Ferrovanadium from South Korea

Investigation No. 731-TA-1315 (Review)

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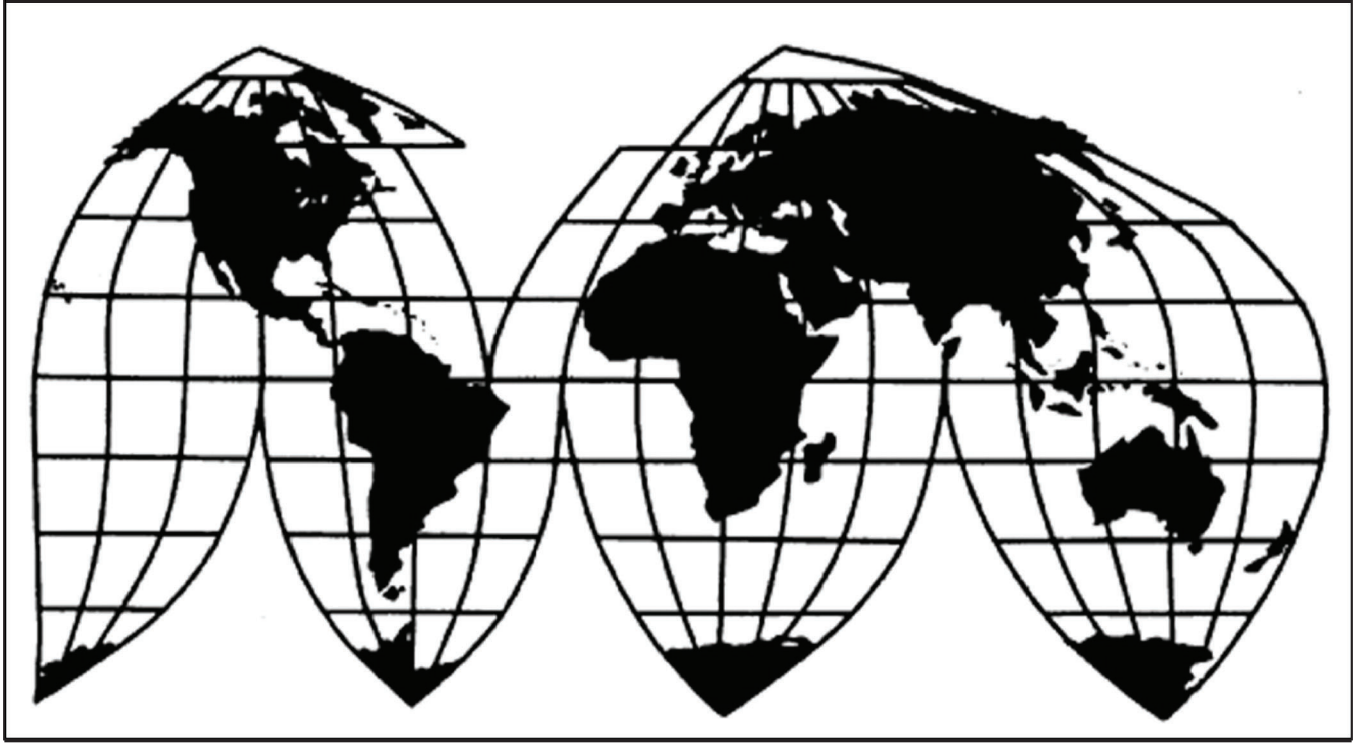
U.S. International Trade Commission



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U.S. International Trade Commission

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UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation No. 731-TA-1315 (Review)

Ferrovanadium from South Korea

DETERMINATION

On the basis of the record[1] developed in the subject five-year review, the United States International Trade Commission ("Commission") determines, pursuant to the Tariff Act of 1930 ("the Act"), that revocation of the antidumping duty order on ferrovanadium from South Korea 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 this review on April 1, 2022 (87 FR 19129) and determined on July 5, 2022 that it would conduct an expedited review (87 FR 63090, October 18, 2022).

[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 this five-year review, we determine under section 751(c) of the Tariff Act of 1930, as amended ("the Tariff Act"), that revocation of the antidumping duty order on ferrovanadium from South Korea would be likely to lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time.

I. Background

Original Investigation. On March 28, 2016, AMG Vanadium LLC ("AMG"), Evergreen Metallurgical Company d/b/a Bear Metallurgical Company ("Bear"), Gulf Chemical and Metallurgical Corporation ("Gulf"), and Evraz Stratcor, Inc. ("Evraz Stratcor") (collectively Vanadium Producers and Reclaimers Association ("VPRA")) filed an antidumping duty petition regarding imports of ferrovanadium from South Korea.[1] In May 2017, the Commission determined that an industry in the United States was materially injured by reason of imports of ferrovanadium from South Korea that had been found by the U.S. Department of Commerce ("Commerce") to be sold in the United States at less-than-fair-value ("LTFV").[2] Commerce subsequently published the antidumping duty order on May 15, 2017.[3]

Current Review. The Commission instituted this review on April 1, 2022.[4] Domestic interested parties VPRA and its members, AMG, a U.S. producer, and U.S. Vanadium LLC ("U.S.

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[1] Confidential Report, INV-UU-067 (June 23, 2022) ("CR") at I-3; *Ferrovanadium from South Korea*, Inv. 731-TA-1315 (Review), USITC Pub. 5384 (Nov. 2022) ("PR") at I-3. For consistency, we use the term "South Korea" throughout, including where in the prior proceeding the term "Korea" was used.

[2] *Ferrovanadium from Korea*, Inv. No. 731-TA-1315 (Final), USITC Pub. 4683 (May 2017) at 3 ("*Original Determination*").

[3] *Ferrovanadium from the Republic of Korea: Antidumping Duty Order*, 82 Fed. Reg. 22309 (May 15, 2017).

[4] *Ferrovanadium from South Korea; Institution of a Five-Year Review*, 87 Fed. Reg. 19129 (Apr. 1, 2022).

Vanadium"), a U.S. wholesaler,[5] jointly submitted a response to the notice of institution (collectively "Domestic Interested Parties").[6] No respondent party responded to the notice of institution or participated in this review. On July 5, 2022, 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.[7] Finding no other circumstances warranted a full review, the Commission determined that it would conduct an expedited review of the antidumping duty order.[8] Domestic Interested Parties submitted joint final comments, pursuant to Commission rule 207.62(d)(1), regarding the determination that the Commission should reach, on October 21, 2022.[9]

U.S. industry data in this review are based on data provided by the Domestic Interested Parties in their response to the notice of institution, which is estimated to account for *** percent of total U.S. ferrovanadium production in 2021.[10] U.S. import data and related information are based on Commerce's official import statistics.[11] Foreign industry data and related information are based on information submitted by Domestic Interested Parties in their

[5] U.S. Vanadium Holding Company LLC, which operates via its wholly owned subsidiary U.S. Vanadium, acquired Evraz Stratcor, a petitioner in the original investigation, in 2019. Following the acquisition, U.S. Vanadium replaced Evraz Stratcor as a member of the VPRA. CR/PR at I-2, n.7.

In 2017, Gulf, another petitioner formerly part of the VPRA, was acquired by Gladieux Metals Recycling LLC ("Gladieux"). According to the Domestic Interested Parties, Gladieux is not producing ferrovanadium at the facility as of May 2022. CR/PR at Table I-4.

[6] *See Domestic Interested Parties' Response to the Notice of Institution*, EDIS Doc. 769600 (May 3, 2022) ("*Domestic Response*"); CR/PR at I-2.

[7] *Explanation of Commission Determination on Adequacy*, EDIS Doc. 775519 (July 15, 2022).

[8] *Ferrovanadium from South Korea; Scheduling of an Expedited Five-Year Review*, 87 Fed. Reg. 63090 (Oct. 18, 2022).

[9] *Domestic Interested Parties' Final Comments*, EDIS Doc. 782773 (Oct. 21, 2022).

[10] *See* CR/PR at Tables I-2, I-5, and I-7; *Domestic Response* at 37.

[11] *See* CR/PR at Tables I-6 and I-7.

response to the notice of institution, information from the original investigation, and publicly available information compiled by the Commission.[12] Additionally, three firms, ***, identified by the Domestic Interested Parties as U.S. purchasers of ferrovanadium, responded to the Commission's adequacy phase questionnaire.[13]

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."[14] 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."[15] 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.[16]

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[12] *See* CR/PR at I-15-21. The record also includes the report from the 2020 third reviews of the antidumping duty orders on ferrovanadium from China and South Africa. Confidential Report, INV-SS-037 (March 25, 2020); *Ferrovanadium from China and South Africa*, Inv. No. 731-TA-986-987 (Third Review), USITC Pub. 5099 (Aug. 2020) ("*China/South Africa Reviews*").

