114,899	85,561	68,343	125,679	284,739	256,636
China	136,027	124,311	91,162	115,493	349,941	199,221
South Africa	157,146	89,399	41,399	68,198	154,595	102,045
South Korea	27,314	47,401	35,608	66,485	140,757	89,306
Belgium	4,973	6,035	8,367	21,049	64,713	---
Canada	23,905	10,982	5,481	18,434	42,381	64,934
Russia	20,244	15,600	18,193	35,183	38,245	31,351
All other	56,479	23,882	27,017	58,993	211,076	46,996
Total	965,085	747,761	503,006	855,944	2,173,584	966,450

Note.--Because of rounding, figures may not add to total shown. Figures shown as “0” represent values greater than zero, but less than “500.” Not all countries report ferrovanadium exports in terms of contained vanadium, therefore, table data are for total quantity of ferrovanadium exported. Export data are not reported by Austria. Data for Austria are import data for all reporting countries of product from Austria (mirror exports).
Source: Global Trade Information Services, Inc., Global Trade Atlas, HTS subheading 7202.92.

Consumption

According to EVRAZ, a leading global vanadium producer, in 2018, global vanadium demand increased by 8 percent year-on-year to 100,000 metric tons. The growth led to increasing "scarcity" on global vanadium markets. China's decision to implement a new rebar standard with higher vanadium requirements (0.03 percent) was considered a significant demand driver. At the same time, the ban that was enacted in 2018 on imports of vanadium scrap, slag and waste to China limited the supply in the country. Limited global spare operating capacity among vanadium producers also drove prices higher. Ferrovanadium prices surged throughout the year in 2018, peaking in November at $124 per kilogram of contained vanadium, and the average price of ferrovanadium in 2018 increased by 150 percent from the previous year.[67]

[67] "Annual Report and Accounts—2018", EVRAZ plc, March, 15, 2009, p. 27, https://ar2018.evraz.com/en, accessed March 5, 2020. p. 27

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
85 FR 67 January 2, 2020	*Initiation of Five-Year (Sunset) Reviews*	https://www.govinfo.gov/content/pkg/FR-2020-01-02/pdf/2019-28344.pdf
85 FR 122 January 2, 2020	*Ferrovanadium From China and South Africa; Institution of Five-Year Reviews*	https://www.govinfo.gov/content/pkg/FR-2020-01-02/pdf/2019-28081.pdf

APPENDIX B

COMPANY-SPECIFIC DATA

RESPONSE CHECKLIST FOR U.S. PRODUCERS

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APPENDIX C

SUMMARY DATA COMPILED IN PRIOR PROCEEDINGS

Table C-1
Ferrovanadium: Summary data concerning the U.S. market, 1999-2001, January-June 2001, and January-June 2002

(Quantity=1,000 pounds of contained vanadium; value=1,000 dollars, unit values, unit labor costs, and unit expenses are per pound; period changes=percent, except where noted)

