Ammonium Sulfate from China

Investigation Nos. 701-TA-562 and 731-TA-1329 (Review)

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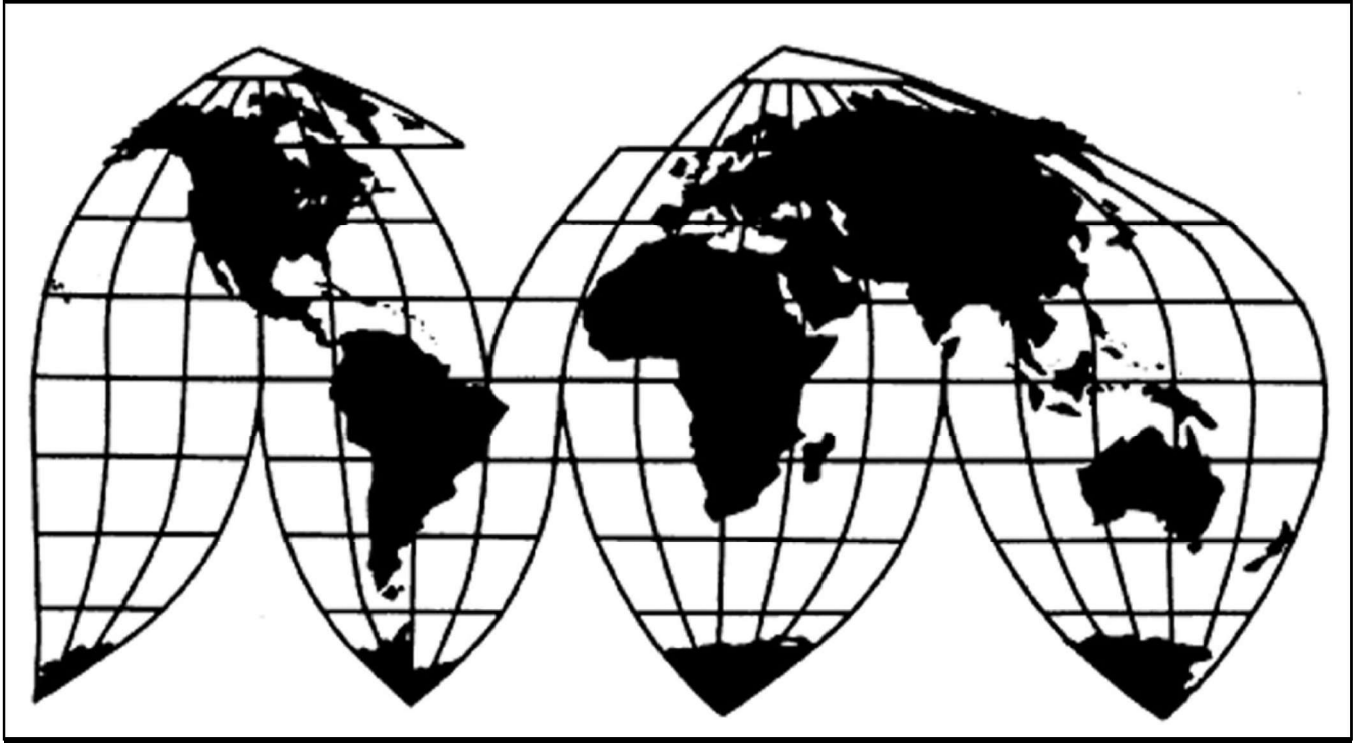
U.S. International Trade Commission



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U.S. International Trade Commission

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Note.—Information that would reveal confidential operations of individual concerns may not be published. Such information is identified by brackets in confidential reports and is deleted and replaced with asterisks (***) in public reports.

UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation Nos. 701-TA-562 and 731-TA-1329 (Review)

Ammonium Sulfate from China

DETERMINATION

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

BACKGROUND

The Commission instituted these reviews on February 1, 2022 (87 FR 5503) and determined on May 9, 2022, that it would conduct full reviews (87 FR 29878, May 17, 2022). Notice of the scheduling of the Commission's reviews and of a public hearing to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the *Federal Register* on August 3, 2022 (87 FR 47463). Since no party to the reviews requested a hearing, the public hearing in connection with the reviews, originally scheduled for December 6, 2022, was cancelled (87 FR 79352, December 27, 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 these five-year reviews, we determine under section 751(c) of the Tariff Act of 1930, as amended ("the Tariff Act"), that revocation of the antidumping and countervailing duty orders on ammonium sulfate from China 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 Investigations. On May 25, 2016, PCI Nitrogen, LLC ("PCI") filed antidumping and countervailing duty petitions concerning imports of ammonium sulfate from China.[1] In March 2017, the Commission determined that an industry in the United States was materially injured by reason of imports of ammonium sulfate from China that had been found by the U.S. Department of Commerce ("Commerce") to be sold in the United States at less than fair value and subsidized by the government of China.[2] On March 9, 2017, Commerce issued antidumping and countervailing duty orders on imports of ammonium sulfate from China.[3]

*Current Reviews***.** On February 1, 2022, the Commission instituted these first five-year reviews.[4] Responses to the notice of institution were submitted by the Committee for Fair Trade in Ammonium Sulfate ("Domestic Producers"), an association composed of two U.S. producers of ammonium sulfate.[5] Seven Chinese producers/exporters of subject merchandise also responded to the notice of institution.[6] On May 9, 2021, the Commission found that the

[1] *Ammonium Sulfate From China; Institution of Antidumping and Countervailing Duty; Investigations and Scheduling of Preliminary Phase Investigations*, 81 Fed. Reg. 35055 (June 1, 2016).

[2] *Ammonium Sulfate from China,* Inv. Nos. 701-TA-562 and 731-TA-1329 (Final), USITC Pub. 4671 (March 2017) ("*Original Determinations*") at 3.

[3] *Ammonium Sulfate From the People's Republic of China: Antidumping Duty and Countervailing Duty Orders*, 82 Fed. Reg. 13094 (Mar. 9, 2017).

[4] *Ammonium Sulfate From China; Institution of Five-Year Reviews*, 87 Fed. Reg. 5503 (Feb. 1, 2022).

[5] The Committee for Fair Trade in Ammonium Sulfate comprises PCI and AdvanSix Inc. ("Advansix").

[6] Domestic Industry's Substantive Response to the Notice of Institution, EDIS Doc. 764512 (Mar. 3, 2022); Respondents' Substantive Response to the Notice of Institution, EDIS Doc. 764463 (Mar. 3, 2022) ("Respondents' Response to NOI").

domestic interested party group and the respondent interested party group responses were adequate and therefore determined to conduct full reviews.[7]

The Commission received prehearing and posthearing briefs and final comments filed on behalf of the Domestic Producers.[8]

Several respondent entities also participated in these reviews. Joint prehearing and posthearing briefs were received on behalf of eight Chinese producers/exporters of ammonium sulfate: Wuzhoufeng Agricultural Science and Technology Co., Ltd.; Hengshui Hengji Agricultural Material Co., Ltd.; Jiangsu Songjia Petrochemical Co., Ltd.; Hangzhou Yike Industry Co., Ltd.; Fujian Xinyuan Fertilizer Co., Ltd.; Yantai Hongyi Agricultural Technology Development Co., Ltd.; Yunnan Yingfu Trading Company; and Yantai Zhongde Agriculture Technology Co., Ltd. (collectively, "Respondents").[9]

Data/Response Coverage. In these reviews, U.S. industry data are based on questionnaire responses from six U.S. producers that are believed to have accounted for over *** percent of U.S. production of ammonium sulfate during 2021.[10] U.S. import data are based on official Commerce import statistics and the responses of nine U.S. importers of ammonium sulfate that are estimated to have accounted for 56.8 percent of total U.S. imports of

[7] *Ammonium Sulfate From China; Notice of Commission Determination To Conduct Full Five-Year Reviews*, 87 Fed. Reg. 29878 (May 17, 2022).

[8] *See* Pre-Hearing Brief of the Committee for Fair Trade in Ammonium Sulfate, EDIS Doc. 785318 (Nov. 29, 2022) ("Domestic Producers' Prehearing Brief"); Posthearing Brief of the Committee for Fair Trade in Ammonium Sulfate, EDIS Doc. 786318 (Dec. 13, 2022) ("Domestic Producers' Posthearing Brief"); Final Comments of the Committee for Free Trade in Ammonium Sulfate, EDIS Doc. 788205 (Jan. 18, 2023) ("Domestic Producers' Final Comments").

[9] Chinese Respondents' Prehearing Brief, EDIS Doc. 785323 (Nov. 29, 2022) ("Respondents' Prehearing Brief"). The Domestic Producers filed a request to appear at the Commission's hearing, but no request to appear was received from any respondents. The Domestic Producers subsequently withdrew their request to appear at the hearing and the Commission cancelled the hearing due to lack of interest. *Ammonium Sulfate from China; Cancellation of Hearing for Full Five-Year Reviews*, 87 Fed. Reg. 79352, (Dec. 27, 2022); Ammonium Sulfate from China/Petitioner Withdrawal of Request to Testify at Hearing, EDIS Doc. 785453 (Dec. 1, 2022). In lieu of a hearing, the Commission issued questions to the parties to which they responded in attachments to their posthearing briefs. *See* Domestic Producers' Posthearing Brief; Chinese Respondents' Response to Questions in Lieu of Hearing, EDIS Doc. 786297 (Dec. 13, 2023) ("Respondents' Posthearing Brief").

[10] Confidential Report, Memorandum INV-VV-001 (Jan. 9, 2023) ("CR"); *Ammonium Sulfate from China,* Inv. Nos. 701-TA-562 and 731-TA-1329 (Review), USITC Pub. 5402 (Feb. 2023) ("PR") at I-9, I-16, III-1. This coverage percentage includes domestic producer ***, which only provided trade data but did not provide usable pricing, financial, and employment data. Excluding ***, the remaining five U.S. producers are believed to have accounted for *** percent of U.S. production of ammonium sulfate during 2021. CR/PR at I-16 n.33, III-1 nn. 1, 2.

ammonium sulfate and 37.9 percent of subject imports from China from 2016 to 2021.[11] Foreign industry data and related information are based on publicly available information and the questionnaire responses of seven foreign producers/exporters in China that are believed to account for approximately *** percent of total ammonium sulfate production in China in 2021.[12]

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."[13] 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."[14] 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.[15]

Commerce has defined the imported merchandise within the scope of the orders under review as follows:

> {A}mmonium sulfate in all physical forms, with or without additives such as anti-caking agents. Ammonium sulfate, which may also be spelled as ammonium sulphate, has the chemical formula $(NH_4)_2SO_4$.

[11] CR/PR at IV-1. The official Commerce statistics are based on one U.S. Harmonized Tariff Schedule ("HTSUS") statistical reporting number 3102.21.0000, an *eo nomine* category coextensive with ammonium sulfate. CR/PR at I-12.

These importers accounted for *** percent of total imports and nonsubject imports in 2021, when there were no subject imports from China. *Id*. at I-17.

[12] CR/PR at I-10, IV-12.

[13] 19 U.S.C. § 1677(4)(A).

[14] 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).

[15] *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).

> The scope includes ammonium sulfate that is combined with other products, including by, for example, blending (*i.e.*, mixing granules of ammonium sulfate with granules of one or more other products), compounding (*i.e.*, when ammonium sulfate is compacted with one or more other products under high pressure), or granulating (incorporating multiple products into granules through, *e.g.*, a slurry process). For such combined products, only the ammonium sulfate component is covered by the scope of this Order.
>
> Ammonium sulfate that has been combined with other products is included within the scope regardless of whether the combining occurs in countries other than China.
>
> Ammonium sulfate that is otherwise subject to the Order is not excluded when commingled (*i.e.*, mixed or combined) with ammonium sulfate from sources not subject to this Order. Only the subject component of such commingled products is covered by the scope of this Order.
>
> The Chemical Abstracts Service (CAS) registry number for ammonium sulfate is 7783-20-2.[16]

The scope definition set out above is substantively unchanged since the original investigations.[17]

Ammonium sulfate is a solid, crystalline salt, primarily used as a fertilizer. Like other fertilizers, ammonium sulfate is a source of nitrogen for soil, but unlike other nitrogenous fertilizers, it is also a source of sulfur, used by plants to make amino acids and chlorophyll.[18] Ammonium sulfate is sold in a variety of grades, including granular and standard grades. Granular grade ammonium sulfate accounts for the vast majority of the U.S. market. Its relatively large particle size (typically 2.5 millimeters) makes it well suited for mixing with other

[16] *Issues and Decision Memorandum for the Final Results of the Expedited First Sunset Review of the Antidumping Duty Order on Ammonium Sulfate from the People's Republic of China,* (June 2, 2022) at 3; *Issues and Decision Memorandum for the Final Results of the Expedited First Sunset Review of the Countervailing Duty Order on Ammonium Sulfate from the People's Republic of China*, (June 1, 2022) ("Commerce CVD I&D Memo") at 3; CR/PR at I-11.

[17] CR/PR at I-10 n.11. While Commerce has issued no scope rulings, on December 28, 2022, Commerce issued a notice indicating that it received a scope ruling application in November 2022, requesting that scope inquiries be conducted to determine whether enriched N ammonium sulfate (a specialty product used in laboratory research) is covered by the scope of the orders and that Commerce issue scope rulings pursuant to those inquiries. *See Notice of Scope Ruling Applications Filed in Antidumping and Countervailing Duty Proceedings*, 87 Fed. Reg. 79867 (Dec. 28, 2022).

[18] CR/PR at I-12.

fertilizers and applying by spreading machines. Standard grade ammonium sulfate has a smaller particle size (less than 2 millimeters) and is used in applications that do not require mechanical spreading, such as being used as a fertilizer in orchards or lower technology farms.[19]

In the original investigations, the Commission defined a single domestic like product, consisting of all ammonium sulfate, coextensive with Commerce's scope definition, and no party argued otherwise.[20]

The record in these reviews does not indicate that there have been any changes in the characteristics and uses of domestically produced ammonium sulfate since the original investigations that would warrant revisiting the definition of the domestic like product.[21] No party argues for a different definition.[22] Consequently, we define a single domestic like product consisting of ammonium sulfate, coextensive with Commerce's scope definition.

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.

In the original investigations, the Commission found that no domestic producer qualified as a related party under section 771(4)(B) of the Tariff Act,[24] and therefore defined a single domestic industry comprised of all domestic producers of ammonium sulfate.[25]

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[19] CR/PR at I-12 to I-13.

[20] *Original Determinations*, USITC Pub. 4671 at 6.

[21] *See generally* CR/PR at I-10-15.

[22] CR/PR at I-15.

[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.

[24] The Commission observed that while no U.S. producer imported subject merchandise or was related to importers or foreign producers/exporters of subject merchandise, U.S. producer *** purchased subject imports in 2015-2016. However, the Commission found that *** did not control a sufficiently large volume of subject imports to qualify as a related party. Confidential Views from the Original Determinations, EDIS Doc. 767620 ("Confidential Original Determinations") at 9 n.21.

[25] *Original Determinations*, USITC Pub. 4671 at 7.

In these reviews, no related party or other domestic industry issues arise.[26] Further, the Domestic Producers state that they agree with the definition of the domestic industry that the Commission adopted in the original investigations, and the Respondents raise no objection to this definition.[27] Accordingly, consistent with our definition of the domestic like product, we define the domestic industry as all U.S. producers of ammonium sulfate.

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

A. Legal Standards

In a five-year review conducted under section 751(c) of the Tariff Act, Commerce will revoke an antidumping or countervailing duty order unless: (1) it makes a determination that dumping or subsidization is likely to continue or recur and (2) the Commission makes a determination that revocation of the antidumping or countervailing duty order "would be likely to lead to continuation or recurrence of material injury within a reasonably foreseeable time."[28] The Statement of Administrative Action ("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."[29] Thus, the likelihood standard is prospective in nature.[30] The U.S. Court of

[26] No U.S. producer is related to an importer or exporter of the subject merchandise. CR/PR at I-15-17, III-14 and Table I-6; *see also* Domestic Producers' Prehearing Brief at 13. Nor did any U.S. producer import or purchase subject imports from China during the current January 2016 through June 2022 period of review ("POR"). CR/PR at III-14.

[27] Domestic Producers' Prehearing Brief at 13.

[28] 19 U.S.C. § 1675a(a).

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

[30] 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.

International Trade has found that "likely," as used in the five-year review provisions of the Act, means "probable," and the Commission applies that standard in five-year reviews.[31]

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."[32] 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."[33]

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."[34] 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).[35] The statute further provides that the presence or absence of any factor that the Commission is required to consider shall not necessarily give decisive guidance with respect to the Commission's determination.[36]

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[31] *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" 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'").