[13] CR/PR at D-3.

[14] 19 U.S.C. § 1677(4)(A).

[15] 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. Dep't of Commerce*, 36 F. Supp. 2d 380, 383 (Ct. Int'l Trade 1998); *Nippon Steel Corp. v. United States*, 19 CIT 450, 455 (1995); *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).

[16] *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).

Commerce has defined the scope of the antidumping duty order in this five-year review as follows:

> {A}ll ferrovanadium regardless of grade (*i.e.*, percentage of contained vanadium), chemistry, form, shape, or size. Ferrovanadium is an alloy of iron and vanadium. Ferrovanadium is classified under Harmonized Tariff Schedule of the United States (HTSUS) item number 7202.92.0000.[17]

Ferrovanadium is an alloy used to add vanadium to molten steel to enhance the strength and wear resistance of 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 pipelines, concrete reinforcing bars, structural shapes and plates for construction, and in automobile components. Steelmaking is the largest use of vanadium and accounts for almost all vanadium consumption worldwide.

Ferrovanadium is commonly produced in grades having a vanadium content of 40 to 60 percent or 75 to 85 percent. Regardless of grade, commercial practice is to quote the price of ferrovanadium on the basis of the contained vanadium.[18]

In the original investigation, the parties did not dispute the definition of the domestic like product.[19] In its preliminary determination, the Commission considered the traditional six factors and defined a single domestic like product consisting of ferrovanadium that was

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[17] *Ferrovanadium from the Republic of Korea: Final Results of the Expedited Sunset Review of the Antidumping Duty Order*, 87 Fed. Reg. 48151 (Aug. 8, 2022); *Issues and Decision Memorandum for the Expedited Final Results of the Sunset Review of the Antidumping Duty Order on Ferrovanadium from the Republic of Korea*, EDIS Doc. 777683 (Aug. 1, 2022) ("*Commerce I&D Memorandum*") at 2.

[18] CR/PR at I-6.

[19] *Original Determination*, USITC Pub. 4683 at 6.

coextensive with the scope of the investigation.[20] In its final determination, the Commission noted the absence of any information or argument suggesting a different result and again defined a single domestic like product coextensive with Commerce's scope.[21]

In this review, the record contains no new information to warrant revisiting the definition of the domestic like product in the original determination, and Domestic Interested Parties agree with the definition of the domestic like product adopted by the Commission in the original investigation.[22] Accordingly, we again define a single domestic like product consisting of all ferrovanadium, coextensive with Commerce's scope.

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."[23] In defining the domestic industry, the Commission's general practice has been to include in the industry producers of all domestic production of the like product, whether toll-produced, captively consumed, or sold in the domestic merchant market.

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[20] *Original Determination*, USITC Pub. 4683 at 75-6. Specifically, the Commission found that all grades of ferrovanadium had similar physical characteristics and were generally used as an alloy in the production of steel. *Id.* at 5. While recognizing that some purchasers preferred a particular grade of ferrovanadium, the Commission found that all grades of ferrovanadium were interchangeable. *Id.* Although the two domestic producers utilized different production processes, the Commission found that both reported the capability to manufacture other grades of ferrovanadium. *Id.* at 5-6. Finally, the Commission found that ferrovanadium was primarily sold to steel manufacturers and priced based on the contained vanadium content. *Id.* at 6.

[21] *Original Determination*, USITC Pub. 4683 at 6.

[22] *Domestic Response* at 41. *See generally* CR/PR at I-11-12.

[23] 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.

In the original investigation, the Commission defined a single domestic industry comprised of all domestic producers of ferrovanadium (*i.e.*, Bear and AMG).[24] Further, the Commission did not include tollees (*i.e.*, Gulf and Evraz), which supplied vanadium pentoxide to producers, retained title to the product during conversion operations, and negotiated the sale of the resulting ferrovanadium in the domestic industry, explaining that they did not manufacture ferrovanadium and were thus not domestic producers of the domestic like product under the statute.[25] There were no related parties or other domestic industry issues.[26]

In the current review, Domestic Interested Parties state that they agree with the definition of the domestic industry that the Commission adopted in the original investigation.[27] In the absence of any new information on the record indicating that the activities of tollees have changed since the original investigation, we again do not include them in the domestic industry. There are no known related parties in this review.[28] Consistent with our definition of the domestic like product, we define the domestic industry as all U.S. producers of ferrovanadium.

[24] *Original Determination*, USITC Pub. 4683 at 6-7.
[25] *Original Determination*, USITC Pub. 4683 at 6.
[26] *Original Determination*, USITC Pub. 4683 at 7.
[27] *Domestic Response* at 41.
[28] *Domestic Response* at 34.

III. Revocation of the Antidumping Duty Order 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 duty order unless: (1) it makes a determination that dumping is likely to continue or recur, and (2) the Commission makes a determination that revocation of the antidumping duty order "would be likely to lead to continuation or recurrence of material injury within a reasonably foreseeable time."[29] 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."[30] Thus, the likelihood standard is prospective in nature.[31] The U.S. Court of International Trade ("CIT") 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.[32]

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[29] 19 U.S.C. § 1675a(a).

[30] 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.

[31] 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.

[32] *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."[33] 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."[34]

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."[35] 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).[36] The statute further provides

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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'").

[33] 19 U.S.C. § 1675a(a)(5).

[34] 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*.

[35] 19 U.S.C. § 1675a(a)(1).

[36] 19 U.S.C. § 1675a(a)(1). Commerce has not made any duty absorption findings with respect to the order under review. *Commerce I&D Memorandum* at 4-6.

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.[37]

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 or relative to production or consumption in the United States.[38] 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.[39]

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

[37] 19 U.S.C. § 1675a(a)(5). Although the Commission must consider all factors, no one factor is necessarily dispositive. SAA at 886.

[38] 19 U.S.C. § 1675a(a)(2).

[39] 19 U.S.C. § 1675a(a)(2)(A-D).

United States at prices that otherwise would have a significant depressing or suppressing effect on the price of the domestic like product.[40]

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.[41] 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 which any improvement in the state of the domestic industry is related to the order under review and whether the industry is vulnerable to material injury upon revocation.[42]

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[40] *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.

[41] 19 U.S.C. § 1675a(a)(4).

[42] 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.

No respondent interested party participated in this expedited review. The record, therefore, contains limited new information with respect to the ferrovanadium industry in South Korea and the United States during the period of review. Accordingly, for our determination, we rely as appropriate on the facts available from the original investigation and the limited new information in the record of this review.

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."[43] The following conditions of competition inform our determination.

1. Demand Conditions

Original Investigation. The Commission found that U.S. demand for ferrovanadium depended on the demand for downstream products in which ferrovanadium is used, primarily by the steel industry as an alloying agent when producing certain types of steel, particularly high strength low-alloy steel.[44] The Commission also found that there were few economically viable substitutes for ferrovanadium.[45] Noting that a majority of domestic producers and a plurality of importers had reported a decrease in demand, the Commission observed that the decrease was generally attributed to a decrease in demand for U.S. steel.[46] Apparent U.S.

[43] 19 U.S.C. § 1675a(a)(4).
[44] *Original Determination*, USITC Pub. 4683 at 11.
[45] *Original Determination*, USITC Pub. 4683 at 11.
[46] *Original Determination*, USITC Pub. 4683 at 12.

consumption of ferrovanadium by quantity of contained vanadium increased from *** pounds in 2013 to *** pounds in 2014 but decreased to *** pounds in 2015.[47]

Current Review. According to Domestic Interested Parties, demand for ferrovanadium is still largely determined by U.S. steel production, which increased irregularly by 5.1 percent from 2017 to 2021.[48] They also contend that there remain few economical substitutes for ferrovanadium in the production of steel, although a temporary increase in the price of ferrovanadium caused the substitution of ferroniobium in the production of certain steel products in 2018 and into 2019.[49] In 2021, apparent U.S. consumption of ferrovanadium was *** pounds.[50]

Two responding purchasers, ***, reported that ***.[51]

2. Supply Conditions

Original Investigation. The Commission found that the domestic industry was the largest supplier to the U.S. market during the period of investigation, with a share of apparent U.S. consumption ranging from *** percent in 2013 to *** percent in 2015.[52] It noted that Bear and AMG accounted for all domestic production of ferrovanadium.[53]

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[47] *Original Determination*, USITC Pub. 4683 at 12; *Confidential Original Determination,* EDIS Doc. 611864 (May 16, 2017) ("*Confidential Original Determination*") at 16.