Item	Reported data			January-June		Period changes			
	1999	2000	2001	2001	2002	1999-2001	1999-2000	2000-2001	Jan.-June 2001-2002
U.S. consumption quantity:									
Amount	12,965	13,012	11,891	6,260	6,370	-8.3	0.4	-8.6	1.8
Producers' share (1)	67.2	57.6	52.8	55.9	55.5	-14.5	-9.7	-4.8	-0.4
Importers' share (1):									
China	6.4	11.3	8.3	11.4	1.7	2.0	4.9	-2.9	-9.7
South Africa	11.4	8.1	20.8	14.9	6.4	9.4	-3.3	12.7	-8.5
Subtotal	17.8	19.4	29.2	26.3	8.1	11.3	1.6	9.7	-18.2
Other sources	15.0	23.0	18.1	17.8	36.4	3.1	8.1	-4.9	18.6
Total imports	32.8	42.4	47.2	44.1	44.5	14.5	9.7	4.8	0.4
U.S. consumption value:									
Amount	65,239	61,738	45,430	24,060	21,563	-30.4	-5.4	-26.4	-10.4
Producers' share (1)	67.0	57.6	52.2	55.7	56.8	-14.8	-9.6	-5.3	1.1
Importers' share (1):									
China	5.9	10.2	8.2	11.2	1.6	2.3	4.2	-1.9	-9.6
South Africa	10.7	9.0	21.1	15.2	6.9	10.4	-1.7	12.1	-8.3
Subtotal	16.6	19.1	29.3	26.4	8.5	12.7	2.5	10.2	-17.9
Other sources	16.3	23.3	18.4	17.9	34.7	2.1	7.0	-4.9	16.8
Total imports	33.0	42.4	47.8	44.3	43.2	14.8	9.5	5.3	-1.1
U.S. imports from:									
China:									
Quantity	826	1,469	992	712	109	20.1	77.8	-32.5	-84.7
Value	3,861	6,270	3,744	2,691	349	-3.0	62.4	-40.3	-87.0
Unit value	$4.67	$4.27	$3.78	$3.78	$3.20	-19.2	-8.7	-11.5	-15.3
Ending inventory quantity	***	***	***	***	***	***	***	***	***
South Africa									
Quantity	1,483	1,059	2,475	931	405	66.9	-28.6	133.8	-56.5
Value	6,991	5,536	9,588	3,659	1,479	37.1	-20.8	73.2	-59.6
Unit value	$4.72	$5.23	$3.87	$3.93	$3.65	-17.8	10.9	-25.9	-7.1
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Subtotal:									
Quantity	2,309	2,528	3,466	1,644	514	50.1	9.5	37.1	-68.7
Value	10,852	11,806	13,333	6,350	1,829	22.9	8.8	12.9	-71.2
Unit value	$4.70	$4.67	$3.85	$3.86	$3.55	-18.2	-0.6	-17.7	-8.0
Ending inventory quantity	***	***	***	***	***	***	***	***	***
All other sources:									
Quantity	1,941	2,995	2,150	1,114	2,319	10.8	54.4	-28.2	108.2
Value	10,657	14,399	8,362	4,314	7,485	-21.5	35.1	-41.9	73.5
Unit value	$5.49	$4.81	$3.89	$3.87	$3.23	-29.2	-12.5	-19.1	-16.7
Ending inventory quantity	***	***	***	***	***	***	***	***	***
All sources:									
Quantity	4,249	5,523	5,617	2,758	2,834	32.2	30.0	1.7	2.8
Value	21,509	26,205	21,695	10,664	9,314	0.9	21.8	-17.2	-12.7
Unit value	$5.06	$4.74	$3.86	$3.87	$3.29	-23.7	-6.3	-18.6	-15.0
Ending inventory quantity	627	705	1,257	670	1,980	100.5	12.4	78.3	195.5

Table continued on next page.

Table C-1--Continued
Ferrovanadium: Summary data concerning the U.S. market, 1999-2001, January-June 2001, and January-June 2002

(Quantity=1,000 pounds of contained vanadium; value=1,000 dollars, unit values, unit labor costs, and unit expenses are per pound; period changes=percent, except where noted)