[32] 19 U.S.C. § 1675a(a)(5).

[33] 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*.

[34] 19 U.S.C. § 1675a(a)(1).

[35] 19 U.S.C. § 1675a(a)(1). Commerce has not issued any duty absorption findings since imposition of the orders. CR/PR at I-10 n.11.

[36] 19 U.S.C. § 1675a(a)(5). Although the Commission must consider all factors, no one factor is necessarily dispositive. SAA at 886.

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.[37] 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.[38]

In evaluating the likely price effects of subject imports if an order under review is revoked and/or a suspended investigation is terminated, the Commission is directed to consider whether there is likely to be significant underselling by the subject imports as compared to the domestic like product and whether the subject imports are likely to enter the United States at prices that otherwise would have a significant depressing or suppressing effect on the price of the domestic like product.[39]

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.[40] 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

[37] 19 U.S.C. § 1675a(a)(2).

[38] 19 U.S.C. § 1675a(a)(2)(A-D).

[39] *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.

[40] 19 U.S.C. § 1675a(a)(4).

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

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."[42] The following conditions of competition inform our determinations.

1. Demand Conditions

Original Investigations. The Commission found that demand for ammonium sulfate was generally driven by demand for agricultural fertilizers, specifically for the replenishment of sulfur in soils. It also found that ammonium sulfate was subject to seasonal (*i.e.*, spring and fall) business cycles driven by fertilizing and crop cycles. It observed that most responding firms reported that U.S. demand for ammonium sulfate increased during the January 2013 through September 2016 period of investigation ("POI").[43] Apparent U.S. consumption of ammonium sulfate increased from *** short tons in 2013 to *** short tons in 2014 and 2015.[44]

Current Reviews. As in the original investigations, demand for ammonium sulfate continues to be driven by demand for agricultural fertilizers, specifically those used for the replenishment of sulfur in soils.[45] Demand also continues to be subject to seasonal (*i.e.*, spring and fall) business cycles driven by fertilizing and crop cycles.[46]

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[41] 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.

[42] 19 U.S.C. § 1675a(a)(4).

[43] *Original Determinations*, USITC Pub. 4671 at 12.

[44] Confidential Original Determinations, at 16. Apparent U.S. consumption was *** short tons in January through September 2015 ("interim 2015") and *** short tons in January through September 2016 ("interim 2016"). *Id*. at 16 n.46.

[45] CR/PR at II-16.

[46] CR/PR at II-13.

U.S. agricultural plantings of principal crops remained relatively stable during the POR, decreasing overall by 0.6 percent from 2016 to 2021.[47] U.S. agricultural plantings of corn, the U.S. crop that uses by far the most sulfur, however, increased from 2016 to 2021.[48]

A majority of responding U.S. producers, purchasers, and foreign producers reported that U.S. demand increased during the POR. An *** of responding importers reported that demand ***. *** reported that demand decreased during the POR.[49]

A majority of responding purchasers and foreign producers and a plurality of responding U.S. producers reported that they anticipate U.S. demand to increase in 2022 and 2023. Responding importers were evenly divided between those anticipating that demand will ***. *** anticipates that demand will decrease in 2022 and 2023.[50]

Apparent U.S. consumption by quantity increased in each full year of the POR except from 2018 to 2019. It increased overall by 33.7 percent from 2016 to 2021 and was 15.6 percent lower in the January through June 2022 period ("interim 2022") than the January through June 2021 period ("interim 2021").[51]

2. Supply Conditions

Original Investigations. The domestic industry was the largest supplier of ammonium sulfate to the U.S. market, although its share of apparent U.S. consumption declined overall from *** percent in 2013 to *** percent in 2014 and *** percent 2015.[52] The Commission observed that during the POI, three principal production processes accounted for

[47] Data from the United States Department of Agriculture ("USDA") indicate that U.S. agricultural plantings of principal crops were 319.2 million acres in 2016, 318.3 million acres in 2017, 319.3 million acres in 2018, 303.1 million acres in 2019, 310.4 million acres in 2020, 317.2 million acres in 2021, and 316.3 million acres in 2022. CR/PR at Table II-9.

[48] CR/PR at II-16. According to USDA data, U.S. farmers applied 233,950 tons of sulfur to corn-planted acres in 2016 compared to 268,500 tons in 2021, an increase of 14.8 percent. CR/PR at Table II-8.

[49] CR/PR at Table II-6.

[50] CR/PR at Table II-7.

[51] CR/PR at Tables I-8 and C-1. Apparent U.S. consumption was 2.5 million short tons in 2016, 2.8 million short tons in 2017, 2.9 million short tons in 2018, 2.7 million short tons in 2019, 3.3 million short tons in 2020, and 3.4 million short tons in 2021; it was 1.9 million short tons in interim 2021 and 1.6 million short tons in interim 2022. *Id*.

[52] *Original Determinations*, USITC Pub. 4671 at 12-13; Confidential Original Determinations, at 16-17. The domestic industry's market share was *** percent in interim 2015 and *** percent in interim 2016. Confidential Original Determinations, at 16-17, 17 n.52.

approximately 90 percent of U.S. and global ammonium sulfate production.[53] It also observed that Petitioner PCI purchased an ammonium sulfate plant in March 2016 after the previous owner made several capital investments during the POI.[54]

Nonsubject imports' share of apparent U.S. consumption declined from *** percent in 2013 to *** percent in 2014 and *** percent in 2015.[55] Canada was the largest source of nonsubject imports during the POI.[56]

Subject imports were initially the third largest source of supply to the U.S. market, but surpassed the volume of nonsubject imports by the end of the POI. Their share of apparent U.S. consumption increased from *** percent in 2013, to *** percent in 2014, and to *** percent in 2015.[57]

Current Reviews. During the POR, the domestic industry continued to be the largest supplier to the U.S. market.[58] Its share of apparent U.S. consumption, by quantity, was 79.1 percent in 2016, 82.9 percent in 2017, 84.5 percent in 2018, 79.8 percent in 2019, 72.8 percent in 2020, and 72.6 percent in 2021; it was 71.6 percent in interim 2021 and 67.9 percent in interim 2022.[59]

While domestic producers ***, there were also several plant openings, expansions, and acquisitions during the POR—notably, ***.[60] *** expects to add *** short tons of annual production volume of ammonium sulfate by ***.[61]

The domestic industry's production capacity remained relatively stable throughout the POR, increasing by 0.2 percent from 2016-2021; it was 0.3 percent higher in interim 2022 than in interim 2021.[62] The domestic industry's capacity utilization decreased irregularly from 82.6

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[53] *Original Determinations*, USITC Pub. 4671 at 12. The three processes were: (1) production of ammonium sulfate as a co-product of production of caprolactam; (2) production through direct synthesis, in which ammonium is neutralized with sulfuric acid; and (3) production using gas produced from the coking of coal. *Id*.

[54] *Original Determinations*, USITC Pub. 4671 at 12.

[55] Confidential Original Determinations, at 17, 17 n.54. Nonsubject imports' share of apparent U.S. consumption was *** percent in interim 2015 and *** percent in interim 2016. *Id*.

[56] *Original Determinations*, USITC Pub. 4671 at 12-13.

[57] Confidential Original Determinations, at 17, 17 n.53. Subject imports' share of apparent U.S. consumption was *** percent in interim 2015 and *** percent in interim 2016. *Id*.

[58] CR/PR at Tables I-8 and C-1.

[59] CR/PR at Tables I-8 and C-1.

[60] CR/PR at Table III-2.

[61] CR/PR at Table III-3.

[62] CR/PR at Tables III-4 and C-1. The only U.S. producer to report changes in production capacity was ***. The only two years in which capacity decreased were in 2019 and 2020 and the largest year-on-year change in capacity was from 2019 to 2020, when *** reported capacity decreased by *** percent. *Id*. at III-3.

percent in 2016 to 79.5 percent in 2021; it was higher in interim 2022 (82.9 percent) than in interim 2021 (80.9 percent).[63]

Nonsubject imports were the second largest source of supply to the U.S. market throughout the POR.[64] Nonsubject imports' share of apparent U.S. consumption by quantity increased during the POR, from 13.5 percent of apparent U.S. consumption in 2016 to 32.1 percent in interim 2022.[65] Canada was the largest source of nonsubject imports in 2021, accounting for 51.2 percent of U.S. imports of ammonium sulfate that year.[66]

Subject imports were the smallest source of supply to the U.S. market throughout the POR.[67] Their share of apparent U.S. consumption by quantity was 7.4 percent in 2016 and then less than 0.05 percent for the remainder of the POR.[68]

A majority of U.S. producers (three of five), importers (***), and purchasers (five of seven) reported that they had not experienced supply constraints since January 1, 2016.[69] The firms reporting supply constraints indicated that they were temporary and/or "rare."[70]

3. Substitutability and Other Conditions

Original Investigations. The Commission found that there was a moderate-to-high degree of substitutability between the domestic like product and subject imports.[71] It found that the majority of U.S. shipments made by U.S. producers and the vast majority of those of subject imports were of a granule size between 2.0 millimeters to 4.0 millimeters.[72] It also observed that a majority of responding market participants reported that subject imports and the domestic like product were always or frequently interchangeable.[73] Further, majorities or

[63] CR/PR at Tables III-4 and C-1.

[64] CR/PR at Table I-8.

[65] CR/PR at Table I-8. Nonsubject imports' share of apparent U.S. consumption was 13.5 percent in 2016, 17.1 percent in 2017, 15.5 percent in 2018, 20.2 percent in 2019, 27.2 percent 2020, and 27.4 percent in 2021; it was 28.4 percent in interim 2021, and 32.1 percent in interim 2022. *Id*.

[66] CR/PR at II-11 n.19. Imports of ammonium sulfate from Belgium and Russia were the next largest sources, accounting for 25.7 percent and 6.5 percent of all U.S. imports of ammonium sulfate by quantity in 2021, respectively. *Id*.

[67] CR/PR at Table I-8.

[68] CR/PR at Table I-8.

[69] CR/PR at II-11.

[70] CR/PR at II-11. Two responding U.S. producers reported ***. CR/PR at Table III-2.

[71] *Original Determinations*, USITC Pub. 4671 at 13-14.

[72] *Original Determinations*, USITC Pub. 4671 at 13.

[73] *Original Determinations*, USITC Pub. 4671 at 13.

pluralities of purchasers reported that the domestic like product was superior or comparable to subject imports with respect to all 15 non-price factors.[74]

The Commission found that price was an important factor in purchasing decisions. It observed that 18 of 21 purchasers reported that price was a "very important" factor, whilethree purchasers reported that it was "somewhat important." Purchasers reported quality and price most often when listing their most important purchasing factors; price was most frequently cited as the most important factor.[75]

The Commission found that raw material costs were the largest component of cost of goods sold ("COGS") for U.S. producers,[76] and that U.S. producers' average raw material costs per short ton had declined during the POI.[77] It further found that U.S. producers reported that ammonium sulfate operations were highly capital intensive with high fixed costs.[78] Finally, it observed that because U.S. demand for ammonium sulfate was seasonal, ammonium sulfate prices exhibited seasonality as prices tended to be highest in the spring when demand was the highest.[79]

Current Reviews. We again find a moderate-to-high degree of substitutability between domestically produced ammonium sulfate and subject imports.[80] A majority of U.S. producers, importers, and purchasers reported that the domestic like product and subject imports were always or frequently interchangeable.[81] Throughout the POR, a majority of U.S. producers' U.S. shipments and *** U.S. shipments of subject imports were of ammonium sulfate in large granule sizes (greater than or equal to 2.0 millimeters).[82] A majority of responding U.S. producers (three of five) reported that there were never significant differences in factors other

[74] *Original Determinations*, USITC Pub. 4671 at 13.

[75] *Original Determinations*, USITC Pub. 4671 at 14.

[76] The Commission found that the primary raw materials used to produce ammonium sulfate were ammonium and sulfur. Raw material costs as a percentage of COGS for the domestic industry ranged from 77.0 percent to 81.7 percent during the POI. *Original Determinations*, USITC Pub. 4671 at 14.

[77] *Original Determinations*, USITC Pub. 4671 at 14. U.S. producers' average raw material costs were $148 per short ton in 2013, $141 per short ton in 2014, $134 per short ton in 2015, $141 per short ton in interim 2015, and $110 per short ton in interim 2016. *Id*. at 14 n.67.

[78] *Original Determinations*, USITC Pub. 4671 at 14.

[79] *Original Determinations*, USITC Pub. 4671 at 14.

[80] CR/PR at II-19.

[81] CR/PR at Tables II-16 through II-18. Specifically, three of five U.S. producers reported that subject imports and the domestic like product were always interchangeable while *** and three of five responding importers and purchasers, respectively, reported that subject imports and the domestic like product were always or frequently interchangeable. *Id*.

[82] CR/PR at Tables III-6, IV-2. The proportion of U.S. producers' U.S. shipments of ammonium sulfate that were of large granule size ranged from *** percent from 2016 to 2021. CR/PR at Table III-6.

than price between subject imports and the domestic like product, while a majority of importers (***) and purchasers (three of five) reported that there were sometimes significant differences in factors other than price between the domestic like product and subject imports.[83] Most purchasers reported that the domestic like product was comparable or superior to subject imports with respect to all 15 non-price purchasing factors.[84] Some of the factors for which the U.S. product was reported to be superior to subject imports by a majority of purchasers concerned product quality (*i.e.*, quality meeting industry standards and quality exceeding industry standards), which suggests certain purchasers view the subject imports as being of lower quality than the domestic like product; this may reduce substitutability to some extent.[85]

We also find that price is an important factor in purchasing decisions.[86] Responding purchasers most frequently cited price (seven firms), availability (six firms), and quality (five firms) as among the top three factors influencing their purchasing decisions. Quality was most frequently reported as the most important factor (three firms) followed by price (two firms).[87] Responding purchasers most frequently reported price, quality meets industry standards, product consistency, reliability of supply, and availability (seven firms each) as very important to their purchasing decisions.[88] A majority of purchasers (four of seven) reported that they usually purchase the lowest priced product.[89]

The primary raw materials for ammonium sulfate production are ammonia and sulfuric acid.[90] Raw material costs represent U.S. producers' largest component of total COGS; as a percentage of total COGS, their raw material costs increased irregularly from *** percent in 2016 to *** percent in 2021; they were higher in interim 2022 (*** percent) than in interim 2021 (*** percent).[91] On a per-short ton basis, U.S. producers' raw material costs increased irregularly from $*** per short ton in 2016 to $*** per short ton in 2021, and were higher in

[83] CR/PR at Tables II-19 through II-21.

[84] CR/PR at Table II-15. Most purchasers rated U.S. produced ammonium sulfate comparable or superior to ammonium sulfate from China on every factor except discounts offered and price. *Id*.

[85] CR/PR at II-19 and Table II-15; *see also* CR/PR at Table II-13.

[86] *See* CR/PR at II-20.

[87] CR/PR at Table II-11.

[88] CR/PR Table II-12.

[89] CR/PR at II-21.

[90] CR/PR at III-39, V-1.

[91] CR/PR at Table III-9.

interim 2022 ($*** per short ton) than in interim 2021 ($*** per short ton).[92] Rising raw material costs during the POR reflected the prices for ammonia, sulfur, and natural gas, which increased irregularly from 2016 to 2021 (the sharpest increases being from 2020 to 2021).[93] From December 2021 to June 2022, ammonia prices decreased by 11.9 percent while natural gas prices increased by 104.8 percent.[94] Four of five U.S. producers reported that the cost of raw materials had increased since January 1, 2016, while *** importers reported that raw material costs fluctuated.[95]

The Domestic Producers report that ammonium sulfate operations continue to be highly capital intensive with high fixed costs.[96] They also indicate that because U.S. demand is seasonal, U.S. prices can also exhibit seasonality, with prices tending to be highest in the spring when demand peaks.[97]

A large majority of U.S. producers' commercial shipments in 2021 were spot sales (*** percent). Although there is no information concerning the sales terms of subject imports in the current reviews, in the original investigations, *** of subject imports were sold through spot sales in 2015.[98] Chinese producers reported selling *** percent of their exports to markets other than the United States in the spot market in 2021, while also selling *** percent of their home market sales in the spot market.[99]

U.S. producers reported that all of their commercial shipments were sold from inventory with lead times averaging 23 days.[100] While no information is available regarding the lead times of importers in the current reviews, in the original investigations, importers reported that *** percent of their commercial shipments were sold from inventories with lead times ***.[101]

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[92] CR/PR at Table III-9. Six of seven purchasers reported they were familiar with raw material prices; two of these purchasers also indicated that information on raw material prices affected their negotiations or contracts to purchase ammonium sulfate since January 2016. CR/PR at V-6.