[48] *Domestic Response* at 6.

[49] *Domestic Response* at 6-7.

[50] CR/PR at Table I-7. We recognize that apparent U.S. consumption is likely understated because Bear, the only other U.S. producer of ferrovanadium besides AMG, did not participate in this review.

[51] CR/PR at D-3-5.

[52] *Original Determination*, USITC Pub. 4683 at 13; *Confidential Original Determination* at 17.

[53] *Original Determination*, USITC Pub. 4683 at 6-7.

The Commission found that subject imports' market share had increased during the period of investigation from *** percent of apparent U.S. consumption in 2013 to *** percent in 2015.[54] It found that nonsubject imports' market share had declined from *** percent of apparent U.S. consumption in 2013 to *** percent in 2015.[55] The largest sources of nonsubject imports were the Czech Republic, Austria, and Canada; the tollee *** accounted for *** percent of nonsubject imports over the period.[56] Finally, the Commission noted that the United States had imposed antidumping duty orders on ferrovanadium imported from China and South Africa in January 2003.[57]

Current Review. The domestic industry was *** source of supply to the U.S. market in 2021, with U.S. shipments of *** pounds of ferrovanadium accounting for *** percent of apparent U.S. consumption that year.[58] There have been several changes to the domestic industry since the original investigation. Bear underwent bankruptcy in 2016 and was acquired by Yildamen Holding.[59] In 2018, AMG invested $35 million to increase the capacity of its spent catalyst recycling operations in Ohio, used to make inputs for ferrovanadium production, by 30 percent.[60] Domestic Interested Parties expect that AMG's new facility will double its capacity to produce ferrovanadium, with production expected to begin in mid-2022.[61]

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[54] *Original Determination*, USITC Pub. 4683 at 13; *Confidential Original Determination* at 17-18.
[55] *Original Determination*, USITC Pub. 4683 at 13; *Confidential Original Determination* at 18.
[56] *Original Determination*, USITC Pub. 4683 at 13; *Confidential Original Determination* at 18.
[57] *Original Determination*, USITC Pub. 4683 at 13.
[58] CR/PR at Table I-7. We recognize that the domestic industry data may be understated because Bear, the only other U.S. producer of ferrovanadium besides AMG, did not participate in this review.
[59] CR/PR at Table I-4.
[60] CR/PR at Table I-4.
[61] *Domestic Response* at 30.

Subject imports were *** source of supply in 2021, with 45,000 pounds of subject imports from South Korea accounting for *** percent of apparent U.S. consumption that year.[62] Nonsubject imports were *** source of supply in 2021, totaling 6.3 million pounds and accounting for *** percent of apparent U.S. consumption that year.[63] The largest sources of nonsubject ferrovanadium during the review period were Canada, the Czech Republic, and Austria.[64]

Two responding purchasers reported ***.[65] Responding purchaser *** reported disruptions in operations of two U.S. producers, while responding purchaser ***.[66]

3. Substitutability and Other Conditions

Original Investigation. The Commission found a high degree of substitutability between domestically produced ferrovanadium and subject imports and that price was an important factor in purchasing decisions.[67]

The Commission also found that most U.S. producers and tollees indexed their ferrovanadium prices to published market prices, with the large majority of responding U.S. producers, tollees, and importers reportedly using published spot market pricing from *CRU Ryan's Notes* to set ferrovanadium prices for both spot sales and contracts.[68] *** U.S.

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

[63] CR/PR at Table I-7. We recognize that U.S. import quantity data are likely understated due to lack of available quantity data for the Czech Republic. Based on value, imports from the Czech Republic as a share of total imports ranged between 14.0 to 42.4 percent during 2016-21 and accounted for 26.8 percent in 2021. CR/PR at Table I-6, Note.

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

[65] CR/PR at D-3-4. Responding purchaser *** reported that ***. *Id.* at D-3, D-5.

[66] CR/PR at D-3-5. *** also reported that ***. *Id.* Similarly, *** reported that ***. *Id.* Finally, *** reported that ***. *Id.* at D-4-5.

[67] *Original Determination*, USITC Pub. 4683 at 14.

[68] *Original Determination*, USITC Pub. 4683 at 15; *Confidential Original Determination* at 20.

producers/tollees' shipments involved contracts while *** U.S. importers' shipments of subject imports involved spot sales.[69]

Current Review. According to Domestic Interested Parties, the U.S. market for ferrovanadium remains highly price-sensitive based on the fungible nature of ferrovanadium and the paramount importance of price in purchasing decisions.[70] The record in this review contains no new information to indicate that the degree of substitutability between the domestic like product and subject imports or the importance of price in purchasing decisions has changed since the original investigation.[71] Accordingly, we find a high degree of substitutability between domestically produced ferrovanadium and subject imports and that price continues to be an important factor in purchasing decisions.

The record indicates that spot market pricing published in industry publications like *CRU* (formerly, "*CRU Ryan's Notes*") continue to be used in the U.S. market as benchmarks for pricing formulas in long-term sales contracts as well as for spot sales.[72]

C. Likely Volume of Subject Imports

Original Investigation. The Commission found that the volume of subject imports and the increase in that volume were significant in both absolute terms and relative to domestic consumption.[73] Subject import volume increased from 784,000 pounds contained vanadium in 2013 to 1.2 million pounds contained vanadium in 2014 and 1.6 million pounds contained

[69] *Original Determination*, USITC Pub. 4683 at 15; *Confidential Original Determination* at 20.
[70] *Domestic Response* at 8.
[71] *See Domestic Response* at 7-8.
[72] *Domestic Response* at 8.
[73] *Original Determination*, USITC Pub. 4683 at 16.

vanadium in 2015, a level 105.6 percent higher than in 2013.[74] Subject import volume increased by 29.6 percent from 2014 to 2015, even as apparent U.S. consumption *** by *** percent over the same period.[75] As a share of apparent U.S. consumption, subject imports increased from *** percent in 2013 to *** percent in 2014 and *** percent in 2015, a level *** percentage points higher than in 2013.[76]

Current Review. The record in this five-year review indicates that the order has had a disciplining effect on subject import volumes during the period of review. During the period of review, the information available shows that subject import volumes decreased from 657,000 pounds in 2016 to 45,000 pounds in 2021.[77] Subject import volume peaked during the original investigation at 1.6 million pounds in 2015.[78]

The record in this expedited review contains limited information on the ferrovanadium industry in South Korea, as no producer or exporter of subject merchandise participated in this review. The information available indicates that subject producers in South Korea have the means and incentive to increase exports of subject merchandise to the U.S. market if the order were revoked. Domestic Interested Parties provided a list of three possible producers of ferrovanadium in South Korea during the period of review and claim that there may be *** additional producers *** if the order were revoked.[79] The record indicates that SeAH M&S, a

[74] *Original Determination*, USITC Pub. 4683 at 16.
[75] *Original Determination*, USITC Pub. 4683 at 16; *Confidential Original Determination* at 22.
[76] *Original Determination*, USITC Pub. 4683 at 16; *Confidential Original Determination* at 22.
[77] CR/PR at Table I-6.
[78] *Original Determination*, USITC Pub. 4683 at 16.
[79] CR/PR at I-15; *Domestic Response* at 12-13, Exhibit 5.

South Korean producer of ferroalloy products, began production of ferrovanadium in December 2019, with a capacity of 800 metric tons per year.[80]

According to Domestic Interested Parties, the three current South Korean producers of ferrovanadium possess production capacity of *** metric tons, and two of the producers possessed excess capacity of *** metric tons in 2019.[81] They also contend that South Korean producers have access to multiple sources of vanadium-bearing raw materials, primarily from China and Brazil, with which they could increase production of ferrovanadium.[82] Global Trade Atlas ("GTA") data show that South Korea was the fifth largest global exporter of ferrovanadium in 2021[83] and increased its exports of such products from 6.0 million pounds in 2016 to 8.5 million pounds in 2021.[84] Thus, the available information indicates that the subject industry in South Korea remains large and export oriented.