	Reported data					Period changes			
				January-June					Jan.-June
Item	1999	2000	2001	2001	2002	1999-2001	1999-2000	2000-2001	2001-2002
U.S. producers': (2)									
Average capacity quantity	***	***	***	***	***	***	***	***	***
Production quantity	***	***	***	***	***	***	***	***	***
Capacity utilization (1)	***	***	***	***	***	***	***	***	***
U.S. shipments:									
Quantity	8,716	7,489	6,274	3,502	3,536	-28.0	-14.1	-16.2	1.0
Value	43,730	35,533	23,735	13,396	12,249	-45.7	-18.7	-33.2	-8.6
Unit value	$5.02	$4.74	$3.78	$3.83	$3.46	-24.6	-5.4	-20.3	-9.4
Export shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Inventories/total shipments (1)	***	***	***	***	***	***	***	***	***
Production workers (3)	187	222	199	204	205	6.4	18.7	-10.4	0.5
Hours worked (1,000s) (3)	395	473	421	215	234	6.6	19.7	-11.0	8.8
Wages paid ($1,000s) (3)	7,937	9,525	8,718	4,359	4,804	9.8	20.0	-8.5	10.2
Hourly wages (3)	$20.09	$20.14	$20.71	$20.27	$20.53	3.1	0.2	2.8	1.3
Productivity (pounds per hour) (4)	***	***	***	***	***	***	***	***	***
Unit labor costs (4)	***	***	***	***	***	***	***	***	***
Net sales:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Cost of goods sold (COGS)	***	***	***	***	***	***	***	***	***
Gross profit or (loss)	***	***	***	***	***	***	***	***	***
SG&A expenses	***	***	***	***	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***	***	***	***	***
Capital expenditures	***	***	***	***	***	***	***	***	***
Unit COGS	***	***	***	***	***	***	***	***	***
Unit SG&A expenses	***	***	***	***	***	***	***	***	***
Unit operating income or (loss)	***	***	***	***	***	***	***	***	***
COGS/sales (1)	***	***	***	***	***	***	***	***	***
Operating income or (loss)/ sales (1)	***	***	***	***	***	***	***	***	***

(1) "Reported data" are in percent and "period changes" are in percentage points.

(2) Capacity and production data are for two firms: Bear and Shieldalloy. All other data are for Bear, Gulf, Shieldalloy, and USV. To avoid double-counting, U.S. shipments exclude Bear's reported shipments of toll-produced product. Instead, such shipments are reported as U.S. commercial shipments by the tollees.

(3) Includes data as reported by Gulf and USV for their production and related workers involved in the production of vanadium pentoxide.

(4) Calculated using data supplied by Bear and Shieldalloy only.

Note.--Financial data are reported on a fiscal year basis and may not necessarily be comperable to data reported on a calendar year basis. Because of rounding, figures may not add to the totals shown. Unit values and shares are calculated from the unrounded figures.

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

Table C-2
Ferrovanadium: Summary data for Bear and Shieldalloy, 1999-2001, January-June 2001, and January-June 2002

* * * * * * *

Table F-1 presents information on Bear's ferrovanadium tolling operations.

Table F-1
Ferrovanadium: Results of Bear's tolling operations, fiscal years 1999-2001, December 2000-May 2001, and December 2001-May 2002

* * * * * * *

As stated at the staff conference, Bear's business model does not envision competing with its suppliers of vanadium pentoxide for sales of ferrovanadium to downstream customers. Its own commercial sales account for a *** of its overall production and tolling of ferrovanadium, and its ***; also, Bear's operating results on its tolling ***. There are several reasons for this, including the ***.

As noted earlier, Bear receives vanadium pentoxide from its tolling partners and returns a ***[1] in the form of ferrovanadium. It does not take title to the vanadium contained within the vanadium pentoxide provided to it by its tolling partners. However, if ***, it is able to use or sell those excess vanadium units for its own purposes ***. Bear ***, and performs certain other services, including packing the ferrovanadium in bags marked with the company names of its tolling partners (such bags were shown at the staff conference). The tolling partners who actually sell the ferrovanadium in the commercial market arrange for shipment and delivery to their customers in the steel industry, and handle the billing and other paperwork related to the sale.

Table F-2 presents value-added ratios for each of the four firms separately and for Bear's tolling operations on behalf of Gulf and USV. The value-added calculation shows two ratios: (1) the sum of direct factory labor and factory overhead costs (conversion costs) to cost of goods sold (COGS), labeled Ratio A, and (2) conversion costs plus selling, general, and administrative expenses (SG&A) to the sum of COGS and SG&A, labeled Ratio B.