[93] Anhydrous ammonia prices had increased by 255.2 percent in December 2021 compared to January 2018. Sulfur prices are estimated to have increased by 137.6 percent from 2016 to 2021. Natural gas prices increased by 64.9 percent between January 2016 and December 2021. CR/PR at Tables V-1, V-2, and V-3.

[94] CR/PR at Tables V-1, V-3.

[95] CR/PR at V-6.

[96] Domestic Producers' Prehearing Brief at 16; *see also* CR/PR at III-37 n.18, D-5 (response from ***).

[97] Domestic Producers' Prehearing Brief at 15.

[98] CR/PR at V-9, Table V-5; Confidential Report from the Original Investigations, EDIS Doc. 767618 at Table V-2.

[99] CR/PR at V-9.

[100] CR/PR at II-21.

[101] Confidential Report from the Original Investigations, EDIS Doc. 767618 at II-14.

Effective September 24, 2018, imports of ammonium sulfate from China have been subject to 25 percent *ad valorem* duties under Section 301 of the Trade Act of 1974[102] ("Section 301 tariffs").[103] Most U.S. market participants (producers, importers, and purchasers) with knowledge of whether or not Section 301 tariffs impacted the U.S. market reported that section 301 tariffs had an impact on the ammonium sulfate market, while *** responding foreign producer reported that section 301 tariffs did not have an impact on the ammonium sulfate market.[104] All firms reporting that Section 301 tariffs impacted the U.S. market reported that the Section 301 tariffs led to a decrease in U.S. supply of ammonium sulfate from China.[105]

C. Likely Volume of Subject Imports

Original Investigations. The Commission found that the volume and increase in volume of subject imports were significant, both in absolute terms and relative to U.S. consumption.[106] It found that subject imports increased from 47,236 short tons in 2013 to 229,000 short tons in 2014 and 369,570 short tons in 2015, a level 682.4 percent larger than in 2013.[107] The Commission found that during a period of increasing demand, subject imports' market share increased, from *** percent in 2013, to *** percent in 2014, and to *** percent in 2015.[108] Over the same period, the domestic industry's market share declined from *** percent in 2013 to *** percent in 2014 and to *** percent in 2015.[109] The Commission found that while subject imports increased their market share principally at the expense of the domestic industry,

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[102] 19 U.S.C. § 2411; *Notice of Modification of Section 301 Action: China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation***,** 83 Fed. Reg. 47974, (Sep. 21, 2018).

[103] CR/PR at I-12.

[104] CR/PR at II-2, Table II-1. A majority of U.S. producers (***) and purchasers (***) reported that they had knowledge about whether or not Section 301 tariffs impacted the U.S. ammonium sulfate market while *** importers and *** foreign producers had knowledge about whether or not Section 301 tariffs impacted the U.S. ammonium sulfate market. CR/PR at II-2.

[105] CR/PR at II-2.

[106] *Original Determinations*, USITC Pub. 4671 at 15.

[107] *Original Determinations,* USITC Pub. 4671 at 14. Subject imports were 303,464 short tons in interim 2015 and 152,503 short tons in interim 2016. *Id* at 14 n.71.

[108] Confidential Original Determination, at 20. Subject imports' market share was *** percent in interim 2015 and *** percent in interim 2016. *Id*. at 20 n.72.

[109] Confidential Original Determination, at 20. The domestic industry's market share was *** percent in interim 2015 and *** percent in interim 2016. *Id.* at 20 n.74. The Commission found that the decline in the volume and market share of subject imports in interim 2016 was a result of the pendency of the investigations. It therefore accorded reduced weight to the reductions in subject import volume and market share for interim 2016, pursuant to 19 U.S.C. § 1677(7)(I). *Id.* at 15.

subject imports also took market share from nonsubject imports.[110] The Commission concluded that the volume and increase in volume of subject imports were significant, both in absolute terms and relative to U.S. consumption.[111]

Current Reviews. The record in these reviews indicates that the orders have had a disciplining effect on the volume of subject imports. Subject imports were minimal throughout the POR, other than in 2016 when they were still lower than during the peak years of the POI.[112] Specifically, subject import volume declined from 185,521 short tons in 2016, equivalent to 7.4 percent of apparent U.S. consumption that year, to 118 short tons in 2017, 24 short tons in 2018, 20 short tons in 2019, 107 short tons in 2020, and zero short tons in 2021, interim 2021, and interim 2022.[113]

The record of these reviews indicates that the subject industry in China has the means and incentive to increase exports to the United States to significant levels upon revocation of the orders. The industry in China producing ammonium sulfate is the largest in the word, accounting for nearly half of world production and three-quarters of world exports in 2021.[114] Although the Commission only received limited questionnaire responses from ammonium sulfate producers in China, the responding subject producers reported significant and increasing production capacity during the POR, including capacity of *** short tons in 2021.[115] Further, the responding subject producers reported significant unused production capacity ranging between *** and *** short tons during the POR, and their excess capacity of *** short tons in 2021 was equivalent to *** percent of apparent U.S. consumption that year.[116] Chinese

[110] *Original Determinations,* USITC Pub. 4671 at 14-15.

[111] *Original Determinations*, USITC Pub. 4671 at 15.

[112] CR/PR at Tables I-3, I-8, Appendix C. The Respondents assert that Section 301 tariffs will ensure that revocation of the orders will not lead to a significant volume of subject imports. This assertion is not supported by the record as the most significant decline in subject imports occurred from 2016 to 2017, immediately after implementation of the orders, and well before Section 301 tariffs were enacted, indicating that the minimal volume of subject imports throughout the remainder of the POR was due, at least in part, to the disciplining effect of the orders.

[113] CR/PR at Tables I-3, I-8, and IV-1.

[114] CR/PR at Table IV-12; Domestic Producers' Prehearing Brief at 38.

[115] Responding subject Chinese producers reported that their annual production capacity of ammonium sulfate was *** short tons from 2016 through 2018, *** short tons in 2019, *** short tons in 2020, *** short tons in 2021, *** short tons in interim 2021, and *** short tons in interim 2022. CR/PR at Table IV-9. Given the limited coverage of foreign producers that provided questionnaire responses, we also note that Chinese producers' ammonium sulfate capacity as reported by *** increased from *** short tons in 2017 to *** short tons in 2021, a *** percent increase. CR/PR at IV-14 n.10.

[116] Subject producers reported that their production increased from *** short tons in 2016 to *** short tons in 2017, *** short tons in 2018, *** short tons in 2019, *** short tons in 2020, and *** (Continued…)

producers' ammonium sulfate excess capacity as reported by ***, a consulting firm, increased from *** short tons in 2017 to *** short tons in 2021, equivalent to *** percent of apparent U.S. consumption that year.[117] Subject producers reported substantial end-of-period inventories that increased by *** percent from *** short tons in 2016 to *** short tons in 2021; they were higher in interim 2022 (*** short tons) than in interim 2021 (*** short tons).[118]

The Chinese industry is also export oriented. According to Global Trade Atlas ("GTA") data, the subject industry is by far the largest global exporter of ammonium sulfate,[119] with exports from China accounting for 73.0 percent of global exports in 2021.[120] China's exports of ammonium sulfate more than doubled during the POR, from 5.5 million short tons in 2016 to 11.7 million short tons in 2021.[121] The responding subject producers indicated that their export volume increased *** during the POR, from *** short tons in 2016 to *** short tons in 2021.[122]

(…Continued)
short ton in 2021; their production was *** short tons in interim 2021, and *** short tons in interim 2022. CR/PR at Table IV-9. Their reported excess capacity declined from *** short tons in 2016 to *** short tons in 2021. *Compare* CR/PR at Table IV-9 with CR/PR Table I-8.

Given the subject industry's reported increase in capacity and production from 2016 to 2021, its reported production that was higher in interim 2022 than interim 2021, and its significant excess capacity, we are unpersuaded by the Respondents' assertion that Chinese producers are experiencing capacity and/or production constraints purportedly caused by Chinese environmental controls and the COVID-19 pandemic to such an extent it would prevent a significant volume of subject imports if the orders were revoked. Respondents' Prehearing Brief at 24-26. Indeed, only *** reported that the *** and ***. CR/PR at IV-15 n.14 and IV-16 n.17 (citing questionnaire responses from ***).

[117] *Calculated from* CR/PR at IV-14 n.10, Table I-8.

[118] Reporting foreign producers' inventories at the end of 2021 were equivalent to *** percent of apparent U.S. consumption in 2021. *Calculated from* CR/PR at Tables I-8 and IV-9. U.S. importers did not report any arranged imports. CR/PR at Table IV-5.

Certain subject producers reported being able to shift production from out-of-scope merchandise to ammonium sulfate. CR/PR at IV-21 n.21. Subject producers reported that ammonium sulfate accounted for *** percent of production on shared equipment that is also used to produce out-of-scope merchandise in 2021, and total capacity utilization of such equipment was *** percent in 2021. CR/PR at Table IV-10.

[119] We also note that Commerce reported that seven of the subsidy programs it found were likely to continue or recur were export subsidy programs within the meaning of Article 3.1 of the Agreement on Subsidies and Countervailing Measures of the World Trade Organization (WTO). Commerce CVD I&D Memo at 7. Such programs likely create an economic incentive for subject producers to export ammonium sulfate.

[120] CR/PR at Table IV-12.

[121] CR/PR at Table IV-12 (based on GTA data for HTS subheading 3102.21).

[122] CR/PR at Table IV-9. Subject producers reported that their export shipment volume increased by *** percent from 2016 to 2021. Their reported export shipments were *** short tons in interim 2021 and interim 2022. *Id*.

Their exports as a share of total shipments increased from *** percent in 2016 to *** percent in 2021, but were lower in interim 2022 (***) than in interim 2021 (***).[123]

The United States is one of the largest global markets for ammonium sulfate[124] and remains an attractive export market for subject producers, providing them with the incentive to export significant volumes of subject merchandise to the United States in the event of revocation.[125] Furthermore, ammonium sulfate prices are generally higher in the United States than in third-country markets.[126] Specifically, in 2021 and interim 2022, the average unit value ("AUV") of subject producers' exports to third-country markets was significantly lower than the AUVs of U.S. shipments by the domestic industry and of nonsubject imports.[127] Furthermore,

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[123] CR/PR at Table IV-9. We are also unpersuaded by the Respondents' argument that increasing demand in the Chinese home market due to increased demand for high-efficiency fertilizers and decreased demand for substitutable products such as urea would prevent a significant volume of subject imports after revocation. Respondents' Prehearing Brief at 17-20, 42. The record indicates that the subject industry was increasingly export-oriented, increasing its exports both on an overall volume basis and as a share of its total shipments from 2016 to 2021. Furthermore, the subject industry has significant amounts of excess capacity and significantly increased its production capacity from 2016 to 2021, permitting both increased export and home market shipments from 2016 to 2021. *See* CR/PR at Table IV-9.

[124] Domestic Producers' Prehearing Brief at 4.

[125] We note that imports of ammonium sulfate from China are also subject to an antidumping duty order in Mexico and that the order has been suspended effective from May 2022 through November 23, 2023 in an effort to combat inflation. CR/PR at IV-27.

We are unpersuaded by the Respondents' assertion that "increased ocean freight costs" would likely inhibit significant volumes of subject imports in the event of revocation. Respondents' Prehearing Brief at 31, 50. Chinese producers increased their shipments of ammonium sulfate to Western Hemisphere markets in 2021 and 2022, notwithstanding the allegedly high freight costs. *See* Domestic Producers' Prehearing Brief at Exhibit 14; CR/PR at Table IV-11. Specifically, ammonium sulfate exports from China to Mexico increased from zero in 2021 to 287,307 short tons during the first three quarters of 2022 following the suspension of Mexico's antidumping duty order on ammonium sulfate from China, indicating that the subject industry has the ability and incentive to rapidly increase exports to a particular country after the country's temporary removal of a trade measure. CR/PR at IV-27; Domestic Producers' Prehearing Brief at Exhibit 14. Additionally, exports of ammonium sulfate from China to Brazil increased throughout the POR, from 686,196 short tons in 2016 to 3.9 million short tons in 2021, including a 41.6 percent increase from 2020 to 2021, to make Brazil China's largest export market in 2021. CR/PR at Table IV-11.

[126] *See*, *e.g.*, Domestic Producers' Posthearing Brief at Exhibit 2 (showing that ammonium sulfate prices in the United States Gulf were higher than those in the Baltic Region, Southeast Asia, Northwest Europe, and China throughout most of January 2020 through December 2022 as reported by industry reporting service ***); Domestic Producers' Prehearing Brief at 37 (showing prices for granular ammonium sulfate in the United States Gulf in June, 2022 were significantly higher than those in Northwest Europe and Brazil as reported by industry reporting service ***).

[127] Responding Chinese producers reported that their export shipments' AUV in 2021 was $*** per short ton and the AUV of exports of ammonium sulfate from China was $181, while the AUVs of U.S. (Continued…)

the AUV of China's exports of ammonium sulfate to the United States generally exceeded the AUV of its exports to third-country markets during the POI and in 2016.[128]

Accordingly, based on the significant and increasing volume of subject imports during the original investigations, the disciplining effect of the orders, the subject producers' substantial production capacity, excess capacity, inventories, and exports, and the attractiveness of the U.S. market, we find that the likely volume of subject imports would be significant, both in absolute terms and relative to consumption in the United States, in the event of revocation of the orders.[129]

(…Continued)
producers' U.S. shipments and of nonsubject U.S. imports were $223 and $252 per short ton, respectively. In interim 2022, Chinese producers reported that the AUV of their export shipments was *** per short ton while the AUVs of U.S. shipments by U.S. producers and of nonsubject imports were $470 and $516 per short ton, respectively. CR/PR at Tables III-5, IV-1, IV-9, IV-11, C-1.

We note that the AUVs of U.S. producers' U.S. shipments and nonsubject imports in interim 2022 were over *** percent and *** percent higher than the AUV of Chinese exports to third-country markets in interim 2022, indicating that even with the 25 percent section 301 tariffs, the U.S. market would still likely be an attractive export market for subject producers in the event of revocation.

[128] *See* Original Determinations, USITC Pub. 4671 at Table VII-5; CR/PR at Table IV-11. As indicated above, the only year during the POR with more than minimal subject imports was 2016.

[129] Given the relative attractiveness of the U.S. market compared to third-country markets, the size of the subject industry, and the subject industry's unused capacity, we are unpersuaded by the Respondents' assertion that the Chinese industry will focus on third-country markets—including those that are experiencing supply constraints caused, in part, by the war in Ukraine and the COVID-19 pandemic—to such an extent that a significant volume of subject imports would not be likely after revocation. Respondents' Prehearing Brief at 28-30, 44-46.

Likewise, we are not persuaded by the Respondents' unsubstantiated claim that approximately 25 percent of Chinese ammonium sulfate production is unqualified and/or "not fit" for the U.S. market, which they argue would preclude a significant volume of subject imports in the event of revocation. Respondents' Prehearing Brief at 16 (citing Respondents' Response to NOI at 7). First, these purported disqualifications did not prevent the significant volumes of subject imports during the original POI. In addition, as discussed in section III.B.3 above, we have found a moderate-to-high degree of substitutability between subject imports and the domestic like product. Moreover, the subject industry is the world's largest exporter of ammonium sulfate, with increasing capacity and significant unused capacity. Even if 25 percent of Chinese production were unfit for the U.S. market, the 75 percent of Chinese production fit for the U.S. market by the Respondents' own admission would be sufficient to permit a significant increase in exports to the U.S. market after revocation. Indeed, the record indicates that the two allegedly "unqualified" grades only account for approximately *** percent of total annual capacity of ammonium sulfate in China. *See* Domestic Producers' Prehearing Brief at Exhibit 1; Domestic Producers' Posthearing Brief at Exhibit 12 pg. 56 (*comparing* *** data of total Chinese annual capacity of ammonium sulfate *with* the annual capacity of production ***).