Available information also indicates that the U.S. market remains attractive to subject producers. Subject imports were present in the U.S. market in three of six years during the period of review, accounting for *** percent of apparent U.S. consumption in 2021, indicating that subject producers have maintained customers in the U.S. market.[85] According to Domestic Interested Parties, the higher ferrovanadium prices available in the United States relative to Europe, to which South Korea producers currently direct 69.9 percent of their exports, would

[80] CR/PR at Table I-8; *Domestic Response* at 12, Exhibit 4.
[81] *Domestic Response* at 12, Exhibit 5.
[82] *Domestic Response* at 16.
[83] CR/PR at Table I-12.
[84] CR/PR at Table I-9.
[85] CR/PR at Table I-6.

encourage South Korean producers to redirect exports from Europe to the United States in the event of revocation.[86]

Given the significant volume and increasing market share of subject imports during the original investigation, the disciplining effect of the order, the subject industry's substantial capacity and exports, and the attractiveness of the United States as an export market, we find that the volume of subject imports would likely be significant, both in absolute terms and relative to U.S. consumption, if the order were revoked.

D. Likely Price Effects

Original Investigation. The Commission found a high degree of substitutability between domestically produced ferrovanadium and subject imports, and that price was an important factor in purchasing decisions.[87] It found that the subject imports undersold the domestic like product in ten of 14 possible quarterly comparisons, involving *** pounds of subject imports, at margins ranging from less than 0.05 to 16.7 percent, and oversold the domestic product in the remaining four comparisons, involving *** pounds of subject imports, at margins ranging from 0.4 to 36.6 percent.[88] Thus, the Commission found that the data for the end of the period showed a mixed pattern of underselling and overselling.[89]

The Commission found that generally, prices for subject and domestic ferrovanadium decreased during the period of investigation, with particularly severe price declines during the

[86] *Domestic Response* at 18, Exhibit 2.
[87] *Original Determination*, USITC Pub. 4683 at 16.
[88] *Original Determination*, USITC Pub. 4683 at 17; *Confidential Original Determination* at 23-24.
[89] *Original Determination*, USITC Pub. 4683 at 17; *Confidential Original Determination* at 23-24.

period leading up to the filing of the petition.[90] Noting that most domestic producer and tollee sales of ferrovanadium were made pursuant to contracts with formulas setting prices based on discounts off spot market prices, the Commission found that increasing volumes of subject imports at declining prices pushed down spot market prices and, by extension, formula contract prices for the domestic like product during 2015.[91] Further, the Commission found that declines in raw material prices, declining U.S. steel production, and nonsubject imports could not explain the magnitude of the decline in domestic prices in 2015.[92] Accordingly, the Commission concluded that subject imports had significant price-depressing effects on prices for the domestic like product.[93]

Current Review. As previously discussed, we continue to find a high degree of substitutability between the domestic like product and subject imports and that price is an important factor in purchasing decisions. The record in this expedited review does not contain new product-specific pricing information. We have found, however, that the volume of subject imports would likely increase significantly upon revocation of the order. Because price is an important factor in purchasing decisions and ferrovanadium is highly substitutable regardless of source, we find that, if the order were revoked, the likely significant volume of low-priced subject imports would likely undersell the domestic like product, as they did during the original investigation. This would likely result in subject imports driving down spot market prices and, in turn, the domestic producers' formula-based contract prices, as they did during the original

[90] *Original Determination*, USITC Pub. 4683 at 17.
[91] *Original Determination*, USITC Pub. 4683 at 18.
[92] *Original Determination*, USITC Pub. 4683 at 19.
[93] *Original Determination*, USITC Pub. 4683 at 19-20.

investigation (or otherwise depress or suppress domestic producer prices) and/or gain sales and market share at the expense of the domestic industry. Accordingly, we find that if the order were revoked, subject imports would likely have significant price effects.

E. Likely Impact

Original Investigation. The Commission found that significant and increasing volumes of subject imports that were good substitutes for the domestic like product entered the U.S. market between 2013 and 2015, depressing prices for the domestic like product in 2015 as demand for ferrovanadium was declining.[94] As a consequence, the Commission explained, the domestic industry's revenues and financial performance were worse than they otherwise would have been in 2015.[95] The Commission thus concluded that subject imports had a significant impact on the domestic industry.[96]

The Commission also considered whether there were other factors that may have affected the domestic industry to ensure that they did not attribute injury from those other factors to subject imports. The Commission referenced its previous findings that the decline in raw material prices, U.S. steel production, and demand for ferrovanadium could not fully explain the magnitude of the declines in ferrovanadium domestic prices.[97] Furthermore, the Commission observed that since the volume and market share of nonsubject imports fell during the period of investigation and the prices of nonsubject imports were generally higher than

[94] *Original Determination*, USITC Pub. 4683 at 22.
[95] *Original Determination*, USITC Pub. 4683 at 22.
[96] *Original Determination*, USITC Pub. 4683 at 22.
[97] *Original Determination*, USITC Pub. 4683 at 22.

those of the domestic like product and subject imports, the declines in the domestic industry's revenues and financial performance could not be explained by nonsubject imports.[98]

Current Review. The record in this expedited review contains limited new information on the domestic industry's condition, consisting of data provided by the Domestic Interested Parties in their response to the notice of institution.

The information available indicates that the domestic industry's performance in 2021 was generally stronger than its performance in 2015, the last full year of the original investigation.[99] The domestic industry's capacity and production were lower in 2021 than in 2015, but its capacity utilization rate was higher. Specifically, in 2021, the domestic industry's production capacity was *** pounds, its production was *** pounds, and its capacity utilization rate was *** percent.[100] The industry's U.S. shipments were *** pounds, with a value of $***, and its net sales revenues were $*** in 2021, which were higher than in 2015.[101] Similarly, the industry's gross profit of $*** in 2021 was higher than in 2015, and its operating income of $***, equivalent to *** percent of net sales, was a significant improvement over 2015.[102] This limited information is insufficient for us to make a finding as to whether the domestic industry

[98] *Original Determination*, USITC Pub. 4683 at 23.

[99] We recognize that domestic industry coverage is not identical for the different periods. In the original investigation, the Commission received U.S. producer questionnaire responses from producers AMG and Bear, as well as from seven tollees. *Original Determination*, USITC Pub. 4683 at 3. The 2021 domestic industry data do not include data from Bear.

[100] CR/PR at Table I-5. In 2015, the domestic industry's capacity was *** pounds, its production was *** pounds, and its capacity utilization rate was *** percent. *Id.*

[101] CR/PR at Table I-5. In 2015, the domestic industry's U.S. shipments were *** pounds, valued at $***, and its net sales revenues were $***. *Id.*

[102] CR/PR at Table I-5. In 2015, the domestic industry's gross profit was $*** and its operating income was $***, equivalent to *** percent of net sales. *Id.*

is vulnerable to the continuation or recurrence of material injury in the event of revocation of the order.

Based on the information available in this review, we find that revocation of the order would likely lead to a significant volume of subject imports that would likely significantly undersell the domestic like product, resulting in increasing volumes of low-priced subject imports that would likely capture sales and market share from the domestic industry and/or depress or suppress spot market prices and, in turn, the domestic producers' formula-based contract prices. Consequently, subject imports would likely have a significant impact on the production, shipments, sales, market share, and/or revenue of the domestic industry. These declines would likely have a direct adverse impact on the domestic industry's profitability and employment levels, as well as its ability to raise capital and to make and maintain necessary capital investments.

We have also considered the role of factors other than subject imports, including the presence of nonsubject imports, so as not to attribute injury from other factors to subject imports. Although nonsubject imports have increased their presence in the U.S. market since the original investigation and accounted for *** percent of apparent U.S. consumption in 2021,[103] the record provides no indication that the presence of nonsubject imports would prevent subject imports from entering the U.S. market in significant volumes through significant underselling upon revocation of the order. Given the fact that the domestic industry supplies *** of apparent U.S. consumption, as well as the high degree of substitutability between

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

subject imports and the domestic like product and the importance of price in purchasing decisions, we find it likely that the increase in low-priced subject imports would likely depress or suppress domestic producer prices and/or capture sales and market share from domestic producers. Consequently, we find that subject imports would likely cause adverse effects on the domestic industry that are distinct from any by nonsubject imports in the event of revocation.

We have also considered the likely effects of demand trends on the domestic industry based on the limited information on this record. We recognize that apparent U.S. consumption was lower in 2021, at *** pounds, than in 2015, at *** pounds.[104] Nevertheless, neither Domestic Producers nor the responding purchasers reported that demand had declined during the period of review. Furthermore, the domestic industry was able to improve its capacity utilization and financial performance in 2021 relative to 2015, notwithstanding any decline in demand.[105] To the extent that apparent U.S. consumption may decline in the reasonably foreseeable future, the likely significant volume of low-priced subject imports would likely exacerbate any negative effects on the domestic industry's trade and financial performance.