Table F-2
Ferrovanadium: Value-added ratios, by firm, 2001

* * * * * * *

Table F-3 presents the combined results of commercial operations on ferrovanadium of Shieldalloy and Bear, calculated from tables VI-3 and VI-5 (this presentation does not include data for Gulf, USV, or any tolling on their behalf by Bear). Table F-4 presents the consolidated results of commercial operations on ferrovanadium of Shieldalloy, Bear, and Gulf (in consolidating Bear with Gulf, Bear's tolling profit has been deducted from total COGS). Table F-5 presents combined results of commercial operations on ferrovanadium of Gulf and USV, including Bear's full tolling costs.

Table F-3
Ferrovanadium: Combined results of commercial operations of Bear and Shieldalloy, fiscal years 1999-2001, January-June 2001, and January-June 2002

* * * * * * *

[1] According to USV's tolling contract with Bear (attachment E to petitioners' posthearing brief), ***.

Table C-1
Ferrovanadium: Summary data concerning the U.S. market (with data for domestic producers/tollees) 2002-07, January-June 2007, and January-June 2008

(Quantity=1,000 pounds, value=1,000 dollars, unit values, unit labor costs, and unit expenses are per pound; period changes=percent, except where noted)

Item	Reported data								Period changes						
							January-June								Jan.-June
	2002	2003	2004	2005	2006	2007	2007	2008	2002-07	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
U.S. consumption quantity:															
Amount	12,606	11,625	15,381	12,397	13,403	13,327	6,422	7,851	5.7	-7.8	32.3	-19.4	8.1	-0.6	22.3
Producers' share (1)	55.9	74.5	56.7	60.8	64.8	63.4	58.1	50.3	7.5	18.6	-17.8	4.1	4.0	-1.4	-7.8
Importers' share (1):															
China	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.9	-0.9	0.0	0.0	-0.0	-0.0	0.0
South Africa	3.5	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-3.4	-3.5	0.0	0.0	0.0	0.1	0.0
Subtotal	4.4	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-4.2	-4.4	0.0	0.0	-0.0	0.1	0.0
All other sources	39.8	25.5	43.3	39.2	35.2	36.5	41.9	49.7	-3.2	-14.3	17.8	-4.1	-4.0	1.3	7.8
Total imports	44.1	25.5	43.3	39.2	35.2	36.6	41.9	49.7	-7.5	-18.6	17.8	-4.1	-4.0	1.4	7.8
U.S. consumption value:															
Amount	47,903	57,676	158,693	363,381	240,344	199,156	101,683	210,509	315.7	20.4	175.1	129.0	-33.9	-17.1	107.0
Producers' share (1)	57.7	74.2	59.0	62.4	60.8	67.6	56.5	54.2	9.9	16.4	-15.2	3.5	-1.6	6.8	-2.2
Importers' share (1):															
China	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.7	-0.7	0.0	0.0	0.0	-0.0	0.0
South Africa	3.4	0.0	0.0	0.0	0.0	0.2	0.0	0.0	-3.3	-3.4	0.0	0.0	0.0	0.2	0.0
Subtotal	4.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	-4.0	-4.2	0.0	0.0	0.0	0.2	0.0
All other sources	38.1	25.8	41.0	37.5	39.1	32.2	43.5	45.8	-5.9	-12.3	15.2	-3.5	1.6	-6.9	2.2
Total imports	42.3	25.8	41.0	37.6	39.2	32.4	43.5	45.8	-9.9	-16.4	15.2	-3.5	1.6	-6.8	2.2
U.S. shipments of imports from:															
China:															
Quantity	109	0	0	1	1	0	0	0	-100.0	-100.0	(2)	(2)	0.0	-100.0	(2)
Value	349	0	0	16	24	0	0	0	-100.0	-100.0	(2)	(2)	50.0	-100.0	(2)
Unit value	$3.20	(2)	(2)	$16.00	$24.00	(2)	(2)	(2)	(2)	(2)	(2)	(2)	50.0	(2)	(2)
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
South Africa:															
Quantity	441	0	0	0	0	17	0	0	-96.1	-100.0	(2)	(2)	(2)	(2)	(2)
Value	1,644	0	0	0	0	350	0	0	-78.7	-100.0	(2)	(2)	(2)	(2)	(2)
Unit value	$3.73	(2)	(2)	(2)	(2)	$20.59	(2)	(2)	452.3	(2)	(2)	(2)	(2)	(2)	(2)
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Subtotal:															