D. Likely Price Effects of Subject Imports

Original Investigations. The Commission found that subject imports and the domestic like product had a moderate-to-high level of substitutability and that price was an important factor in purchasing decisions.[130] It found that subject imports predominantly undersold the domestic like product over the POI, based on volume, and that subject import underselling was pervasive for Product 1, involving sales to distributors, for which most competition between the domestic like product and subject imports took place.[131] Moreover, it observed that subject import underselling continued at the end of 2014 and into 2015, when the volume and market share of subject imports peaked. Given this, as well as the moderate-to-high degree of substitutability between subject and domestic ammonium sulfate, the importance of price, and the 11 purchasers that reported shifting sales to subject imports due to price, the Commission found subject import underselling to be significant.[132]

The Commission observed that, despite increasing U.S. demand, annual prices for domestically produced ammonium sulfate for both pricing products fell between *** and *** percent from January 2013 to December 2015.[133] It also found that U.S. producers' prices declined to a greater degree than raw material prices. In light of this, the Commission found that subject imports depressed prices of the domestic like product to a significant degree.[134]

Current Reviews. As discussed above, the record in these reviews indicates that there is a moderate-to-high degree of substitutability between domestically produced ammonium sulfate and ammonium sulfate from China, and that price is an important factor in purchasing decisions.

The Commission requested pricing data for three pricing products in these reviews.[135] Five of six U.S. producers and *** importers provided usable data for sales of the requested

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[130] *Original Determinations*, USITC Pub. 4671 at 13-14.

[131] *Original Determinations*, USITC Pub. 4671 at 16-17. Subject imports undersold the domestic like product in 14 out of 26 overall comparisons, at margins ranging between 1.6 percent and 19.9 percent, and an overall average margin of underselling of 9.4 percent. On a volume basis, 469,093 short tons of subject imports were associated with instances of underselling, which represented 85.1 percent of the volume of subject imports covered by the Commission's pricing data. *Id.* at 16.

[132] *Original Determinations*, USITC Pub. 4671 at 16-17.

[133] Confidential Original Determinations, at 24.

[134] *Original Determinations*, USITC Pub. 4671 at 16-17.

[135] The Commission requested pricing data on the following products:

> **Product 1**.--Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to distributors**.**
>
> **Product 2**.--Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to retailers.

(Continued…)

products, although not all firms reported data for all products for all quarters.[136] Data reported by these firms accounted for approximately *** percent of U.S. producers' commercial shipments of ammonium sulfate in 2021 by quantity.[137] No pricing data was reported by subject importers *** and consequently there are limited price comparisons available.[138]

The limited pricing data on the record indicate that subject imports undersold the domestic like product in *** (or *** percent of) quarterly comparisons, at margins averaging *** percent, while overselling the domestic like product in ***, at an average margin of *** percent.[139] There were *** short tons of subject imports sold in quarters in which subject imports undersold the domestic like product (*** percent of the total), compared to *** short tons in *** of overselling.[140] Thus, notwithstanding the discipline of the orders, subject imports undersold the domestic like product in the vast majority of quarterly comparisons, accounting for nearly all of the reported volume of subject imports covered by the Commission's pricing data during the POR. Most responding purchasers (four of five) reported that with respect to price, U.S. produced ammonium sulfate was inferior to (*i.e.,* more expensive than) subject imports.[141]

Over the POR, the prices of U.S.-produced ammonium sulfate for Product 1 and Product 2, the two pricing products with data available throughout the POR, increased by *** percent and *** percent, respectively.[142]

In light of the underselling observed during the POR and the original POI,[143] as well as the moderate-to-high degree of substitutability between the domestic like product and subject imports and the importance of price in purchasing decisions, we find that underselling by

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(…Continued)

Product 3.--Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to end users. CR/PR at V-10.

[136] CR/PR at V-10.

[137] CR/PR at V-10.

[138] CR/PR at V-10. Pricing data was ***.

[139] CR/PR at Table V-10.

[140] CR/PR at Table V-10.

[141] CR/PR at II-23, Table II-15.

[142] CR/PR Table V-9. The increase reflects the difference in quarterly AUVs between the first quarter of 2016 and the second quarter of 2022. *See* CR/PR at Tables V-6 and V-7. Given the seasonality of demand, we also note the prices of U.S. produced ammonium sulfate were *** percent and *** percent higher in the second quarter of 2022 than in the second quarter of 2016 for Product 1 and Product 2, respectively. *Id*.

[143] *Original Determinations*, USITC Pub. 4671 at 16-17. The Commission found the predominant underselling by subject imports, by volume, to be significant, as 85.1 percent of the volume of subject imports covered by the Commission's pricing data undersold the domestic like product. *Id*.

subject imports would likely be significant in the event of revocation. Additionally, the significant volume of low-priced subject imports likely in the event of revocation would likely force the domestic industry to lower prices, forgo needed price increases, or lose sales and market share.[144] Consequently, we find that, if the orders were revoked, subject imports would likely have significant price effects within a reasonably foreseeable time.

E. Likely Impact of Subject Imports

Original Investigations. The Commission found that, despite substantially increasing U.S. demand between 2013 and 2015, the domestic industry lost market share to low-priced subject imports and experienced declines in production, capacity utilization, net sales, productivity, revenues, and financial performance—moving from a small positive operating income in 2013 to substantial operating losses in 2014 and 2015.[145] The Commission added that although some of the domestic industry's trade and employment indicators increased during the POI, the increases were less than the *** percent increase in apparent U.S. consumption.[146]

In its non-attribution analysis, the Commission considered the role of nonsubject imports in the U.S. market. It found that nonsubject imports could not explain the decline in the domestic industry's market share over the POI because the market share of nonsubject imports declined by *** percentage points between 2013 and 2015.[147] The Commission added that while nonsubject imports' market share was higher in interim 2016, when the presence of subject imports in the U.S. market diminished, than in interim 2015, the domestic industry's market share and its financial performance improved in interim 2016 compared to interim 2015. It therefore found that the adverse effects of the subject imports were distinguishable

[144] We disagree with the Respondents' assertion that Section 301 tariffs and purportedly increased freight costs would inhibit subject import volume to such an extent that there would be no significant price effects. Likewise, we also disagree with the contention that the Section 301 measures would prevent adverse price effects from the subject imports. Respondents' Prehearing Brief at 50. We have already found that the reduced volume and market share of subject imports reflect the discipline of the orders, and that absent these orders, the likely volume of subject imports would be significant in the event of revocation. Based on the record, including the relatively high U.S. prices, we also find that Section 301 tariffs and freight costs are unlikely to prevent significant underselling or price effects upon revocation of the orders.

[145] *Original Determinations*, USITC Pub. 4671 at 18.

[146] Confidential Original Determinations, at 25-26.

[147] Confidential Original Determinations, at 30.

from any effects attributable to the nonsubject imports.[148] The Commission concluded that the subject imports had a significant impact on the domestic industry.[149]

Current Reviews. The domestic industry's performance indicators were mixed during the POR. The domestic industry's production capacity remained stable throughout the POR while its production decreased by 3.7 percent from 2016 to 2021 and was 2.7 percent higher in interim 2022 compared to interim 2021.[150] The decrease in production resulted in the domestic industry's capacity utilization rate decreasing by 3.2 percentage points from 2016 to 2021; it was 1.9 percentage points higher in interim 2022 than interim 2021.[151] The quantity of the domestic industry's total U.S. shipments and net sales increased between 2016 and 2021 but were lower in interim 2022 compared to interim 2021.[152] The domestic industry's share of apparent U.S. consumption and ending inventory levels decreased irregularly from 2016 to 2021; its share of apparent U.S. consumption was lower in interim 2022 compared to interim 2021 and its ending inventory levels were higher in interim 2022 compared to interim 2021.[153]

The domestic industry's employment-related indicators were mixed. The number of production related workers ("PRWs"), wages paid, hourly wages, and productivity all increased

[148] *Original Determinations*, USITC Pub. 4671 at 21.

[149] *Original Determinations*, USITC Pub. 4671 at 21.

[150] CR/PR at Table III-4, C-1. The domestic industry's production was 3.0 million short tons in 2016, 3.1 million short tons in 2017, 2018, and 2019, and 2.9 million short tons in 2020 and 2021. CR/PR at Table C-1. It was 1.5 million short tons in interim 2021 and interim 2022. *Id.* The domestic industry's average annual capacity was 3.6 million short tons in 2016 through 2018, 3.7 million short tons in 2019, and 3.6 million short tons in 2021; it was 1.8 million short tons in interim 2021 and interim 2022. *Id*.

[151] CR/PR at Tables III-4, C-1. The domestic industry's capacity utilization rate was 82.6 percent in 2016, 85.5 percent in 2017, 85.0 percent in 2018, 83.8 percent in 2019, 81.0 percent in 2020, and 79.5 percent in 2021; it was 80.9 percent in interim 2021 and 82.9 percent in interim 2022. *Id.*

[152] U.S. producers' U.S. shipments were 2.0 million short tons in 2016, 2.3 million short tons in 2017, 2.4 million short tons in 2018, 2.1 million short tons in 2019, and 2.4 million short tons in 2020 and 2021; they were 1.3 million short tons in interim 2021 and 1.1 million short tons in interim 2022. CR/PR at Tables III-5, C-1. The domestic industry's net sales were *** short tons in 2016 and 2017, *** short tons in 2018, *** short tons in 2019, *** short tons in 2020, and *** short tons in 2021; they were *** short tons in interim 2021 and *** short tons in interim 2022. CR/PR at Tables III-9, C-1.

[153] The domestic industry's share of apparent U.S. consumption was 79.1 percent in 2016, 82.9 percent in 2017, 84.5 percent in 2018, 79.8 percent in 2019, 72.8 percent in 2020, 72.6 percent in 2021; it was 71.6 percent in interim 2021 and 67.9 percent in interim 2022. CR/PR at Tables I-8, C-1. The domestic industry's ending inventory quantities were 349,435 short tons in 2016, 373,329 short tons in 2017, 281,330 short tons in 2018, 470,518 short tons in 2019, 349,177, short tons in 2020, and 166,087 short tons in 2021; they were 197,400 short tons in interim 2021 and 304,605 short tons in interim 2022. CR/PR at Tables III-7, C-1.

irregularly between 2016 and 2021.[154] Hours worked and hours worked per PRW decreased irregularly from 2016 to 2021.[155] PRWs, wages paid, hourly wages, and hours worked, were all higher in interim 2021 than interim 2022 while productivity and hours worked per PRW were lower.[156]

The domestic industry's financial performance indicia fluctuated but improved overall from 2016 to 2021. The domestic industry's net sales revenues,[157] gross profits,[158] operating income,[159] and net income[160] all increased between 2016 and 2021 and were also higher in interim 2022 than in interim 2021. Likewise, the domestic industry's operating and net income margins increased overall and were higher in interim 2022 than in interim 2021.[161] However, its capital expenditures and research and development expenses declined by *** percent and

[154] The number of PRWs was *** in 2016, *** in 2017, *** in 2018, *** in 2019, *** in 2020, *** in 2021; it was *** in interim 2021 and *** in interim 2022. CR/PR at Tables III-8, C-1.

Wages paid were $*** in 2016, $*** in 2017, $*** in 2018, $*** in 2019, $*** in 2020, and $*** in 2021; they were $*** in interim 2021 and $*** in interim 2022. CR/PR at Tables III-8, C-1.

Hourly wages were $*** in 2016, $*** in 2017, *** in 2018, $*** in 2019, $*** in 2020, and $*** in 2021; they were $*** in interim 2021 and $*** in interim 2022.

Productivity in short tons per hour was *** short tons, *** short tons in 2017 and 2018, *** short tons in 2019, *** short tons in 2020, *** short tons in 2021; it was *** short tons in interim 2021 and *** short tons in interim 2022. *Id.*

[155] Hours worked were *** in 2016, *** in 2017 through 2019, *** in 2020, and *** in 2021; they were *** in interim 2021, and *** in interim 2022. CR/PR at Tables III-8, C-1.

Hours worked per PRW were *** in 2016, *** in 2017, *** in 2018, *** in 2019, *** in 2020, and *** in 2021; they were *** in interim 2021 and *** in interim 2022. *Id*.

[156] CR/PR at Tables III-8, C-1.

[157] Net sales revenues were $*** in 2016, $*** in 2017, $*** in 2018, $*** in 2019, $*** in 2020, and $*** in 2021; they were $*** in interim 2021, and $*** in interim 2022. CR/PR at Tables III-9, C-1.

[158] Gross profits were $*** in 2016, $*** in 2017, $*** in 2018, $*** in 2019, $*** in 2020, and $*** in 2021; they were $*** in interim 2021 and $*** in interim 2022. CR/PR at Tables III-9, C-1.

[159] Operating income was $*** in 2016, $***, *** in 2018, $*** in 2019, $*** in 2020, $*** in 2021; it was $*** in interim 2021 and $*** in interim 2022. CR/PR at Tables III-9, C-1.

[160] Net income was $*** in 2016, *** in 2017, *** in 2018, $*** in 2019, $*** in 2020, and $*** in 2021; it was $*** in interim 2021 and $*** in interim 2022. CR/PR at Tables III-9, C-1.

[161] The domestic industry's operating margin was *** percent in 2016, *** percent in 2017, *** percent in 2018, *** percent in 2019, *** percent in 2020, and *** percent in 2021; it was *** percent in interim 2021 and *** percent in interim 2022. CR/PR at Tables III-9, C-1.

The domestic industry's net income margin was *** percent in 2016, *** percent in 2017, *** percent in 2018, *** percent in 2019, *** percent in 2020, and *** percent in 2021; it was *** percent in interim 2021 and *** percent in interim 2022. *Id.*

*** percent, respectively, from 2016 to 2021.[162] Capital expenditures were higher in interim 2021 than interim 2022 while research and development expenditures were lower. In general, the record shows that the industry's condition was improved during the POR as compared to the original investigation period, and the improvement is due at least in part to the orders under review.[163]

In assessing the vulnerability of the domestic industry, we observe that certain performance indicators showed mixed trends, with capacity, sales, and shipments improving overall during the POR, and the industry's production, capacity utilization, market share, and PRWs declining. Financial indicators such as net sales revenue, gross profit, operating and net income, and operating and net income margins fluctuated but improved markedly, reflecting the domestic industry's strong performance toward the end of the period.[164] On the basis of the record as a whole, we do not find that the domestic industry is currently vulnerable.

As discussed above, we have found that the volume of subject imports would likely be significant if the orders under review were revoked, and that subject imports would likely undersell the domestic like product to a significant degree, forcing the domestic industry to either cut prices or forgo price increases, or else lose sales and market share to subject imports. Consequently, the likely significant volume of low-priced subject imports and their significant price effects would likely have a significant adverse impact on the production, shipments, sales, market share, and revenues of the domestic industry, which, in turn, would have a direct adverse impact on the industry's profitability and employment, as well as its ability to raise

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[162] Capital expenditures were $*** in 2016, $*** in 2017, $*** in 2018, $*** in 2019, $*** in 2020, and $*** in 2021; they were $*** in interim 2021 and $*** in interim 2022. CR/PR at Tables III-13, C-1.

Research and development expenses were $*** in 2016, $*** in 2017, $*** in 2018, $*** in 2019, $*** in 2020, and $*** in 2021; they were $*** in interim 2021 and $*** in interim 2022. CR/PR at Tables III-15, C-1. The industry's assets and return on assets both increased from 2016 to 2021 by *** percent and *** percentage points, respectively. *See* CR/PR at Tables III-17 and III-18.

[163] The domestic industry generally reported higher profitability and greater yearly capital expenditures during the POR than in the original investigations when the industry was reporting substantial operating losses by the end of the POI. For example, the industry's condition improved after the petitions were filed in 2016 as evidenced by its *** percent operating margin that year compared to 2015 when the domestic industry reported a *** percent operating margin. CR/PR at Appendix C. Further, the domestic industry's capital expenditures decreased from 2013 to 2015, but increased in 2016. *See id*. The improvements in the domestic industry's condition (particularly its net sales, U.S. shipments, and market share) also were evident from 2016 to 2017 after the petitions were filed, but prior to the implementation of the Section 301 tariffs in September 2018. *Id.*

[164] For example, the industry's operating income as a ratio to net sales was *** percent in 2021 as compared to *** percent in 2015, the final year of the POI. CR/PR at Table I-2. It was also *** percent in in interim 2022 compared to *** percent in interim 2021. CR/PR at Tables III-9, C-1.

capital and make and maintain necessary capital investments. We conclude that, if the orders were revoked, subject imports would be likely to have a significant impact on the domestic industry within a reasonably foreseeable time.

The Respondents argue the domestic industry's "strong condition" through its improved financial position, increasing demand, and increasing prices, will "prevent or substantially ameliorate" any adverse impact resulting from revocation.[165] They also assert that the Section 301 tariffs will protect the domestic industry from material injury.[166] As we have noted, however, the domestic industry's condition improved between 2016 and 2017, after imposition of the order but prior to the Section 301 tariffs.[167] Furthermore, as discussed in section III.C above, we have found that the Section 301 tariffs would not prevent the likely significant

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[165] Respondents' Prehearing Brief at 51 (quoting *Color Picture Tubes from Canada, Japan, Korea, and Singapore,* Inv. Nos. 731-TA-367-370 (Review), USITC Pub. 3291 (Apr. 2000) at 27, 53.