In sum, we conclude that if the order were revoked, the likely volume of subject imports from South Korea would likely have a significant impact on the domestic industry within a reasonably foreseeable time.

[104] *See* CR/PR at Table I-7.
[105] *See* CR/PR at Table I-5.

IV. Conclusion

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

Information obtained in this review

Background

On April 1, 2022, 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 a review to determine whether revocation of the antidumping duty order on ferrovanadium from South Korea would likely lead to the continuation or recurrence of material injury to a domestic industry.[2] All interested parties were requested to respond to this notice by submitting certain information requested by the Commission.[3] [4] Table I-1 presents information relating to the background and schedule of this proceeding:

Table I-1
Ferrovanadium: Information relating to the background and schedule of this proceeding

Effective date	Action
April 1, 2022	Notice of initiation by Commerce (87 FR 19069, April 1, 2022)
April 1, 2022	Notice of institution by Commission (87 FR 19129, April 1, 2022)
July 5, 2022	Commission's vote on adequacy
August 8, 2022	Commerce's results of its expedited review
November 15, 2022	Commission's determination and views

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

[2] 87 FR 19129, April 1, 2022. 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 order. 87 FR 19069, April 1, 2022. 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 the original investigation are 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 domestic like product and 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 review. It was filed on behalf of the following entities (collectively referred to herein as "domestic interested parties"):

1. Vanadium Producers and Reclaimers Association ("VPRA"), a trade association a majority of whose members manufacture, produce or wholesale ferrovanadium, and its individual members (see below)
2. AMG Vanadium LLC ("AMG"), a domestic producer and U.S. wholesaler of ferrovanadium,[5] and
3. U.S. Vanadium, LLC ("U.S. Vanadium"), a U.S. wholesaler of ferrovanadium[6] [7]

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-2.

[5] AMG reported being a U.S. wholesaler, ***. Domestic interested parties' supplemental response to the notice of institution, May 23, 2022, p. 2.

[6] U.S. Vanadium characterizes itself as a wholesaler of ferrovanadium as follows: ***. Domestic interested parties' response to the notice of institution, May 2, 2022, pp. 32-33.

[7] U.S. Vanadium Holding Company LLC, which operates via its wholly owned subsidiary U.S. Vanadium, acquired Evraz Stratcor, Inc. ("Evraz Stratcor"), a petitioner in the original investigation, in 2019. Following the acquisition, U.S. Vanadium replaced Evraz Stratcor as a member of the VPRA. Domestic interested parties' response to the notice of institution, May 2, 2022, p. 2 n2.

Table I-2
Ferrovanadium: Summary of completed responses to the Commission's notice of institution

Interested party	Type	Number of firms	Coverage
U.S. producer	Domestic	1	***%
U.S. wholesalers	Domestic	2	NA
U.S. trade association	Domestic	1	***%

Note: The U.S. producer and U.S. trade association coverage figures presented is the domestic interested parties' estimate of their share of total U.S. production of ferrovanadium during 2021. Domestic interested parties' response to the notice of institution, May 2, 2022, p. 37 and exh. 13.

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 an expedited or a full review from VPRA and its members. The domestic interested parties request that the Commission conduct an expedited review of the antidumping duty order on ferrovanadium.[8]

The original investigation

The original investigation resulted from a petition filed on March 28, 2016, with Commerce and the Commission by AMG, Cambridge, Ohio; Evergreen Metallurgical Company DBA Bear Metallurgical Company ("Bear"), Butler, Pennsylvania; Gulf Chemical and Metallurgical Corporation ("Gulf"), Freeport, Texas; and Evraz Stratcor, Hot Springs, Arkansas (collectively VPRA).[9] On March 23, 2017, Commerce determined that imports of ferrovanadium from South Korea were being sold at less than fair value ("LTFV").[10] The Commission determined on May 8, 2017, that the domestic industry was materially injured by reason of such imports.[11] On May 15, 2017, Commerce issued its antidumping duty order with the final weighted-average dumping margins ranging from 3.22 to 54.69 percent.[12]

[8] Domestic interested parties' comments on adequacy, June 10, 2022, p. 2.
[9] Ferrovanadium from Korea, Inv. No. 731-TA-1315 (Final), USITC Publication 4683, May 2017 ("Original publication"), p. I-1.
[10] 82 FR 14874, March 23, 2017.
[11] 82 FR 22156, May 12, 2017.
[12] 82 FR 22309, May 15, 2017.

Previous and related investigations

The Commission has conducted previous import relief proceedings on ferrovanadium, as presented in table I-3.

Table I-3
Ferrovanadium: Previous and related Commission proceedings and status of orders

Date	Inv. No.	Country	Determination	Current Status of Order
1994	731-TA-702	Russia	Affirmative	Order revoked after third review, October 13, 2011
2001	731-TA-986	China	Affirmative	Order continued after third review, August 20, 2020
2001	731-TA-987	South Africa	Affirmative	Order continued after third review, August 20, 2020

Source: U.S. International Trade Commission publications and Federal Register notices.

Note: "Date" refers to the year in which the investigation was instituted by the Commission.

Commerce's five-year review

Commerce announced that it would conduct an expedited review with respect to the order on imports of ferrovanadium from South Korea with the intent of issuing the final results of this review based on the facts available not later than August 1, 2022.[13] Commerce publishes its Issues and Decision Memoranda and its final results concurrently, accessible upon publication at http://enforcement.trade.gov/frn/. Issues and Decision Memoranda contain complete and up-to-date information regarding the background and history of the order, including scope rulings, duty absorption, changed circumstances reviews, and anticircumvention, as well as 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 order on imports of ferrovanadium from South Korea are noted in the sections titled "The original investigation" and "U.S. imports," if applicable.

[13] Letter from Melissa G. Skinner, Senior Director, Office VII Office of AD/CVD Operations, International Trade Administration, U.S. Department of Commerce to Nannette Christ, Director of Investigations, May 24, 2022.

The product

Commerce's scope

Commerce has defined the scope as follows:

> *The product covered by this order is all ferrovanadium regardless of grade (i.e., percentage of contained vanadium), chemistry, form, shape, or size. Ferrovanadium is an alloy of iron and vanadium.*[14]

U.S. tariff treatment

Ferrovanadium is currently imported under Harmonized Tariff Schedule of the United States ("HTS") statistical reporting number 7202.92.0000.[15] Ferrovanadium that is produced in South Korea is subject to the column 1-general duty rate of 4.2 percent ad valorem, unless the importer claims that the shipment comprises originating goods under the U.S.-Korea Free Trade Agreement and is eligible for the column 1-special duty rate of "free."[16] Decisions on the tariff classification and treatment of imported goods are within the authority of U.S. Customs and Border Protection.

Description and uses[17]

Ferrovanadium is an alloy used to add vanadium to molten steel. Steelmaking is the largest use of vanadium and accounts for almost all vanadium consumption worldwide.[18] Vanadium enhances strength and wear resistance and is therefore beneficial in 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

[14] 82 FR 22309, May 15, 2017.
[15] 7202.92.0000 is not believed to contain out of scope products.
[16] USITC, HTSUS (2022) Revision 5, Publication 5319, June 2022, p. 72-11.
[17] Unless otherwise noted, this information is based on the original publication, pp. I-8-I-9.
[18] Polyak, Désirée, 2018 Minerals Yearbook: Vanadium, United States Geological Survey, August 2021, p. 81.2. https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/atoms/files/myb1-2018-vanad.pdf (accessed May 19, 2022).

components. Ferroniobium is considered a substitute for ferrovanadium due to its ability to reach the same chemical and physical characteristics in steel.[19]

Ferrovanadium is commonly produced in grades having a vanadium content of 40–60 percent or 75–85 percent. The choice of ferrovanadium grade as a steel additive depends on several factors. There are situations where either grade can be used in which case the choice is simply metallurgist preference. In certain steels highly alloyed with vanadium, such as tool steels, the ferrovanadium 80-percent grade is preferred. Specifically, the higher silicon levels in the 50-percent grade (as well as other residual elements) and the higher carbon levels are undesirable in some steels and so the 80-percent grade would be preferred. Regardless of grade, commercial practice is to quote the price of ferrovanadium based on the contained vanadium. Ferrovanadium is commonly packaged for sale in the United States in containers of a specified content of contained vanadium, typically 25 pounds of contained vanadium.