Quantity	550	0	0	1	1	17	0	0	-96.9	-100.0	(2)	(2)	0.0	1600.0	(2)
Value	1,993	0	0	16	24	350	0	0	-82.4	-100.0	(2)	(2)	50.0	1358.3	(2)
Unit value	$3.62	(2)	(2)	$16.00	$24.00	$20.59	(2)	(2)	468.2	(2)	(2)	(2)	50.0	-14.2	(2)
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
All other sources:															
Quantity	5,011	2,964	6,664	4,859	4,718	4,866	2,691	3,905	-2.9	-40.9	124.8	-27.1	-2.9	3.1	45.1
Value	18,263	14,903	65,107	136,445	94,075	64,120	44,281	96,324	251.1	-18.4	336.9	109.6	-31.1	-31.8	117.5
Unit value	$3.64	$5.03	$9.77	$28.08	$19.94	$13.18	$16.46	$24.67	261.6	38.0	94.3	187.4	-29.0	-33.9	49.9
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
All sources:															
Quantity	5,561	2,964	6,664	4,860	4,719	4,883	2,691	3,905	-12.2	-46.7	124.8	-27.1	-2.9	3.5	45.1
Value	20,256	14,903	65,107	136,461	94,099	64,470	44,281	96,324	218.3	-26.4	336.9	109.6	-31.0	-31.5	117.5
Unit value	$3.64	$5.03	$9.77	$28.08	$19.94	$13.20	$16.46	$24.67	262.5	38.0	94.3	187.4	-29.0	-33.8	49.9
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
U.S. producers'/tollees':															
Average capacity quantity (3)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Production quantity (3)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Capacity utilization (1) (3)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
U.S. shipments:															
Quantity	7,045	8,661	8,717	7,537	8,684	8,444	3,731	3,946	19.9	22.9	0.6	-13.5	15.2	-2.8	5.8
Value	27,647	42,773	93,586	226,920	146,245	134,686	57,402	114,185	387.2	54.7	118.8	142.5	-35.6	-7.9	98.9
Unit value	$3.92	$4.94	$10.74	$30.11	$16.84	$15.95	$15.39	$28.94	306.4	25.8	117.4	180.4	-44.1	-5.3	88.1
Export shipments:															
Quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Inventories/total shipments (1)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Production workers	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Hours worked (1,000s)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Wages paid ($1,000)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Hourly wages	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Productivity (lbs. per hour) (3)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit labor costs	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Net sales:															
Quantity	7,413	9,063	8,638	7,240	8,053	7,554	3,864	4,175	1.9	22.3	-4.7	-16.2	11.2	-6.2	8.0
Value	29,060	44,889	94,195	216,944	137,221	122,259	61,329	119,756	320.7	54.5	109.8	130.3	-36.7	-10.9	95.3
Unit value	$3.92	$4.95	$10.90	$29.96	$17.04	$16.18	$15.87	$28.68	312.9	26.3	120.2	174.8	-43.1	-5.0	80.7
Cost of goods sold (COGS)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Gross profit or (loss)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
SG&A expenses	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Operating income or (loss)	(10,773)	(8,479)	21,453	102,547	31,925	986	932	31,207	(2)	21.3	(2)	378.0	-68.9	-96.9	3248.4
Capital expenditures	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit COGS	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit SG&A expenses	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit operating income or (loss)	($1.45)	($0.94)	$2.48	$14.16	$3.98	$0.13	$0.24	$7.47	(2)	35.6	(2)	470.3	-72.0	-96.7	2999.0
COGS/sales (1)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Operating income or (loss)/ sales (1)	-37.1	-18.9	22.8	47.3	23.3	0.8	1.5	26.1	37.9	18.2	41.7	24.5	-24.0	-22.5	24.5

(1) "Reported data" are in percent and "period changes" are in percentage points.
(2) Not applicable.
(3) Data are for Bear and Metvan only.