Likewise, we are unpersuaded by the Respondents' argument that subject imports would not impact the domestic industry because they would merely replace market share held by nonsubject imports—particularly nonsubject imports from Russia which nearly doubled from 2017 to 2021, but are expected by the Respondents to decline. Given the limited presence of nonsubject imports from Russia in the U.S. market during the POR and the domestic industry's large market share, any increase in subject imports would come, at least in part, at the expense of the domestic industry. CR/PR at II-11 n.17, Table I-8. Furthermore, the record indicates that U.S. imports of ammonium sulfate from Russia remain duty free despite the fact that imports from Russia became subject to higher column 2 duty rates. CR/PR at IV-27. Moreover, nonsubject imports from Russia continued during and after March 2022, despite the war in Ukraine. Domestic Producers' Posthearing Brief at Exhibit 7. Finally, all four responding U.S. producers, most importers (***), and all seven purchasers reported that they do not anticipate changes in the availability of nonsubject imports. CR/PR at II-11.

[166] Respondents' Prehearing Brief at 40, 49-50.

[167] *See* CR/PR at Appendix C. According to the Respondents, the domestic industry's improved financial performance, sales, employment indicia, and capital expenditures demonstrate that revocation of the orders would not be likely to have an adverse impact on the domestic industry in a reasonably foreseeable time. However, the domestic industry's improved condition is due, at least in part, to the disciplining effect of the orders under review. Specifically, the domestic industry generally had stronger financial indicators and greater capital expenditure in 2016 compared to 2015. *See* CR/PR at Appendix C. Furthermore, the domestic industry's net sales, U.S. shipments, and market share were all higher in 2017 (the first full year following the filing of the petition, but prior to implementation of Section 301 tariffs) than in 2016. CR/PR at Tables I-8 and III-9, Appendix C. Indeed, the domestic industry experienced its largest increase in market share during the POR in 2017, as subject imports exited the U.S. market. CR/PR at Appendix C and Table I-8.

Furthermore, the Domestic Producers reported that the domestic industry's enhanced profitability in interim 2022 reflected a lag between increased ammonium sulfate prices and increased raw material costs. They indicate that ammonium sulfate prices are already receding from the elevated prices that resulted in the domestic industry's increased profits at the end of the POR, and they indicate that the ammonium sulfate sold in late 2022 should be less profitable as it was produced using raw materials that were purchased when costs were elevated in late 2021 and early 2022. Domestic Producers' Prehearing Brief at 65-67.

volume of low-priced subject imports from causing adverse price effects if the orders were revoked.

Finally, the record does not support the Respondents' argument that subject imports would only "supplement the growing U.S. demand" that is allegedly outstripping U.S. supply.[168] Although the domestic industry is not required by statute to be able to supply the entire market,[169] the record shows that domestic producers reported sufficient capacity to satisfy all apparent U.S. consumption throughout the POR, even as apparent U.S. consumption increased.[170] Furthermore, as discussed in section III.B.2 above, although U.S. demand in the foreseeable future may continue to grow, the domestic industry did not experience significant supply constraints during the POR and does not anticipate such constraints in the foreseeable future.[171]

We have also considered the likely role of nonsubject imports in the U.S. market. Nonsubject imports increased irregularly during the POR both in terms of volume and market share, accounting for 27.4 percent of apparent U.S. consumption in 2021.[172] Given the domestic industry's market share of 72.6 percent in 2021, the moderate-to-high degree of substitutability between the subject merchandise and the domestic like product, and the importance of price in purchasing decisions, the presence of nonsubject imports would likely not prevent the significant volume of low-priced subject imports that is likely after revocation from taking market share from the domestic industry and/or forcing U.S. producers to either lower prices or forgo price increases to retain market share. Furthermore, despite an increasing volume of nonsubject imports, the domestic industry experienced improved financial performance and increasing prices during the POR due at least in part to the disciplining effects of the orders.[173] Therefore, we find that subject imports would likely cause adverse effects on

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[168] Respondents' Prehearing Brief at 46.

[169] *See generally* 19 U.S.C. § 1675a.

[170] *Compare* CR/PR at Table I-8 with Table III-4.

[171] Specifically, the domestic industry reported that its production capacity remained stable throughout the POR, a majority of responding firms reported that there were no supply constraints in the U.S. market during the POR, and even those firms that reported supply constraints reported that they were temporary and/or "rare." CR/PR at II-11, Table III-3. Finally, a vast majority of firms reported that they do not anticipate changes in the availability of nonsubject imports and U.S. producers reported that they anticipate increased capacity in the foreseeable future. CR/PR at II-9, II-11.

[172] CR/PR at Tables I-8, C-1. Nonsubject import volume increased from 340,756 short tons in 2016 to 922,597 million short tons in 2021; it was lower in interim 2022 (509,714 short tons) than interim 2021 (533,482 short tons). *Id*. Nonsubject imports' share of apparent U.S. consumption by volume increased from 13.5 percent in 2016 to 27.4 percent in 2021; it was higher in interim 2022 at 32.1 percent than in interim 2021 when it was 28.4 percent. *Id.*

[173] CR/PR at V-11-17, Tables III-9, III-10, C-1.

the domestic industry that are distinct from any effects attributable to nonsubject imports in the event of revocation.

In sum, we conclude that, if the orders were revoked, subject imports from China would likely have a significant impact on the domestic industry within a reasonably foreseeable time.

IV. Conclusion

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

Part I: Introduction

Background

On February 1, 2022, the U.S. International Trade Commission ("Commission" or "USITC") gave notice, pursuant to section 751(c) of the Tariff Act of 1930, as amended ("the Act"),[1] that it had instituted reviews to determine whether revocation of the countervailing duty order on ammonium sulfate from China and the antidumping duty order on ammonium sulfate from China would likely lead to the continuation or recurrence of material injury to a domestic industry.[2] [3] On May 9, 2022, the Commission determined that it would conduct full reviews pursuant to section 751(c)(5) of the Act.[4] Table I-1 presents information relating to the background and schedule of this proceeding.[5]

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

[2] 87 FR 5503, February 1, 2022. All interested parties were requested to respond to this notice by submitting the information requested by the Commission.

[3] In accordance with section 751(c) of the Act, the U.S. Department of Commerce ("Commerce") published a notice of initiation of five-year reviews of the subject antidumping and countervailing duty orders. 87 FR 5467, February 1, 2022.

[4] 87 FR 29878, May 17, 2022. The Commission found that both the domestic and respondent interested party group responses to its notice of institution were adequate.

[5] The Commission's notice of institution, notice to conduct full reviews and scheduling notice are referenced in appendix A and may also be found at the Commission's web site (internet address *www.usitc.gov*). Commissioners' votes on whether to conduct expedited or full reviews may also be found at the web site. Appendix B is reserved for the witnesses appearing at the Commission's hearing.

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

Effective date	Action
March 9, 2017	Commerce's countervailing/antidumping duty orders on ammonium sulfate from China (82 FR 13094, March 9, 2017)
February 1, 2022	Commission's institution of five-year reviews (87 FR 5503, February 1, 2022)
February 1, 2022	Commerce's initiation of five-year reviews (87 FR 5467, February 1, 2022)
May 9, 2022	Commission's determinations to conduct full five-year reviews (87 FR 29878, May 17, 2022)
June 1, 2022	Commerce's final results of expedited five-year reviews of the countervailing duty order (87 FR 34848, June 8, 2022)
June 1, 2022	Commerce's final results of expedited five-year reviews of the antidumping duty order (87 FR 34841, June 8, 2022)
August 1, 2022	Commission's scheduling of the reviews (87 FR 47463, August 3, 2022)
December 6, 2022	Scheduled date for the Commission's hearing
January 20, 2022	Scheduled date for the Commission's vote
February 8, 2022	Scheduled date for the Commission's determination(s) and views

The original investigations

The original investigations resulted from petitions filed by PCI Nitrogen, LLC ("PCI"), Pasadena, Texas, on May 25, 2016, alleging that an industry in the United States is materially injured and threatened with material injury by reason of subsidized and less-than-fair-value ("LTFV") imports of ammonium sulfate from China. Following notification of a final determination by Commerce that imports of ammonium sulfate from China were being sold in the United States at LTFV and subsidized by the government of China, the Commission determined on March 2, 2017, that a domestic industry was materially injured by reason of subsidized and LTFV imports of ammonium sulfate from China.[6] Commerce published the countervailing duty and antidumping duty orders on subject imports of ammonium sulfate from China on March 9, 2017.[7]

Previous and related investigations

Ammonium sulfate has not been the subject of any prior related antidumping or countervailing duty investigations in the United States.

[6] *Ammonium Sulfate from China*, *Inv. Nos. 701-TA-562 and 731-TA-1329 (Final)*, USITC Publication 4671, March 2017 ("Original Publication"), p. 1.

[7] 82 FR 13094, March 9, 2017.

Summary data

Table I-2 presents a summary of data from the original investigations and the current full five-year reviews. Summary data from the original proceeding and the current review appear in Appendix C. Apparent consumption by quantity in 2021 was *** percent higher than in 2015, while apparent consumption by value was *** percent higher. Due to the imposition of countervailing and antidumping duty orders resulting from the original investigations, there were no imports of ammonium sulfate from China in 2021. Nonsubject imports as a share of apparent consumption by quantity were *** percentage points higher in 2021 than in 2015, and were *** percentage points higher as a share of value. U.S. producers' market share by quantity was *** percentage points lower in 2021 than in 2015, and was *** percentage points lower as a share of value. Total production in 2021 was 12.7 percent lower than in 2015, and the number of production workers and total hours worked were lower in 2021 than 2015, by *** percent and *** percent, respectively.

Table I-2
Ammonium sulfate: Comparative data from the original investigation and current review, by terminal years

Quantity in short tons; Value in 1,000 dollars; Unit values in dollars per short ton; Shares in percent

Item	Measure	2015	2021
Apparent consumption	Quantity	***	3,372,155
U.S. producers market share	Share of quantity	***	72.6
China market share	Share of quantity	***	---
Nonsubject market share	Share of quantity	***	27.4
Import market share	Share of quantity	***	27.4
Apparent consumption	Value	***	778,838
U.S. producers market share	Share of value	***	70.2
China market share	Share of value	***	---
Nonsubject market share	Share of value	***	29.8
Import market share	Share of value	***	29.8
China	Quantity	***	---
China	Value	***	---
China	Unit value	***	---
Nonsubject sources	Quantity	***	922,597
Nonsubject sources	Value	***	232,285
Nonsubject sources	Unit value	***	$252
All import sources	Quantity	***	922,597
All import sources	Value	***	232,285
All import sources	Unit value	***	$252

Table continued.

Table I-2 Continued
Ammonium sulfate: Comparative data from the original investigation and current review, by terminal years

Quantity in short tons; Value in 1,000 dollars; Unit values in dollars per short ton; ratios in percent

Item	Measure	2015	2021
Capacity	Quantity	4,026,948	3,643,694
Production	Quantity	3,317,859	2,894,954
Capacity utilization	Ratio	82.4	79.5
Producer U.S. shipments	Quantity	***	2,449,558
Producer U.S. shipments	Value	***	546,553
Producer U.S. shipments	Unit value	***	$223
Producer inventories	Quantity	313,336	166,087
Producer inventory ratio to total shipments	Ratio	9.6	***
Production workers (number)	Noted in label	***	***
Hours worked (in 1,000 hours)	Noted in label	***	***
Wages paid (1,000 dollars)	Value	***	***
Hourly wages (dollars per hour)	Value	***	***
Productivity (short tons per hour)	Noted in label	***	***
Net sales	Quantity	3,118,386	2,537,604
Net sales	Value	546,912	596,343
Net sales	Unit value	***	$235
Cost of goods sold	Value	522,546	480,444
Gross profit or (loss)	Value	24,366	115,899
SG&A expense	Value	183,788	61,050
Operating income or (loss)	Value	(159,422)	54,849
Unit COGS	Unit value	***	$189
Unit operating income	Unit value	$(51)	$22
COGS/ Sales	Ratio	95.5	80.6
Operating income or (loss)/Sales	Ratio	29.2	9.2

Source: Office of Investigations memorandum INV-PP-014, Nos. 701-TA-562 and 731-TA-1329 (Final), January 27, 2017, official U.S. import statistics of the U.S. Department of Commerce using HTS subheading 3102.21.00, accessed Sept. 28, 2022, and compiled from data submitted in response to Commission questionnaires.

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent. Zeroes, null values, and undefined calculations are suppressed and shown as “---“. Data for 2015 are from the last year of the original investigations.

Table I-3 and figure I-1 present data on U.S. producers' U.S. shipments and U.S. importers' U.S. imports during the original investigations and these full reviews.

Table I-3
Ammonium sulfate: U.S. producers' U.S. shipments and U.S. importers' imports from the original investigations and these reviews, by source and period

Quantity in short tons

Source	Measure	2013	2014	2015
U.S. producers	Quantity	***	***	***
Subject sources	Quantity	47,236	229,000	369,570
Nonsubject sources	Quantity	283,216	279,428	231,635
All import sources	Quantity	330,452	508,428	601,205
All sources	Quantity	***	***	***

Table continued.

Table I-3 Continued
Ammonium sulfate: U.S. producers' U.S. shipments and U.S. importers' imports from the original investigations and these reviews, by source and period

Quantity in short tons

Source	Measure	2016	2017	2018
U.S. producers	Quantity	1,996,441	2,281,430	2,420,935
Subject sources	Quantity	185,521	118	24
Nonsubject sources	Quantity	340,756	469,055	445,312
All import sources	Quantity	526,277	469,173	445,337
All sources	Quantity	2,522,718	2,750,603	2,866,272

Table continued.

Table I-3 Continued
Ammonium sulfate: U.S. producers' U.S. shipments and U.S. importers' imports from the original investigations and these reviews, by source and period

Quantity in short tons

Source	Measure	2019	2020	2021
U.S. producers	Quantity	2,146,003	2,365,976	2,449,558
Subject sources	Quantity	20	107	--
Nonsubject sources	Quantity	543,753	885,462	922,597
All import sources	Quantity	543,773	885,569	922,597
All sources	Quantity	2,689,776	3,251,545	3,372,155

Source: Office of Investigations memorandum INV-PP-014, Nos. 701-TA-562 and 731-TA-1329 (Final), January 27, 2017, official U.S. import statistics of the U.S. Department of Commerce using HTS subheading 3102.21.00, accessed Sept. 28, 2022, and compiled from data submitted in response to Commission questionnaires.

Note: Zeroes, null values, and undefined calculations are suppressed and shown as "---". Data presented for years 2013-15 are derived from U.S. producers' questionnaire responses in the final phase of the original investigations and from official U.S. import statistics, while data presented for years 2016-21 are derived from U.S. producers' questionnaire responses in these current reviews and from official U.S. import statistics.

Figure I-1
Ammonium sulfate: U.S. producers' U.S. shipments and U.S. importers' imports from the original investigations and these reviews, by source and period

* * * * *

Source: Office of Investigations memorandum INV-PP-014, Nos. 701-TA-562 and 731-TA-1329 (Final), January 27, 2017, official U.S. import statistics of the U.S. Department of Commerce using HTS subheading 3102.21.00, accessed Sept. 28, 2022, and compiled from data submitted in response to Commission questionnaires.

Statutory criteria

Section 751(c) of the Act requires Commerce and the Commission to conduct a review no later than five years after the issuance of an antidumping or countervailing duty order or the suspension of an investigation to determine whether revocation of the order or termination of the suspended investigation "would be likely to lead to continuation or recurrence of dumping or a countervailable subsidy (as the case may be) and of material injury."

Section 752(a) of the Act provides that in making its determination of likelihood of continuation or recurrence of material injury--

> *(1) IN GENERAL.-- . . . the Commission shall determine whether revocation of an order, or termination of a suspended investigation, would be likely to lead to continuation or recurrence of material injury within a reasonably foreseeable time. The Commission shall consider the likely volume, price effect, and impact of imports of the subject merchandise on*

the industry if the order is revoked or the suspended investigation is terminated. The Commission shall take into account--

(A) its prior injury determinations, including the volume, price effect, and impact of imports of the subject merchandise on the industry before the order was issued or the suspension agreement was accepted,

(B) whether any improvement in the state of the industry is related to the order or the suspension agreement,

(C) whether the industry is vulnerable to material injury if the order is revoked or the suspension agreement is terminated, and

(D) in an antidumping proceeding . . ., (Commerce's findings) regarding duty absorption . . ..