Although vanadium is one of the most common elements in the earth's crust, it is frequently 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 by-product or co-product of other mineral operations. For example, the largest source of vanadium is a by-product of the production of steel using iron ore with high vanadium content. Iron ore containing recoverable vanadium is mined in only a few places in the world; the major producers are China, South Africa, and Russia. The second most common production method is recovery from vanadium-containing ore. Most ore production is in South Africa and China. The third and final method of vanadium production is secondary production from such sources as the residue from the processing and burning of vanadium-containing oil products. Such secondary production is the primary vanadium source in the United States.[20]

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[19] Metals Hub, "Ferrovanadium – Global market insights," May 05, 2019, https://www.metals-hub.com/blog/ferrovanadium-market-insights/#:~:text=Since%20the%20very%20beginning%20of,it%3A%20ferroniobium%20(FeNb) (accessed June 23, 2022).

[20] Polyak, Désirée, 2018 Minerals Yearbook: Vanadium, United States Geological Survey, August 2021, p. 81.2. https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/atoms/files/myb1-2018-vanad.pdf (accessed May 19, 2022). Vanitec Limited, "Making Vanadium," http://vanitec.org/vanadium/making-vanadium, (accessed May 19, 2022).

Manufacturing process[21]

The manufacturing process to produce ferrovanadium is determined by the raw material to be used. Most operations utilize a two-step process: first, the production and separation of vanadium pentoxide from the other contents of the starting raw material, and second, the production of ferrovanadium from vanadium pentoxide. Vanadium pentoxide is an important intermediate chemical compound that is used primarily to produce ferrovanadium, but has many other applications such as being used in the manufacturing of sulfuric acid, chemical and environmental catalysts, batteries, among other uses.[22] It is widely traded and industry publications regularly report its price.

Two processes are employed by U.S. producers of ferrovanadium. The first is based on the production of ferrovanadium for a processing fee (toll production), using vanadium pentoxide provided by its customers. The process 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.[23] The contents are ignited with a fuse and the reaction proceeds quickly, with the oxidation (burning) of aluminum providing the heat. There is no external heat source such as electricity or gas. Following a reaction period of about seven minutes, the result is molten ferrovanadium and an aluminum-oxide-rich slag. The products are allowed to cool and freeze in the reaction vessel for about six hours. After cooling, both are crushed and sized for sale. Slag is sold for use as flux in steelmaking operations.

The other process employed by U.S. producers produces ferrovanadium and other ferroalloys from spent catalysts and petroleum combustion residues and uses pyrometallurgical processing in electrical furnaces. This process yields ferrovanadium which contains approximately 55 percent of vanadium, in contrast to the aforementioned process, which yields a product that contains 80 percent. The resulting product also contains more silicon but less aluminum than the aforementioned. Despite the difference in the contained vanadium content,

[21] Unless otherwise noted, this information is based on the original publication, pp. I-9-I-11.

[22] Vanitec Limited, "Vanadium Products for Chemical Applications," http://vanitec.org/vanadium/vanadium-products, (accessed May 19, 2022).

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

the product is packaged similarly to 80-percent product, in individual cans or paper sacks, typically of 10-25 pounds of vanadium content, or in 2,000- or 4,000-pound supersacks.[24]

Spent oil refinery catalysts, as well as oil residues and ash, are waste products that are subject to regulation with respect to their handling, processing, and disposition. Two classes of spent catalysts are specifically classified as hazardous wastes under the 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.[25]

The industry in the United States

U.S. producers

During the final phase of the original investigation, the Commission received U.S. producer questionnaires from two producers, which accounted for all U.S. production of ferrovanadium in the United States during 2015, and seven tollees.[26]

In response to the Commission's notice of institution in this current review, domestic interested parties provided a list of two known and currently operating U.S. producers of ferrovanadium. One firm provided U.S. industry data in response to the Commission's notice of institution, which accounted for approximately *** percent of production of ferrovanadium in the United States during 2021.[27]

Recent developments

Table I-4 presents events in the U.S. industry since the original investigation.

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[24] In general, ferrovanadium is packaged for sale in a variety of types and sizes of containers. Steel companies reportedly have been changing their handling of alloy products to bulk systems, so 4,000-pound supersacks are increasingly common rather than 2000-pound sacks or smaller amounts. Packaging may be in cans or in bags, each with a specific amount of contained vanadium-from 10 to 25 pounds. Paper bags may be placed in a steel drum for protection.

[25] *Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Petroleum Refining Process Wastes; Land Disposal Restrictions for Newly Identified Wastes; and CERCLA Hazardous Substance Designation and Reportable*, 63 FR 42110, August 6, 1998, https://www.govinfo.gov/content/pkg/FR-1998-08-06/pdf/98-19929.pdf (accessed May 18, 2022).

[26] Original publication, p. III-1 and table III-1.

[27] Domestic interested parties' response to the notice of institution, May 2, 2022, p. 37 and exh. 13.

Table I-4
Ferrovanadium: Recent developments in the U.S. industry

Year	Item	Firm	Event
2017	Acquisition	Gulf	In 2017, Gulf was acquired by Gladieux Metals Recycling LLC. According to the domestic interested parties, Gladieux is "currently making necessary improvements," at the facility. As of May 2022, the facility is not producing ferrovanadium, but, although not imminent, it is considering doing so in the future.
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. Bear itself underwent bankruptcy in 2016 and was acquired by Yildamen Holding and is no longer part of the VPRA.
2018	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. Information on the latest status of the expansion is not currently available.
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 oxide 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 planned to restore the facility's production operations to its full nameplate processing capacity of approximately 12 million pounds of vanadium pentoxide per year. Information on the current processing capacity status is not available.
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, with ***.

Sources on next page.

Source: Domestic interested parties' response to the notice of institution, May 2, 2022, pp. 30-33, 38; Polyak, Desiree E., "Vanadium (Advance Release)," 2016 Minerals Yearbook, August 2018, p. 81.2; 2017 Annual Report, YILDIRIM Group, March 18, 2018, p.44, http://www.yildirimholding.com/Sunumlar/2017/en17.pdf, retrieved June 2, 2022; AMG Vanadium, "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 June 2, 2022; AMG Vanadium, "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 June 2, 2022; Couch, Erin, "AMG Vanadium: New Zanesville plant will start operating this summer," Times Recorder, March, 2021, https://www.zanesvilletimesrecorder.com/story/news/local/2021/03/17/summer-2021-100-new-employees-work-amg-vanadium-zanesville-plant-facility/4671798001/?utm_source=zanesvilletimesrecorder-Daily%20Briefing&utm_medium=email&utm_campaign=daily_briefing&utm_term=hero, retrieved June 13, 2022; "U.S. Vanadium acquires sole high-purity vanadium producer in U.S." U.S. Vanadium LLC, news release, October 14, 2019, https://usvanadium.com/us-vanadium-high-purity-vanadium/#:~:text=Hot%20Springs%2C%20AR%20(October%2014,V205%E2%80%9D), retrieved June 2, 2022; and Ferrovanadium from China and South Africa, Investigation Nos. 731-TA-986-987 (Second Review), USITC Publication 4517, January 2015, p. I-15.

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 review.[28] Table I-5 presents a compilation of the trade and financial data submitted from all responding U.S. producers in the original investigation and this current five-year review.

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

Table I-5
Ferrovanadium: Trade and financial data submitted by U.S. producers, by period

Quantity in 1,000 pounds contained vanadium; value in 1,000 dollars; unit value in dollars per pound contained vanadium; ratio is in percent

Item	Measure	2013	2014	2015	2021
Capacity	Quantity	***	***	***	***
Production	Quantity	***	***	***	***
Capacity utilization	Ratio	***	***	***	***
U.S. shipments	Quantity	***	***	***	***
U.S. shipments	Value	***	***	***	***
U.S. shipments	Unit value	***	***	***	***
Net sales	Value	***	***	***	***
COGS	Value	***	***	***	***
COGS to net sales	Ratio	***	***	***	***
Gross profit or (loss)	Value	***	***	***	***
SG&A expenses	Value	***	***	***	***
Operating income or (loss)	Value	***	***	***	***
Operating income or (loss) to net sales	Ratio	***	***	***	***

Source: For the years 2013-15, data are compiled using data submitted in the Commission's original investigation. For the year 2021, data are compiled using data submitted by domestic interested parties. Domestic interested parties' response to the notice of institution, May 2, 2022, exh. 13.

Note: For the years 2013-15, U.S. shipments includes U.S. shipments by unaffliated tollees.

Note: For a discussion of data coverage, please see "U.S. producers" section.