Note.—Financial data are reported on a fiscal year basis and may not necessarily be comparable to data reported on a calendar year basis. Because of rounding, figures may not add to the totals shown. Unit values and shares are calculated from the unrounded figures.

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

Table C-2
Ferrovanadium: Summary data for producers Bear and Metvan, 2002-2007, January-June 2007 and January-June 2008

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Table C-1
Ferrovanadium: Summary data concerning the U.S. market, 2008-13, January to June 2013, and January to June 2014
(Quantity=1,000 pounds of 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						January-June		Calendar year						Jan-Jun
	2008	2009	2010	2011	2012	2013	2013	2014	2008-13	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
U.S. consumption quantity:															
Amount	14,902	8,632	13,401	14,190	15,638	15,312	7,996	8,514	2.8	(42.1)	55.2	5.9	10.2	(2.1)	6.5
Producers' share (fn1)	58.5	91.0	78.0	65.9	40.9	46.9	40.7	50.3	(11.6)	32.5	(13.0)	(12.1)	(25.0)	6.0	9.6
Importers' share (fn1):															
China	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0
South Africa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Subtotal, subject	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	(0.0)	0.0	0.0	0.1
All others sources	41.5	9.0	22.0	34.1	59.1	53.1	59.3	49.6	11.6	(32.5)	13.0	12.1	25.0	(6.0)	(9.7)
Total imports	41.5	9.0	22.0	34.1	59.1	53.1	59.3	49.7	11.6	(32.5)	13.0	12.1	25.0	(6.0)	(9.6)
U.S. consumption value:															
Amount	413,428	93,197	176,991	186,251	195,618	180,574	99,462	101,521	(56.3)	(77.5)	89.9	5.2	5.0	(7.7)	2.1
Producers' share (fn1)	60.2	86.1	75.9	64.1	42.3	48.5	42.4	50.6	(11.7)	25.9	(10.2)	(11.7)	(21.8)	6.2	8.3
Importers' share (fn1):															
China	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0
South Africa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Subtotal, subject	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	(0.0)	0.0	0.0	0.1
All others sources	39.8	13.9	24.1	35.9	57.7	51.5	57.6	49.2	11.7	(25.9)	10.2	11.7	21.8	(6.2)	(8.4)
Total imports	39.8	13.9	24.1	35.9	57.7	51.5	57.6	49.4	11.7	(25.9)	10.2	11.7	21.8	(6.2)	(8.3)
U.S. imports from:															
China:															
Quantity	0	0	1	0	0	0	0	0	fn2	fn2	fn2	(100.0)	fn2	fn2	fn2
Value	0	0	25	0	0	0	0	0	fn2	fn2	fn2	(100.0)	fn2	fn2	fn2
Unit value	---	---	22.35	---	---	---	---	---	fn2	fn2	fn2	(100.0)	fn2	fn2	fn2
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
South Africa:															
Quantity	0	0	0	0	0	0	0	11	fn2	fn2	fn2	fn2	fn2	fn2	fn2
Value	0	0	0	0	0	0	0	130	fn2	fn2	fn2	fn2	fn2	fn2	fn2
Unit value	---	---	---	---	---	---	---	12.19	fn2	fn2	fn2	fn2	fn2	fn2	fn2
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Subject:															
Quantity	0	0	1	0	0	0	0	11	fn2	fn2	fn2	(100.0)	fn2	fn2	fn2
Value	0	0	25	0	0	0	0	130	fn2	fn2	fn2	(100.0)	fn2	fn2	fn2
Unit value	---	---	22.35	---	---	---	---	12.19	fn2	fn2	fn2	(100.0)	fn2	fn2	fn2
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
All other sources:															
Quantity	6,180	777	2,952	4,840	9,237	8,125	4,739	4,219	31.5	(87.4)	279.8	63.9	90.8	(12.0)	(11.0)
Value	164,414	12,954	42,682	66,797	112,777	92,923	57,325	49,982	(43.5)	(92.1)	229.5	56.5	68.8	(17.6)	(12.8)
Unit value	26.61	16.66	14.46	13.80	12.21	11.44	12.10	11.85	(57.0)	(37.4)	(13.2)	(4.5)	(11.5)	(6.3)	(2.1)
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Total imports:															
Quantity	6,180	777	2,954	4,840	9,237	8,125	4,739	4,230	31.5	(87.4)	279.9	63.9	90.8	(12.0)	(10.7)
Value	164,414	12,954	42,707	66,797	112,777	92,923	57,325	50,113	(43.5)	(92.1)	229.7	56.4	68.8	(17.6)	(12.6)
Unit value	26.61	16.66	14.46	13.80	12.21	11.44	12.10	11.85	(57.0)	(37.4)	(13.2)	(4.6)	(11.5)	(6.3)	(2.1)
Ending inventory quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
U.S. producers':															
Average capacity quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Production quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Capacity utilization (fn1)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
U.S. shipments:															
Quantity	8,722	7,855	10,447	9,350	6,401	7,187	3,257	4,284	(17.6)	(9.9)	33.0	(10.5)	(31.5)	12.3	31.5
Value	249,014	80,243	134,284	119,454	82,841	87,651	42,137	51,408	(64.8)	(67.8)	67.3	(11.0)	(30.7)	5.8	22.0
Unit value	28.55	10.22	12.85	12.78	12.94	12.20	12.94	12.00	(57.3)	(64.2)	25.8	(0.6)	1.3	(5.8)	(7.2)
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	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Productivity (pounds contained vanadium per hour)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit labor costs	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
U.S. producers':															
Net sales:															
Quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Cost of goods sold (COGS)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Gross profit of (loss)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
SG&A expenses	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Capital expenditures	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit COGS	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit SG&A expenses	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit operating income or (loss)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
COGS/sales (fn1)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
U.S. producers' and tollees':															
Net sales:															
Quantity	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Cost of goods sold (COGS)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Gross profit of (loss)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
SG&A expenses	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Capital expenditures	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit COGS	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit SG&A expenses	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Unit operating income or (loss) (fn3)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
COGS/sales (fn1)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***