(2) VOLUME.--In evaluating the likely volume of imports of the subject merchandise if the order is revoked or the suspended investigation is terminated, the Commission shall consider whether the likely volume of imports of the subject merchandise would be significant if the order is revoked or the suspended investigation is terminated, either in absolute terms or relative to production or consumption in the United States. In so doing, the Commission shall consider all relevant economic factors, including--

(A) any likely increase in production capacity or existing unused production capacity in the exporting country,

(B) existing inventories of the subject merchandise, or likely increases in inventories,

(C) the existence of barriers to the importation of such merchandise into countries other than the United States, and

(D) 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.

(3) PRICE.--In evaluating the likely price effects of imports of the subject merchandise if the order is revoked or the suspended investigation is terminated, the Commission shall consider whether--

(A) there is likely to be significant price underselling by imports of the subject merchandise as compared to domestic like products, and

(B) imports of the subject merchandise are likely to enter the United States at prices that otherwise would have a significant depressing or suppressing effect on the price of domestic like products.

(4) IMPACT ON THE INDUSTRY.--In evaluating the likely impact of imports of the subject merchandise on the industry if the order is revoked or the suspended investigation is terminated, the Commission shall consider all relevant economic factors which are likely to have a bearing on the state of the industry in the United States, including, but not limited to–

(A) likely declines in output, sales, market share, profits, productivity, return on investments, and utilization of capacity,

(B) likely negative effects on cash flow, inventories, employment, wages, growth, ability to raise capital, and investment, and

(C) 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.

The Commission shall evaluate all such relevant economic factors . . . within the context of the business cycle and the conditions of competition that are distinctive to the affected industry.

Section 752(a)(6) of the Act states further that in making its determination, "the Commission may consider the magnitude of the margin of dumping or the magnitude of the net countervailable subsidy. If a countervailable subsidy is involved, the Commission shall consider information regarding the nature of the countervailable subsidy and whether the subsidy is a subsidy described in Article 3 or 6.1 of the Subsidies Agreement."

Organization of report

Information obtained during the course of the reviews that relates to the statutory criteria is presented throughout this report. A summary of trade and financial data for ammonium sulfate as collected in the reviews is presented in appendix C. U.S. industry data are based on the questionnaire responses of six U.S. producers of ammonium sulfate that are believed to have accounted for *** percent of domestic production of ammonium sulfate in 2021.[8] U.S. import data and related information are based on Commerce's official

[8] This coverage calculation is based on responses to Commission questionnaires and on industry size estimates provided in the domestic interested party's response to the notice of institution, exh. 20. U.S. producer *** provided production and trade data, but did not provide complete and/or usable pricing (*continued*...)

import statistics and the questionnaire responses of nine U.S. importers of ammonium sulfate that are believed to account for 30.4 percent of nonsubject imports in 2021.[9] Foreign industry data and related information are based on the questionnaire responses of seven producers of ammonium sulfate, believed to account for *** percent of production in China.[10] Responses by U.S. producers, importers, purchasers, and foreign producers of ammonium sulfate to a series of questions concerning the significance of the existing antidumping and countervailing duty orders and the likely effects of revocation of such orders are presented in appendix D.

Commerce's reviews[11]

Five-year reviews

Commerce has issued the final results of its expedited reviews with respect to China.[12] Table I-4 presents the countervailable subsidy margins and dumping margins calculated by Commerce in its original investigations and first reviews.

Table I-4
Ammonium sulfate: Commerce's original and first five-year countervailable subsidy margins for producers/exporters in China

Producer/exporter	Original margin (*percent*)	First five-year review margin (*percent*)
Wuzhoufeng Agricultural Science & Technology Co. Ltd	206.72	206.72
Yantai Jiahe Agriculture Means of Production Co. Ltd	206.72	206.72
All others	206.72	206.72

Source: 82 FR 13094, March 9, 2017. 87 FR 34841, June 8, 2022.

(…*continued*)
and financial data. Email with ***, December 7, 2022. Unless otherwise noted, ***'s production and trade data are included in all discussions of U.S. producers' ammonium sulfate production and trade information received via questionnaire responses, and ***'s information is not included in any discussions of U.S. producers' financial and pricing information received via questionnaire responses.

[9] As there were no reported subject imports for 2021, no estimate of coverage for responding U.S. importers is provided.

[10] Foreign producers' questionnaire response, section II-5.

[11] Commerce has not conducted any changed circumstances review or scope rulings, since the completion of the original investigation. In addition, Commerce has not issued any duty absorption findings, any company revocations, anti-circumvention findings since the imposition of the order.

[12] 87 FR 34841 and 34848, June 8, 2022.

Table I-4 Continued
Ammonium sulfate: Commerce's original and first five-year dumping margins for producers/exporters in China

Producer/exporter	Original margin (*percent*)	First five-year review margin (*percent*)
PRC-wide entity rate	493.46	493.46

Source: 82 FR 13094, March 9, 2017. 87 FR 34848, June 8, 2022.

The subject merchandise

Commerce's scope

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

> *The merchandise covered by the Order is ammonium sulfate in all physical forms, with or without additives such as anti-caking agents. Ammonium sulfate, which may also be spelled as ammonium sulphate, has the chemical formula $(NH_4)_2SO_4$.*
>
> *The scope includes ammonium sulfate that is combined with other products, including by, for example, blending (i.e., mixing granules of ammonium sulfate with granules of one or more other products), compounding (i.e., when ammonium sulfate is compacted with one or more other products under high pressure), or granulating (incorporating multiple products into granules through, e.g., a slurry process). For such combined products, only the ammonium sulfate component is covered by the scope of this Order.*
>
> *Ammonium sulfate that has been combined with other products is included within the scope regardless of whether the combining occurs in countries other than China.*
>
> *Ammonium sulfate that is otherwise subject to the Order is not excluded when commingled (i.e., mixed or combined) with ammonium sulfate from sources not subject to this Order. Only the subject component of such commingled products is covered by the scope of this Order.*
>
> *The Chemical Abstracts Service (CAS) registry number for ammonium sulfate is 7783-20-2.* [13] [14]

[13] Issues and Decision Memorandum for the Final Results of the Expedited First Sunset Review of the Antidumping Duty Order on Ammonium Sulfate from the People's Republic of China, June 1, 2022.

[14] Issues and Decision Memorandum for the Final Results of the Expedited First Sunset Review of the Countervailing Duty Order on Ammonium Sulfate from the People's Republic of China, June 1, 2022.

Tariff treatment

Ammonium sulfate is imported under Harmonized Tariff Schedule of the United States ("HTS") subheading 3102.21.00, an eo nomine category coextensive with the product. Ammonium sulfate produced in China comes into the U.S. market at a column 1-general duty rate of "free" under this subheading. Effective September 24, 2018, ammonium sulfate produced in China is subject to an additional 25 percent ad valorem duty under Section 301 of the Trade Act of 1974.[15] Decisions on the tariff classification and treatment of imported goods are within the authority of U.S. Customs and Border Protection.

The product

Description and applications[16]

Ammonium sulfate is a solid, crystalline salt, primarily used as a fertilizer. Like other fertilizers such as ammonium nitrate, ammonium phosphate, and urea, ammonium sulfate is a source of nitrogen for soil. However, unlike other nitrogenous fertilizers, ammonium sulfate is also a source of sulfur, used by plants to make amino acids and chlorophyll. Ammonium sulfate is especially applicable for use in growing crops such as cotton and canola that require a relatively high level of sulfur and to increase the acidity of soil.[17] Usage of ammonium sulfate as a fertilizer has increased as sulfur deposition in soil has decreased due to tighter control of air pollution. Beyond crop fertilization, ammonium sulfate is used in small amounts in wallboard, flame proofing, ***.[18]

Ammonium sulfate comes in a variety of grades including granular, standard, soluble fines,[19] and in aqueous solution. Granular grade, which, due to its relatively large particle size (typically 2.5 millimeters), is well suited for mixing with other fertilizers and application by

[15] 83 FR 47974, September 21, 2018. The U.S. Trade Representative has not granted any exclusions for subheading 3102.21 from Section 301 duties under subheading 9903.88.03. Harmonized Tariff Schedule of the United States (2022), Basic Edition, USITC publication 5296, Revision 3, March 2022, Chapter 99 20(f).

[16] Unless otherwise noted, this information is based on Original Publication, pp. I-8—I-9.

[17] Crop Nutrition. "Ammonium sulfate," accessed November 10, 2022. https://www.cropnutrition.com/resource-library/ammonium-sulfate.

[18] Confidential staff report, p. I-11.

[19] Fines are a powder form of ammonium sulfate. "Ammonium Sulphate Fines 20.5-0-0 with 24% Sulphur Safety Data Sheet," Teck company website. https://www.teck.com/media/Ammonium_Sulfate_Fines_with_24_Sulfur_SDS.pdf

spreading machines, accounts for the vast majority of the U.S. market. Standard grade, with smaller sized particles (less than 2 millimeters), is well suited for applications that do not require mechanical spreading, including in orchards or lower technology farms in developing countries.

Manufacturing processes[20]

Ammonium sulfate is produced by the reaction of ammonia and sulfuric acid. This is either done through direct synthesis, or as a co-product of manufacturing processes that, for either pollution control or commercial reasons, benefit from the capture of produced ammonia or sulfuric acid. Estimates of the relative importance of the different production processes vary, but the following three processes likely account for approximately 90 percent of ammonium sulfate production, both globally and in the United States:

- Co-product of caprolactam production. Ammonium sulfate is produced at several stages of the classical process for making caprolactam,[21] a precursor to nylon. Roughly half of global ammonium sulfate production capacity is caprolactam co-production, making it the most important manufacturing process. The classical caprolactam synthesis process produces approximately 4 to 4.5 tons of ammonium sulfate for every ton of caprolactam. However, newer caprolactam manufacturing processes produce less ammonium sulfate per ton of caprolactam.[22]

[20] Unless otherwise noted, this information is based on Original Publication, pp. I-9—I-10.

[21] First, ammonium sulfate is formed when an initial ammonium nitrite solution is converted to hydroxylamine sulfate via sulfur dioxide. Second, the hydroxylamine sulfate is reacted with ammonia to convert cyclohexanone to oxime, producing additional ammonium sulfate. Finally, caprolactam is formed by a rearrangement reaction using oleum as the catalyst. This material is then neutralized with ammonia, forming free caprolactam and ammonium sulfate.

Ammonium sulfate crystals are formed by circulating an ammonium sulfate liquor through a water evaporator, which thickens the solution. The crystals are then separated from the liquor in a centrifuge. The crystals, which contain about 1 to 2.5 percent moisture by weight after centrifugation, are fed to either a fluidized bed dryer or a rotary drum dryer. Fluidized bed dryers are continuously steam heated, while the rotary drum dryers are fired directly with either oil or natural gas or may use steam-heated air. After being dried, the ammonium sulfate crystals are screened into different sized crystals. This screening is done in an enclosed area to restrict fugitive dust from forming.

[22] Including processes that use direct oximation and/or alternative rearrangement catalysts.

- Direct synthesis. As a primary product, ammonium sulfate is produced by the neutralization of ammonium with sulfuric acid.[23] Ammonium sulfate is recovered by crystallization, allowing for relatively large particle size with little variation.
- Coking. The coking of coal produces gas that contains ammonia. Treating this gas with sulfuric acid yields ammonium sulfate.[24] ***.[25]

Other production methods include treatment of sulfuric acid in emissions produced in burning coal; as a co-product during methyl methacrylate manufacture; as a co-product during nickel pressure acid leaching (Ni-PAL); and treatment of ammonium extracted from sewage.

Higher-value granular ammonium sulfate can either result directly from production or be formed after production by compacting standard grade under high pressure to achieve larger, more uniform particle sizes. In the original investigations, the petitioner asserted that the majority of ammonium sulfate imported from China was compacted granular material. The domestic interested party in these reviews again assert that a large amount of ammonium sulfate made in China is compacted granular material.[26] Respondents assert that, due to production processes used by some Chinese firms, approximately 25 percent of ammonium

[23] In the synthetic production process, ammonium sulfate solution is formed by directly reacting anhydrous ammonia with sulfuric acid in a reactor/saturator. The hot ammonium sulfate slurry is then sprayed onto solid recycle granules in a special rotating vessel called a granulator. Coating recycled granules with the slurry solution in the presence of ammonia vapor forms finished ammonium sulfate granules. The granules are transferred to the screening, crushing, and cooling section and are separated into three sizes by vibrating screens. Oversized granules are transferred to chain mills that crush them into smaller sizes. They are then mixed with the undersized granules and recycled to the granulator. Acceptable sized granules are cooled further, coated with an anti-dust chemical, and transferred to storage.

[24] Coke oven gas contains about 1 percent NH_3 by volume. This gas is cooled and passed into saturators containing H_2SO_4, forming $(NH_4)_2SO_4$ crystals. This process is employed in steel plants where large coke-oven batteries are in operation. In the coking process, ammonium sulfate crystals are formed by circulating ammonium sulfate liquor through a water evaporator, which thickens the solution. Ammonium sulfate crystals are then separated from the liquor in a centrifuge. The crystals, which contain about 1 to 2.5 percent moisture by weight after the centrifuge, are fed to either a fluidized bed dryer or a rotary drum dryer. Rotary vacuum filters may be used in place of a centrifuge and dryer. The crystal layer is deposited on the filter and is removed as product. These crystals are then carried by conveyors to bulk storage. After being dried, the ammonium sulfate crystals are screened into different sized crystals. This screening is done in an enclosed area to restrict fugitive dust from forming.

[25] ***.

[26] Domestic interested party's response to the notice of initiation, March 3, 2022, p. 12.

sulfate produced in that country does not meet U.S. customer requirements for color, smell, or minimum nitrogen content.[27]

Domestic like product issues

In its original determinations, the Commission defined a single domestic like product consisting of ammonium sulfate, coextensive with the scope of the investigations.[28] In its notice of institution in these current five-year reviews, the Commission solicited comments from interested parties regarding the appropriate domestic like product and domestic industry.[29] The domestic interested party, the Committee for Fair Trade in Ammonium Sulfate, agrees with the definitions of the domestic like product and the domestic industry contained in the Notice of Institution.[30] In their response to the Commission's notice of institution, the Chinese respondent parties held no position on these definitions, but stated that they reserved the right to address the Commission's definition of the domestic like product at a later time.[31] No party requested that the Commission collect data concerning other possible domestic like products in their comments on the Commission's draft questionnaires. No other interested party provided further comment on the domestic like product.

U.S. market participants

U.S. producers

During the original investigations, 11 firms supplied the Commission with information on their U.S. operations with respect to ammonium sulfate. These firms accounted for the vast majority of U.S. production of ammonium sulfate in 2015.[32] In these current proceedings, the Commission issued U.S. producers' questionnaires to nine firms, six of which provided the Commission with information on their production operations. These firms are believed to

[27] Respondent party response to the notice of initiation, March 3, 2022, p. 7.
[28] Original Publication, p. 6.
[29] 87 FR 5503, February 1, 2022.
[30] *Substantive Response of The Committee for Fair Trade in Ammonium Sulfate*, p. 33.
[31] *Substantive Response of Chinese Respondents*, p. 17.
[32] The eleven U.S. producers that supplied the Commission with usable questionnaire information during the original investigations were: ABC Coke, A Division of Drummond Company, Inc., AdvanSix, Inc. ("AdvanSix"), ArcelorMittal USA, ADM, BASF, Dakota, GAC, JR Simplot, Mountain State Carbon, LLC, PCI Nitrogen, LLC ("PCI"), and Vertellus.

account for *** percent of U.S. production of ammonium sulfate in 2021.[33] Presented in table I-5 is a list of current domestic producers of product and each company's position on continuation of the orders, production locations(s), related and/or affiliated firms, and share of reported production of ammonium sulfate in 2021.

Table I-5
Ammonium sulfate: U.S. producers, positions on orders, U.S. production locations, and shares of reported U.S. production, 2021

Share in percent

Firm	Position on continuation of orders	Production location(s)	Share of production
AdvanSix	***	Hopewell, VA Chester, VA	***
BASF Corporation	***	Freeport, TX	***
Dakota	***	Beulah, ND	***
J.R. Simplot	***	Lathrop, CA Pocatello, ID	***
Martin Resources	***	Plainview, TX	***
PCI	***	Pasadena, TX	***
All firms	Various	Various	***

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

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

As indicated in table I-6, *** U.S. producer is related to foreign producers of ammonium sulfate and *** is related to U.S. importers/exporters of ammonium sulfate. In addition, as discussed in greater detail in Part III, *** U.S. producers directly import the subject merchandise and one purchased ammonium sulfate from U.S. importers.