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 U.S. producer from the domestic industry for purposes of its injury determination if "appropriate circumstances" exist.[29]

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

In its original determination, the Commission defined a single domestic like product consisting of ferrovanadium that was coextensive with Commerce's scope. In its original determination, the Commission defined a single domestic industry consisting of all U.S. producers of ferrovanadium.[30]

U.S. imports

U.S. importers

During the final phase of the original investigation, the Commission received U.S. importer questionnaires from 23 firms, which accounted for essentially all U.S. imports of ferrovanadium from South Korea during 2015.[31] Import data presented in the original investigation are based on official Commerce statistics, adjusted to include suppressed quantity data for U.S. imports from ***, using proprietary Customs records.[32]

The Commission did not receive responses from any respondent interested parties in this current review. In its response to the Commission's notice of institution, the domestic interested parties stated that they did not know the firms that may currently import subject merchandise.[33]

U.S. imports

Table I-6 presents the quantity, value, and unit value of U.S. imports from South Korea as well as the other top sources of U.S. imports (shown in descending order of 2021 imports by quantity).

[30] 87 FR 19129, April 1, 2022.

[31] Original publication, pp. I-6 and IV-1.

[32] Investigation No. 731-TA-1315 (Final): Ferrovanadium from Korea, Confidential Report, INV-PP-044, April 6, 2017, as revised in INV-PP-046, April 12, 2017 ("Original confidential report"), p. IV-1 n. 2.

[33] Domestic interested parties' response to the notice of institution, May 2, 2022, p. 35.

Table I-6
Ferrovanadium: U.S. imports, by source and period

Quantity in 1,000 pounds contained vanadium; value in 1,000 dollars; unit value in dollars per pound contained vanadium

Source	Measure	2016	2017	2018	2019	2020	2021
South Korea (subject)	Quantity	657	---	24	---	---	45
Canada	Quantity	313	1,691	1,917	2,791	2,368	2,406
Czech Republic	Quantity	N/A	N/A	N/A	N/A	N/A	N/A
Austria	Quantity	2,915	3,996	4,877	1,665	1,496	1,706
All other sources	Quantity	1,018	2,867	2,027	3,036	272	2,218
Nonsubject sources	Quantity	4,246	8,553	8,821	7,491	4,136	6,330
All import sources	Quantity	4,903	8,553	8,845	7,491	4,136	6,375
South Korea (subject)	Value	3,806	---	631	---	---	629
Canada	Value	2,173	17,207	41,533	64,560	22,180	27,304
Czech Republic	Value	21,361	19,948	33,729	47,942	20,522	25,640
Austria	Value	16,767	40,625	126,440	24,332	12,094	18,571
All other sources	Value	6,267	21,406	38,897	35,058	2,264	23,634
Nonsubject sources	Value	46,569	99,185	240,599	171,892	57,060	95,149
All import sources	Value	50,375	99,185	241,231	171,892	57,060	95,777
South Korea (subject)	Unit value	5.79	---	26.04	---	---	13.95
Canada	Unit value	6.95	10.18	21.67	23.14	9.37	11.35
Czech Republic	Unit value	---	---	---	---	---	---
Austria	Unit value	5.75	10.17	25.93	14.61	8.08	10.89
All other sources	Unit value	6.16	7.47	19.19	11.55	8.33	10.66
Nonsubject sources	Unit value	5.94	9.26	23.45	16.55	8.83	10.98
All import sources	Unit value	5.92	9.26	23.46	16.55	8.83	11.00

Source: Compiled from official Commerce statistics for HTS statistical reporting number 7202.92.0000, accessed May 9, 2022.

Note: U.S. import quantity data are understated as no quantity data are available for the Czech Republic. Based on value, imports from the Czech Republic as a share of total imports ranged between 14.0 to 42.4 percent during 2016-21 and accounted for 26.8 percent in 2021.

Note: Unit values for nonsubject sources and all import sources exclude the Czech Republic.

Note: Because of rounding, figure may not add to total shown.

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

Apparent U.S. consumption and market shares

Table I-7 presents data on U.S. producers' U.S. shipments, U.S. imports, apparent U.S. consumption, and market shares.

Table I-7
Ferrovanadium: Apparent U.S. consumption and market shares, by source and period

Quantity in 1,000 pounds contained vanadium; value in 1,000 dollars; shares in percent

Source	Measure	2013	2014	2015	2021
U.S. producers	Quantity	***	***	***	***
South Korea	Quantity	784	1,243	1,612	45
Nonsubject sources	Quantity	7,400	***	***	6,330
Total imports	Quantity	8,184	***	***	6,375
Apparent U.S. consumption	Quantity	***	***	***	***
U.S. producers	Value	***	***	***	***
South Korea	Value	9,599	14,715	15,636	629
Nonsubject sources	Value	83,939	83,210	50,732	95,149
All import sources	Value	93,538	97,925	66, 367	95,777
Apparent U.S. consumption	Value	***	***	***	***
U.S. producers	Share of quantity	***	***	***	***
South Korea	Share of quantity	***	***	***	***
Nonsubject sources	Share of quantity	***	***	***	***
All import sources	Share of quantity	***	***	***	***
U.S. producers	Share of value	***	***	***	***
South Korea	Share of value	***	***	***	***
Nonsubject sources	Share of value	***	***	***	***
All import sources	Share of value	***	***	***	***

Source: For the years 2013-15, data are compiled using data submitted in the Commission's original investigation. For the year 2021, U.S. producers' U.S. shipments are compiled from the domestic interested parties' 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, accessed May 9, 2022.

Note: U.S. import quantity data are understated as no quantity data are available for the Czech Republic. Based on value, imports from the Czech Republic as a share of total imports ranged between 14.0 to 42.4 percent during 2016-21 and accounted for 26.8 percent in 2021.

Note: For a discussion of data coverage, please see "U.S. producers" and "U.S. importers" sections.

The industry in South Korea

During the final phase of the original investigation, the Commission received foreign producer/exporter questionnaires from three firms, whose exports accounted for virtually all U.S. imports of ferrovanadium from South Korea in 2015.[34]

Although the Commission did not receive responses from any respondent interested parties in this five-year review, the domestic interested parties provided a list of three possible producers of ferrovanadium in South Korea.[35]

Table I-8 displays events in the South Korean industry since the original investigation.

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

Year	Item	Firm	Event
2019	Plant opening	SeAH M&S	According to its website, SeAH M&S began production of ferrovanadium in December 2019. SeAH M&S operates in Seoul, South Korea and produced other ferroalloy products prior to adding ferrovanadium in 2019. Information on SeAH M&S' production capacity is not available.

Source: SeAH M&S, "History", http://www.seahmns.co.kr/eng/company/history.jsp, accessed 6/13/2022.

Table I-9 presents export data for ferrovanadium from South Korea (by export destination in descending order of quantity for 2021).

[34] Original publication, p. VII-3. Further, according to responding firms' estimates, their production of ferrovanadium accounted for the majority of overall production of ferrovanadium in South Korea. Ibid.

[35] Domestic interested parties' supplemental response to the notice of institution, May 23, 2022, pp. 2-3.

Table I-9
Ferrovanadium: Quantity of exports from South Korea, by export destination and period

Quantity in 1,000 pounds

Export Destination	2016	2017	2018	2019	2020	2021
Netherlands	3,007	3,778	3,402	2,939	2,969	5,821
Japan	1,314	569	1,012	1,325	1,200	875
India	88	478	231	119	209	579
Taiwan	287	447	360	235	309	441
Turkey	132	331	357	351	242	375
Italy	132	441	82	284	110	116
Singapore	0	22	51	11	18	101
China	0	132	0	0	0	99
Vietnam	13	154	0	0	33	44
Belgium	283	0	44	66	0	22
All other exporters	4,402	5,922	9,375	8,911	5,913	4,672
All exporters	6,017	7,322	5,745	5,698	5,169	8,524

Note: Not all countries report ferrovanadium exports in terms of contained vanadium, therefore, table data are for total quantity of ferrovanadium exported. Because of rounding, figures may not add to total shown.

Source: Global Trade Information Services, Inc., Global Trade Atlas, HS subheadings 7202.92.

Third-country trade actions

Based on available information, ferrovanadium from South Korea has not been subject to other antidumping or countervailing duty investigations outside the United States.[36]

[36] World Trade Organization ("WTO"), "Anti-dumping," https://www.wto.org/english/tratop_e/adp_e/adp_e.htm, retrieved May 19, 2022; and WTO, "Subsidies and Countervailing Measures," https://www.wto.org/english/tratop_e/scm_e/scm_e.htm, retrieved May 26, 2022.