Notes:

fn1.--Reported data are in percent and period changes are in percentage points.
fn2.--Undefined.
fn3.--Toller's operating income has been added to the U.S. producers' and tollees' operating income

Note.—Reported production and employment data are based on data submitted by U.S. producers (including toll production). U.S. shipment, inventory, and financial data include U.S. producers and tollee operations.

Source: Compiled from adjusted official commerce statistics and from data submitted in response to Commission questionnaires.

APPENDIX D

PURCHASER QUESTIONNAIRE RESPONSES

As part of their response to the notice of institution, interested parties were asked to provide a list of three to five leading purchasers in the U.S. market for the domestic like product. A response was received from domestic interested parties and it named the following five firms as the top purchasers of ferrovanadium: ***. Purchaser questionnaires were sent to these five firms and four firms (***) provided responses which are presented below.

1. Have there been any significant changes in the supply and demand conditions for ferrovanadium that have occurred in the United States or in the market for ferrovanadium in China and South Africa since January 1, 2014?

Purchaser	Changes that have occurred
***	***
***	***
***	***
***	***

2. Do you anticipate any significant changes in the supply and demand conditions for ferrovanadium in the United States or in the market for ferrovanadium in China and South Africa within a reasonably foreseeable time?

Purchaser	Anticipated changes
***	***
***	***
***	***
***	***