[33] One firm, ***, provided production and trade data in its U.S. producer questionnaire response, but could not provide usable pricing and financial data. *** were unable to obtain data from ***. Email with ***, December 7, 2022. *** accounted for *** percent of U.S. production of ammonium sulfate in 2021, and responding U.S. producers not including *** accounted for *** percent of U.S. production of ammonium sulfate in 2021.

Table I-6
Ammonium sulfate: U.S. producers' ownership, related and/or affiliated firms

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

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

U.S. importers

In the original investigations, nine U.S. importing firms supplied the Commission with usable information on their operations involving the importation of ammonium sulfate, accounting for 94.4 percent of U.S. imports of ammonium sulfate during 2015.

In the current proceedings, the Commission issued U.S. importers' questionnaires to 21 firms believed to be importers of ammonium sulfate, as well as to nine U.S. producers of ammonium sulfate. Usable questionnaire responses were received from nine importers, representing *** percent of nonsubject imports and *** percent of total imports in 2021.[34] [35] Table I-7 lists all responding U.S. importers of ammonium sulfate from China and other sources, their locations, and their shares of U.S. imports in 2021.

[34] As there were no U.S. imports of ammonium sulfate from China in 2021, no coverage estimate is provided for the responding U.S. importers.

[35] Importer *** reported importing ***. *** reported that ***. *** did not report U.S. commercial shipments because ***. Email with ***, October 24, 2022.

Table I-7
Ammonium sulfate: U.S. importers, their headquarters, and share of imports within a given source in 2021, by firm

Shares in percent

Firm	Headquarters	China	Nonsubject sources	All import sources
ADM	Chicago, IL	***	***	***
EMD	Burlington, MA	***	***	***
EuroChem North America	Tulsa, OK	***	***	***
International Raw Materials	Philadelphia, PA	***	***	***
MacroSource	Savannah, GA	***	***	***
Oakley	North Little Rock, AR	***	***	***
Performance	Franklin, NH	***	***	***
Trammo	New York, NY	***	***	***
Two Rivers	Pasco, WA	***	***	***
All firms	Various	***	***	***

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

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

U.S. purchasers

The Commission received seven usable questionnaire responses from firms that bought ammonium sulfate during January 1, 2016 through June 30, 2022.[36] Six responding purchasers are distributors, *** are end users, and three are retailers (with sales to farmers and cooperatives).[37] In general, responding U.S. purchasers were located in the Midwest, Southeast, Central Southwest, and Pacific Coast. The responding purchasers represented firms in the agricultural industry. Large purchasers of ammonium sulfate include ***.

[36] Of the seven responding purchasers, seven purchased the domestic product, *** purchased imports of the subject merchandise from China, and four purchased imports of ammonium sulfate from other sources.

[37] Two firms identified themselves as both a distributor and a retailer.

Apparent U.S. consumption and market shares

Quantity

Table I-8 and Figure I-2 present data on apparent U.S. consumption and U.S. market shares by quantity for ammonium sulfate. Apparent U.S. consumption by quantity increased 33.7 percent during the period 2016-21, with the 6.2 percent decrease in 2018-19 as the only period without a year-on-year increase in apparent U.S. consumption. During this same period, U.S. producers' market share decreased irregularly by 6.5 percentage points, and the market share of nonsubject imports increased irregularly by 13.9 percentage points. U.S. producers' market share by quantity increased each year during 2016-2018, for a total increase of 5.3 percent, and then decreased by 11.8 percentage points from 2018-2021. The market share of U.S. producers was 3.7 percentage points lower in interim 2022 compared to interim 2021.

Table I-8
Ammonium sulfate: Apparent U.S. consumption and market shares based on quantity, by source and period

Quantity in short tons; shares in percent

Source	Measure	2016	2017	2018
U.S. producers	Quantity	1,996,441	2,281,430	2,420,935
China	Quantity	185,521	118	24
Nonsubject sources	Quantity	340,756	469,055	445,312
All import sources	Quantity	526,277	469,173	445,337
All sources	Quantity	2,522,718	2,750,603	2,866,272
U.S. producers	Share	79.1	82.9	84.5
China	Share	7.4	0.0	0.0
Nonsubject sources	Share	13.5	17.1	15.5
All import sources	Share	20.9	17.1	15.5
All sources	Share	100.0	100.0	100.0

Table continued.

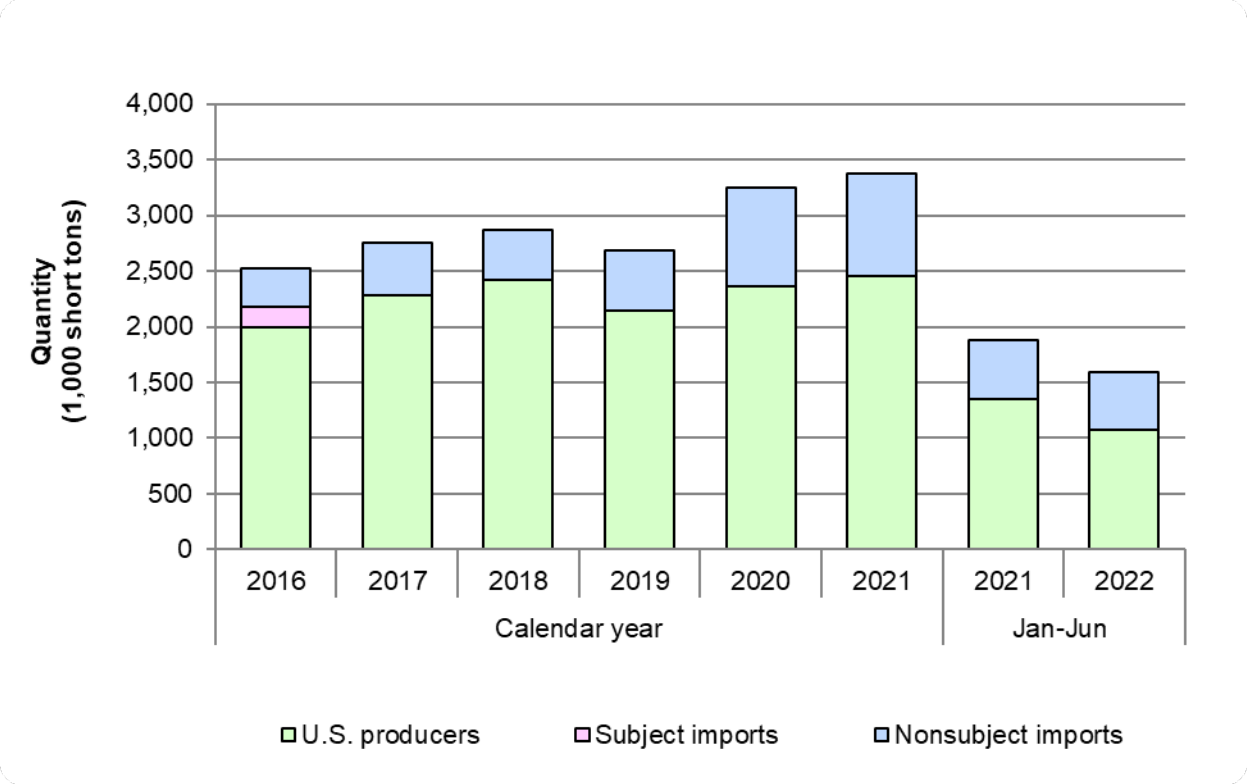
Table I-8 Continued
Ammonium sulfate: Apparent U.S. consumption and market shares based on quantity, by source and period

Quantity in short tons; shares in percent

Source	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
U.S. producers	Quantity	2,146,003	2,365,976	2,449,558	1,347,550	1,077,873
China	Quantity	20	107	---	---	---
Nonsubject sources	Quantity	543,753	885,462	922,597	533,482	509,714
All import sources	Quantity	543,773	885,569	922,597	533,482	509,714
All sources	Quantity	2,689,776	3,251,545	3,372,155	1,881,032	1,587,587
U.S. producers	Share	79.8	72.8	72.6	71.6	67.9
China	Share	0.0	0.0	---	---	---
Nonsubject sources	Share	20.2	27.2	27.4	28.4	32.1
All import sources	Share	20.2	27.2	27.4	28.4	32.1
All sources	Share	100.0	100.0	100.0	100.0	100.0

Source: Compiled data submitted in response to Commission questionnaires and from official U.S. imports statistics of the U.S. Department of Commerce using HTS subheading 3102.21.00, accessed September 28, 2022. Imports are based on the imports for consumption data series.

Figure I-2
Ammonium sulfate: Apparent U.S. consumption based on quantity, by source and period



Source: Compiled data submitted in response to Commission questionnaires and from official U.S. imports statistics of the U.S. Department of Commerce using HTS subheading 3102.21.00, accessed September 28, 2022. Imports are based on the imports for consumption data series.

Value

Table I-9 and figure I-3 present data on apparent U.S. consumption and U.S. market shares by value for ammonium sulfate. Overall apparent consumption by value increased irregularly by 10.5 percent during 2016-19, and subsequently increased each year during 2019-2021, with a 52.9 percent increase over the two-year period, for a total increase of 69.0 percent over the period of review. From 2017 onwards, imports from China never accounted for more than 0.01 percent of apparent consumption by value, following the imposition of countervailing and antidumping duty order from the original investigations. U.S. producers' market share increased each year during 2016-18, with an overall increase of 5.6 percentage points for the period, then decreased irregularly from 2018-21, with 2021 market share 14.1 percentage points lower compared to 2018 and 8.5 percentage points lower compared to 2016. Overall apparent consumption of ammonium sulfate by value was 100.4 percent higher in interim 2022 compared to interim 2021, due to the value of nonsubject imports and U.S. producers'

shipments being 135.8 percent and 85.9 percent higher, respectively, in interim 2022 than in interim 2021.

Table I-9
Ammonium sulfate: Apparent U.S. consumption and market shares based on value, by source and period

Value in 1,000 dollars; shares in percent

Source	Measure	2016	2017	2018
U.S. producers	Value	362,524	381,717	438,115
China	Value	29,659	34	6
Nonsubject sources	Value	68,741	82,575	81,657
All import sources	Value	98,399	82,609	81,663
All sources	Value	460,923	464,326	519,778
U.S. producers	Share of value	78.7	82.2	84.3
China	Share of value	6.4	0.0	0.0
Nonsubject sources	Share of value	14.9	17.8	15.7
All import sources	Share of value	21.3	17.8	15.7
All sources	Share of value	100.0	100.0	100.0

Table continued.

Table I-9 Continued
Ammonium sulfate: Apparent U.S. consumption and market shares based on value, by source and period

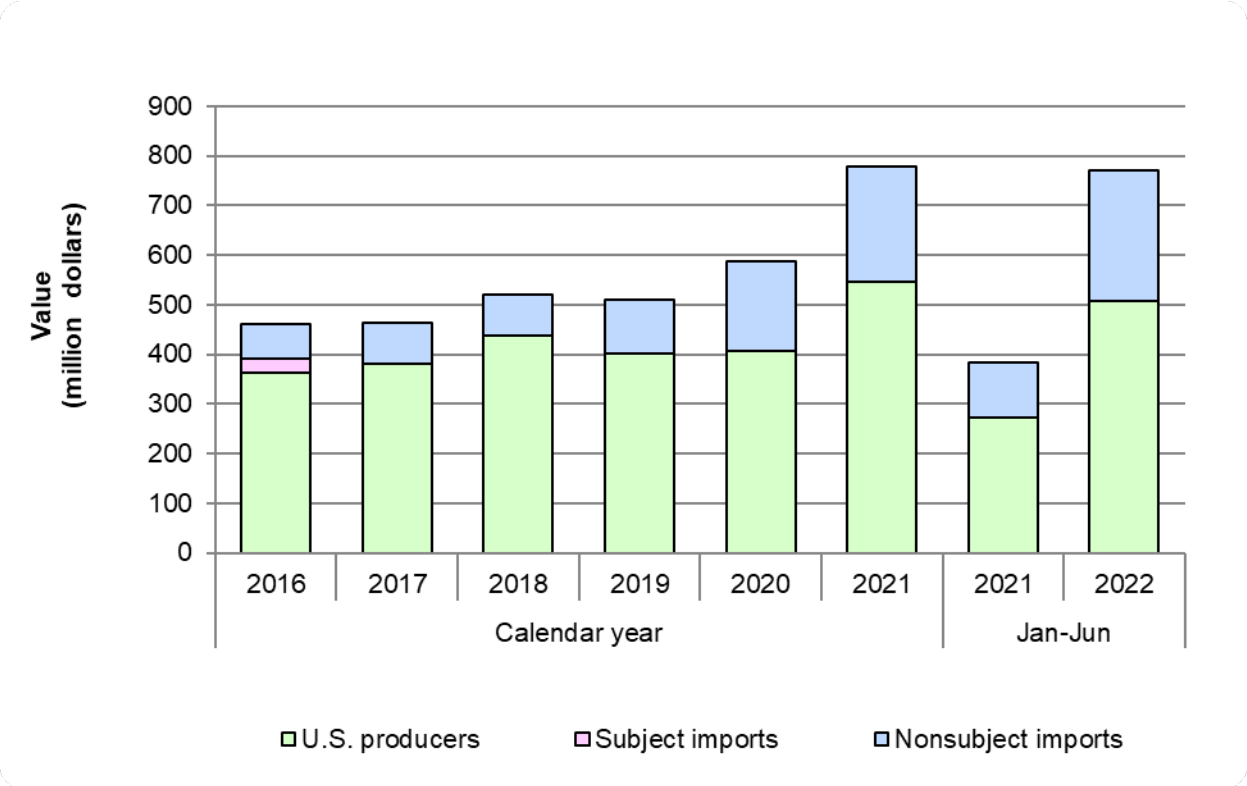
Value in 1,000 dollars; shares in percent

Source	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
U.S. producers	Value	400,684	407,976	546,553	272,301	506,316
China	Value	8	66	---	---	---
Nonsubject sources	Value	108,526	178,380	232,285	111,565	263,089
All import sources	Value	108,534	178,446	232,285	111,565	263,089
All sources	Value	509,218	586,422	778,838	383,866	769,405
U.S. producers	Share of value	78.7	69.6	70.2	70.9	65.8
China	Share of value	0.0	0.0	---	---	---
Nonsubject sources	Share of value	21.3	30.4	29.8	29.1	34.2
All import sources	Share of value	21.3	30.4	29.8	29.1	34.2
All sources	Share of value	100.0	100.0	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires and from official U.S. imports statistics of the U.S. Department of Commerce using HTS subheading 3102.21.00, accessed September 28, 2022. Imports are based on the imports for consumption data series.

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 "---".

Figure I-3
Ammonium sulfate: Apparent U.S. consumption based on value, by source and period



Source: Compiled from data submitted in response to Commission questionnaires and from official U.S. imports statistics of the U.S. Department of Commerce using HTS subheading 3102.21.00, accessed September 28, 2022. Imports are based on the imports for consumption data series.

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

U.S. market characteristics

Ammonium sulfate is used primarily in agricultural and, to a lesser extent, industrial applications. Demand for ammonium sulfate is generally driven by agricultural demand for fertilizer that replenishes sulfur in soils. Ammonium sulfate is typically sold in granular and standard particle size (approximately 2.5 millimeters for granular form and under 2 millimeters for standard form).[1] Both forms have the same nutrient values. Higher grades of ammonium sulfate, such as large crystalized and granular forms, typically command a price premium and are used in mechanized, sophisticated farming.[2]

Apparent U.S. consumption of ammonium sulfate increased during 2016-21. Overall, apparent U.S. consumption in 2021 was *** percent higher than in 2016.[3]

As discussed in part I, the Commission received seven usable questionnaire responses from firms that bought ammonium sulfate during the review period. Six responding purchasers are distributors, *** are end users, and three are retailers (with sales to farmers and cooperatives).[4] All six distributors reported that they compete for sales to their customers with the manufacturers or importers from which they purchase ammonium sulfate.[5] None of the responding purchasers reported purchasing ammonium sulfate from China after 2016.[6]

[1] U.S. producers, importers, and purchasers were asked to assess the interchangeability between different granule sizes of ammonium sulfate. Most responding firms reported that product in each size comparison is "sometimes" interchangeable (3 of 5 U.S. producers, *** importers, and 5 of 7 purchasers). U.S. producers reported that the majority of their U.S. shipments were of a granule size of 2mm or larger (see table III-6).