The global market[37]

Production

Most of the world's supply of vanadium, the raw material used to produce ferrovanadium, was derived from either primary or coproduction.[38] As of 2018, the most recent year 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 descending order by production quantity, provided nearly 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. 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.

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

Quantity in 1,000 pounds contained vanadium

Country	2014	2015	2016	2017	2018
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

Source: Polyak, Désirée, 2018 Minerals Yearbook: Vanadium, United States Geological Survey, August 2021, https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/atoms/files/myb1-2018-vanad.pdf (accessed June 13, 2022).

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

[37] Unless otherwise noted, this information is based on Ferrovanadium from China and South Africa, Investigation Nos. 731-TA-985-987 (Third Review), USITC Publication 5099, August 2020 pp. I-32-I-37.

[38] Co-production refers to vanadium derived from iron ore processed for steel production.

In 2016, the most recent year for which ferrovanadium production data are 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

Quantity in 1,000 pounds

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

Notes: Production data for Austria and Czech Republic and all data in 2017 were from the British Geological Survey. Data from China and Japan was not available from the British Geological Survey for 2017. Total does not include data from Austria or the Czech Republic due to the different source of data.

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.

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 States has a duty rate of 5.5 percent. However, it can be imported duty free into Canada, converted there into ferrovanadium and imported into the United States duty-free under USMCA.

China

As noted above, China produces over 50 percent of the world's vanadium. The leading producers of ferrovanadium in China are Panzhihua and Chengde, but there are an estimated 40 additional producers of ferrovanadium in China. Panzhihua produces vanadium pentoxide, ferrovanadium, and other products. Chengde produces vanadium products including ferrovanadium as well as titanium products.

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.

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).

South Africa

There are two primary producers of ferrovanadium in South Africa. Rhovan Glencore ("Rhovan") is South Africa's largest producer of ferrovanadium. The firm reported its vanadium production in terms of vanadium pentoxide production, a portion of which it converts to ferrovanadium, but does not 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. The second primary producer of ferrovanadium in South Africa is Vanchem Vanadium Products Ltd. ("Vanchem"). Vanchem produces roughly 2.1 million pounds of vanadium per year. The firm's ferrovanadium production levels are not reported.

Table I-12 presents global export data for ferrovanadium (by source in descending order of quantity for 2021).

Table I-12
Ferrovanadium: Quantity of global exports by country and period

Quantity in 1,000 pounds

Exporting country	2016	2017	2018	2019	2020	2021
Czech Republic	13,798	14,443	14,011	14,655	12,280	15,211
Netherlands	18,230	14,233	27,506	15,370	13,852	14,542
China	15,248	11,339	13,566	10,925	9,932	10,856
South Africa	6,961	6,334	5,863	6,557	7,424	10,132
South Korea	6,017	7,322	5,745	5,698	5,169	8,524
Russia	5,089	3,236	1,651	2,907	1,683	3,280
New Zealand	4,542	2,471	32,577	28,885	11,188	2,595
Canada	767	1,805	1,983	2,835	3,003	2,455
United States	2,154	1,692	4,668	2,714	1,063	1,548
Belgium	1,220	1,758	2,396	876	830	1,043
All other exporters	4,402	5,922	9,375	8,911	5,913	4,672
All exporters	78,426	70,555	119,341	100,333	72,337	74,859

Source: Global Trade Information Services, Inc., Global Trade Atlas, HS subheadings 7202.92.

Note: Because not all countries report ferrovanadium exports in terms of contained vanadium (i.e., reporting only vanadium content), the data presented are for total quantity of ferrovanadium exported.

Note: Figures may not add to total shown due to rounding.

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
87 FR 19069 April 1, 2022	*Initiation of Five-Year (Sunset) Reviews*	https://www.govinfo.gov/content/pkg/FR-2022-04-01/pdf/2022-06923.pdf
87 FR 19129, April 1, 2022	*Ferrovanadium From South Korea; Institution of a Five-Year Review*	https://www.govinfo.gov/content/pkg/FR-2022-04-01/pdf/2022-06561.pdf

APPENDIX B

COMPANY-SPECIFIC DATA

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APPENDIX C

SUMMARY DATA COMPILED IN PRIOR PROCEEDING

Table C-1
Ferrovanadium: Summary data concerning the U.S. market, 2013-15, January to September 2015, and January to September 2016
(Quantity=1,000 pounds contained vanadium; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per pound contained vanadium; Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to September		Calendar year			Jan-Sep
	2013	2014	2015	2015	2016	2013-15	2013-14	2014-15	2015-16
U.S. consumption quantity:									
Amount	***	***	***	***	***	***	***	***	***
Producers' share (fn1)	***	***	***	***	***	***	***	***	***
Importers' share (fn1):									
Korea	***	***	***	***	***	***	***	***	***
Nonsubject sources	***	***	***	***	***	***	***	***	***
All import sources	***	***	***	***	***	***	***	***	***
U.S. consumption value:									
Amount	***	***	***	***	***	***	***	***	***
Producers' share (fn1)	***	***	***	***	***	***	***	***	***
Importers' share (fn1):									
Korea	***	***	***	***	***	***	***	***	***
Nonsubject sources	***	***	***	***	***	***	***	***	***
All import sources	***	***	***	***	***	***	***	***	***
U.S. imports from:									
Korea:									
Quantity	784	1,243	1,612	1,156	532	105.5	58.5	29.6	(54.0)
Value	9,599	14,715	15,636	12,005	3,806	62.9	53.3	6.3	(68.3)
Unit value	$12.24	$11.84	$9.70	$10.38	$7.15	(20.7)	(3.3)	(18.0)	(31.1)
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Nonsubject sources:									
Quantity	7,400	***	***	***	***	***	***	***	***
Value	83,939	83,210	50,732	44,459	33,398	(39.6)	(0.9)	(39.0)	(24.9)
Unit value	$11.34	***	***	***	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	***	***	***	***
All import sources:									
Quantity	8,184	***	***	***	***	***	***	***	***
Value	93,538	97,925	66,367	56,465	37,204	(29.0)	4.7	(32.2)	(34.1)
Unit value	$11.43	***	***	***	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	***	***	***	***
U.S. producers':									
Average capacity quantity	***	***	***	***	***	***	***	***	***
Production quantity	***	***	***	***	***	***	***	***	***
Capacity utilization (fn1)	***	***	***	***	***	***	***	***	***
U.S. shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Export shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Inventories/total shipments (fn1)	***	***	***	***	***	***	***	***	***
Production workers	***	***	***	***	***	***	***	***	***
Hours worked (1,000s)	***	***	***	***	***	***	***	***	***
Wages paid ($1,000)	***	***	***	***	***	***	***	***	***
Hourly wages (dollars)	***	***	***	***	***	***	***	***	***
Productivity (pounds contained vanadium per hour)	***	***	***	***	***	***	***	***	***
Unit labor costs	***	***	***	***	***	***	***	***	***
Net sales:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Cost of goods sold (COGS)	***	***	***	***	***	***	***	***	***
Gross profit or (loss)	***	***	***	***	***	***	***	***	***
SG&A expenses	***	***	***	***	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***	***	***	***	***
Net income or (loss)	***	***	***	***	***	***	***	***	***
Capital expenditures	***	***	***	***	***	***	***	***	***
Unit COGS	***	***	***	***	***	***	***	***	***
Unit SG&A expenses	***	***	***	***	***	***	***	***	***
Unit operating income or (loss)	***	***	***	***	***	***	***	***	***
Unit net income or (loss)	***	***	***	***	***	***	***	***	***
COGS/sales (fn1)	***	***	***	***	***	***	***	***	***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	***	***	***	***
Net income or (loss)/sales (fn1)	***	***	***	***	***	***	***	***	***

Notes:

fn1.--Reported data are in percent and period changes are in percentage points.
fn2.--Undefined.

Source: Compiled from data submitted in response to Commission questionnaires and official U.S. import statistics, using statistical reporting number 7202.92.0000, accessed December 1, 2016, and adjusted to include suppressed quantity data for U.S. imports from ***, using proprietary Customs records.

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 six firms as top purchasers of ferrovanadium: ***. Purchaser questionnaires were sent to these six firms and three 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 South Korea since May 16, 2017?

Purchaser	Yes / No	Changes that have occurred
***	***	***
***	***	***

Table continued on next page.

Purchaser

Purchaser	Yes / No	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 South Korea within a reasonably foreseeable time?

Purchaser	Yes / No	Anticipated changes
***	***	***
***	***	***
***	***	***