[2] Original publication, p. II-1.

[3] Apparent consumption was 15.6 percent lower in the interim period of January-June 2022 than in the same period in 2021.

[4] Two firms identified themselves as both a distributor and a retailer.

[5] Purchaser *** reported that it competes with a few of its smaller domestic suppliers. *** reported that it competes for the business of customers who also buy from its suppliers. *** reported that "we all sell {to} the same people." *** reported that its suppliers are also distributors in the regions in which it sells.

[6] However, purchasers ***. Original confidential report, table V-7.

Impact of section 301 tariffs

U.S. producers, importers, and purchasers were asked to report the impact of section 301 tariffs on overall demand, supply, prices, or raw material costs. Three U.S. producers, *** importers, and 4 purchasers reported that section 301 tariffs had an impact on the ammonium sulfate market. One U.S. producer, *** importer, and *** foreign producer reported that section 301 tariffs did not have an impact on the market. One U.S. producer, *** importers, 3 purchasers, and *** foreign producers reported that they did not know whether section 301 tariffs had had an impact.

Firms that reported that the section 301 tariffs had an impact were asked further questions regarding the impact on U.S. supply, Chinese supply, supply from other sources, prices, U.S. demand, and raw material costs, as summarized in table II-1. A majority of responding firms indicated that the supply of ammonium sulfate from China had decreased, the supply from nonsubject countries had increased, and that there was no change in domestic supply.[7] A majority of firms indicated that prices, demand, and the cost of raw materials had increased. Firms provided varying responses regarding the impact of the section 301 tariffs (table II-2).

[7] Importer *** reported both no change and a decrease in the domestic supply.

Table II-1
Ammonium sulfate: Count of firms' responses regarding the impact of the 301 tariffs on Chinese origin products

Item	Firm type	Increase	No change	Decrease	Fluctuate
Domestic supply in market	U.S. producer	0	3	0	0
China supply in market	U.S. producer	0	0	3	0
Other than China supply in market	U.S. producer	3	0	0	0
Prices of scope merchandise	U.S. producer	1	0	1	1
Overall demand in market	U.S. producer	1	1	0	1
Raw material costs of scope merchandise	U.S. producer	2	0	0	1
Domestic supply in market	Importer	***	***	***	***
China supply in market	Importer	***	***	***	***
Other than China supply in market	Importer	***	***	***	***
Prices of scope merchandise	Importer	***	***	***	***
Overall demand in market	Importer	***	***	***	***
Raw material costs of scope merchandise	Importer	***	***	***	***
Domestic supply in market	Purchaser	1	2	0	1
China supply in market	Purchaser	0	0	4	0
Other than China supply in market	Purchaser	2	2	0	0
Prices of scope merchandise	Purchaser	4	0	0	0
Overall demand in market	Purchaser	2	2	0	0
Raw material costs of scope merchandise	Purchaser	2	0	0	2

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

Table II-2
Ammonium sulfate: Firms' narrative responses regarding the impact of the 301 tariffs on Chinese origin products

Firm	Firm type	Supply	Prices
***	U.S. producer	***	***
***	U.S. producer	***	***
***	Importer	***	***
***	Importer	***	***
***	Purchaser	***	***
***	Purchaser	***	***
***	Purchaser	***	***

Table continued.

Table II-2 Continued
Ammonium sulfate: Firms' narrative responses regarding the impact of the 301 tariffs on Chinese origin products

Firm	Firm type	U.S. demand	Raw material costs
***	U.S. producer	***	***
***	U.S. producer	***	***
***	Importer	***	***
***	Importer	***	***
***	Purchaser	***	***
***	Purchaser	***	***
***	Purchaser	***	***

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

Channels of distribution

U.S. producers sold mainly to distributors while importers sold mainly to retailers, as shown in table II-3.[8]

[8] *** reported ***. *** reported U.S. commercial shipments in 2017. ***.

Table II-3
Ammonium sulfate: Share of U.S. shipments by source, channel of distribution, and period

Shares in percent

Source	Channel	2016	2017	2018	2019
United States	Distributors	***	***	***	***
United States	Retailers	***	***	***	***
United States	End users	***	***	***	***
China	Distributors	***	***	***	***
China	Retailers	***	***	***	***
China	End users	***	***	***	***
Nonsubject	Distributors	***	***	***	***
Nonsubject	Retailers	***	***	***	***
Nonsubject	End users	***	***	***	***
All imports	Distributors	***	***	***	***
All imports	Retailers	***	***	***	***
All imports	End users	***	***	***	***

Table continued.

Table II-3 Continued
Ammonium sulfate: Share of U.S. shipments by source, channel of distribution, and period

Shares in percent

Source	Channel	2020	2021	Jan-Jun 2021	Jan-Jun 2022
United States	Distributors	***	***	***	***
United States	Retailers	***	***	***	***
United States	End users	***	***	***	***
China	Distributors	***	***	***	***
China	Retailers	***	***	***	***
China	End users	***	***	***	***
Nonsubject	Distributors	***	***	***	***
Nonsubject	Retailers	***	***	***	***
Nonsubject	End users	***	***	***	***
All imports	Distributors	***	***	***	***
All imports	Retailers	***	***	***	***
All imports	End users	***	***	***	***

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

Geographic distribution

U.S. producers and importers reported selling ammonium sulfate to all regions in the contiguous United States (table II-4). In 2021, U.S. producers sold *** percent within 100 miles of their production facility, *** percent of sales were between 101 and 1,000 miles, and *** percent were over 1,000 miles. In 2016, *** sold *** percent within 100 miles of its U.S. point of shipment, *** percent between 101 and 1,000 miles, and *** percent over 1,000 miles. *** sold *** percent within 100 miles of its U.S. point of shipment, *** percent between 101 and 1,000 miles, and *** percent over 1,000 miles.

Table II-4
Ammonium sulfate: Count of U.S. producers' and U.S. importers' geographic markets

Region	U.S. producers	China
Northeast	2	***
Midwest	4	***
Southeast	4	***
Central Southwest	3	***
Mountains	5	***
Pacific Coast	3	***
Other	0	***
All regions (except Other)	1	***
Reporting firms	5	***

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

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

Supply and demand considerations

U.S. supply

Table II-5 provides a summary of the supply factors regarding ammonium sulfate from U.S. producers and from China. U.S. producers' capacity was relatively stable during 2016-21 and capacity utilization decreased while Chinese producers' capacity and capacity utilization increased. U.S. inventories as a share of total shipments decreased while Chinese inventories as a share of total shipments increased.

Table II-5
Ammonium sulfate: Supply factors that affect the ability to increase shipments to the U.S. market, by country

Quantity in short tons; ratio in percent; count in number of firms reporting

Factor	Measure	United States	China
Capacity 2016	Quantity	***	***
Capacity 2021	Quantity	***	***
Capacity utilization 2016	Ratio	***	***
Capacity utilization 2021	Ratio	***	***
Ending inventories 2016	Ratio	***	***
Ending inventories 2021	Ratio	***	***
Home market 2021	Ratio	***	***
Non-US export markets 2021	Ratio	***	***
Ability to shift production	Count	***	***

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

Note: Responding U.S. producers accounted for more than *** percent of U.S. production of ammonium sulfate in 2021. There were no reported U.S. imports of ammonium sulfate from China during 2021. For additional data on the number of responding firms and their share of U.S. production and of U.S. imports from China, please refer to Part I, "U.S. market participants."

Note: Capacity utilization is measured as a ratio of production to capacity, ending inventories is measured as a share of total shipments, home market 2021 and non-U.S. export market 2021 shipments are measured as a share of total shipments.

Domestic production

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

U.S. producers' capacity, production, and capacity utilization were relatively stable during 2016-21, while inventories to total shipments decreased.[9] Major export markets reported by U.S. producers include Brazil, Canada, Colombia, Dominican Republic, Paraguay, and Peru. U.S. producers reported that Chinese exports into some of these markets have driven prices down, making it difficult to compete. Mexico had antidumping duties in place against imports from the United States since 2015, which were suspended in May 2022 through November 2023.[10] The European Union charges U.S. exporters 6.5 percent ordinary customs duties on imports from the United States.[11] One U.S. producer stated that production equipment cannot be shifted for production to other products, and another U.S. producer stated that ammonium sulfate is produced as a co-product and the production process does not allow for shifting.

Most responding U.S. producers (3 of 5) reported that the availability of U.S.-produced ammonium sulfate had changed since 2016. U.S. producer *** reported that its exports had decreased.[12] Most responding importers (***) reported that the availability of U.S.-produced ammonium sulfate had not changed since 2016. Of those that did report a change, *** reported the Fibrant production facility in Augusta, GA had closed and *** reported increased downtime at Honeywell, IOC, and BASF facilities. Purchasers' responses were mixed (4 firms each) on changes in the availability of U.S.-produced ammonium sulfate.[13] Purchaser *** reported fewer domestic producers than in 2016 while *** reported new producers had entered the market. Purchaser *** reported that producers had increased the efficiency of plants. Most U.S. producers (3 of 5), importers (***), and purchasers (6 of 7) reported that they do not anticipate changes in availability in the future.

Subject imports from China

Based on available information, producers of ammonium sulfate from China have the ability to respond to changes in demand with moderate-to-large changes in the quantity of shipments of ammonium sulfate to the U.S. market. The main contributing factors to this degree of responsiveness of supply are the availability of unused capacity, the ability to shift

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[9] U.S. producers' capacity increased by *** percent and production decreased by *** percent during 2016-21. For more information on U.S. producers' production, see table III-4.

[10] *Diario Oficial de la Federación*, November 24, 2022. https://dof.gob.mx/nota_detalle.php?codigo=5672275&fecha=24/11/2022#gsc.tab=0.

[11] European Commission, https://ec.europa.eu/taxation_customs, retrieved January 5, 2023.

[12] For more information on U.S. producers' export shipments, see table III-5.

[13] Purchaser *** reported both yes and no.

shipments from inventories, the ability to shift shipments from alternate markets, and some ability to shift production to or from alternate products. A factor potentially mitigating responsiveness of supply is the impact of section 301 tariffs.

Chinese producers' capacity, production, capacity utilization, and ratio of inventories to total shipments increased during 2016-21.[14] Chinese producers reported that the ammonium sulfate market in China is emerging with many suppliers and that there is no import competition. Major export markets reported by foreign producers include Australia, Brazil, Burma, Ghana, the Philippines, Singapore, Thailand, and Vietnam.[15] *** responding Chinese producers reported that Mexico imposed antidumping duties on Chinese ammonium sulfate in 2015; the Mexican government subsequently suspended the orders in May 2022 until December 2022 in an effort to reduce inflation rates.

Other products that responding foreign producers reportedly can produce on the same equipment as ammonium sulfate are granular ammonium chloride, urea, compound fertilizers, heavy calcium superphosphate, potassium sulfate granules, and potassium magnesium chloride granules. Factors affecting foreign producers' ability to shift production include the time it takes to shut down production associated with adjusting, cleaning, and testing the machinery.

All four responding U.S. producers reported that the availability of subject imports from China had changed since 2016, citing the decline in imports due to the AD/CVD duties. Most responding importers (***) reported that the availability of subject imports from China had not changed since 2016. The one firm (***) that did report a change cited that it was due to the AD/CVD duties. Purchasers' responses were mixed (three firms each) on changes in the availability of subject imports from China. Purchasers that had reported a change cited the AD/CVD duties. Most responding U.S. producers (3 of 4), importers (***), and purchasers (5 of 6) reported that they did not anticipate changes in availability in the future.

Petitioner expects Chinese capacity to reach *** short tons in 2025 and reported that much of this capacity will be unused.[16]

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[14] Chinese producers' capacity increased by *** percent and production increased by *** percent during 2016-21 (see table IV-9).

[15] Most Chinese producers reported no change and anticipated no future change in factors affecting supply. Foreign producer *** reported that the section 301 tariffs prevent Chinese shipments to the United States and that most of its capacity is occupied by long-term contracts in the Brazilian market. Other foreign producers reported that it would be difficult to develop in the U.S. market again because of losing customers {since the AD/CVD orders} and that they have focused on the increasing demand in other markets.

[16] Domestic interested parties' prehearing brief, p. 22.

[16] Domestic interested parties' prehearing brief, p. 25.

Respondents stated that the "increasingly stringent environmental regulations limit their production of ammonium sulfate" and Chinese government's "aggressive goals for reducing carbon dioxide and pollutive gas emissions… are expected to remain in place for the next decade."[17] They also stated that COVID-19 policies in China also limit Chinese production.[18]

Imports from nonsubject sources

Nonsubject imports accounted for all of U.S. imports in 2021. The largest sources of nonsubject imports reported in questionnaires in 2021 were Belgium, Canada, and Russia. Combined, these countries accounted for 83.4 percent of nonsubject imports in 2021.[19]

All four responding U.S. producers reported that the availability of nonsubject imports had changed since 2016, citing the increase in imports from Belgium, Canada, Germany, Russia, and South Korea. Most importers (***) and purchasers (4 of 6) reported that the availability of nonsubject imports had not changed since 2016. All 4 responding U.S. producers, most importers (***), and all 7 purchasers reported that they did not anticipate changes in availability of nonsubject imports.

Supply constraints

Three of 5 responding U.S. producers and *** importers reported that they had not experienced supply constraints since January 1, 2016. The two U.S. producers that did report supply constraints cited periodic production outages and occasional seasonal demand outpacing storage capacity volume.

Importer *** reported that U.S. producers would not sell ammonium sulfate to the firm in 2016 but once it found supply elsewhere, sales offers from U.S. producers increased. Importer *** reported that availability has impacted its sales to customers.[20] Importer *** reported unplanned production or shipping outages.

Five of 7 responding purchasers reported that they had not experienced supply constraints since January 1, 2016. The two purchasers that did report supply constraints cited that it was rare and that outages happen occasionally, usually due to production down time.

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[17] Respondents' prehearing brief, pp. 24-25.

[18] Respondents' prehearing brief, p. 27.

[19] Canada accounted for 51.2 percent, Belgium 25.7 percent, and Russia 6.5 percent. Compiled from official import statistics, using HTS statistical reporting number 3102.21.0000.

[20] The firm reported purchases from foreign producer ***.

New suppliers

Four of 6 responding purchasers indicated that new suppliers entered the U.S. market since January 1, 2016. New domestic suppliers reported by purchasers include NeuAg (3 firms) and N-7 (1 firm). New foreign suppliers reported include Ultramar (Russia) and PhosAgro (Russia). Two of 7 purchasers anticipate new ammonium sulfate suppliers to enter the U.S. market in the future. Purchaser *** reported that new plants that manufacture computer chips will generate ammonium sulfate. The firm also anticipates new plants that collect and process pre-consumer food waste will generate ammonium sulfate.

Product changes

Most responding U.S. producers (4 of 5) and *** responding importers reported that there had not been significant changes in the product range, mix, or marketing of ammonium sulfate since January 1, 2016. The same firms reported that they do not anticipate any changes in the future. U.S. producer *** reported that "there has been a U.S. push to go directly to retailers instead of wholesalers/importers and more discovery into sulfate coated urea."

U.S. demand

Based on available information, the overall demand for ammonium sulfate is likely to experience small-to-moderate changes in response to changes in price. The main contributing factors are a limited range of close substitute products and the moderate, though varying, cost share of ammonium sulfate in most of its end-use products.

End uses and cost share

U.S. demand for ammonium sulfate depends on the demand for U.S.-produced downstream products. The largest end-use market for ammonium sulfate is the agricultural industry, which uses ammonium sulfate as a component in fertilizer for crops. All responding U.S. producers, importers, purchasers, and foreign producers reported no changes in end uses nor anticipate changes in the future. When asked if there are any end uses of ammonium sulfate that require a specific granule size, firms reported that a larger particle size (greater than 2.5 mm) makes spreading on fields easier due to the mechanization of the equipment used. Firms also reported that the larger particle size helps with blending with other fertilizers so that a uniform mix can be applied to the field.

The cost share of ammonium sulfate is low compared to the final cost of agricultural crops, but it is a higher cost share of intermediate products used in agricultural production such as fertilizer. In the original investigations, reported cost shares ranged from *** percent of agricultural crops to *** percent for fertilizers, with many responses in the range of *** percent for fertilizer blends.[21]

Business cycles

Three of 5 U.S. producers and 6 of 7 purchasers indicated that the market was subject to business cycles; *** importers reported that it was not. Specifically, most responding firms stated that ammonium sulfate is subject to seasonal (i.e., spring and fall) business cycles driven by fertilizing and crop cycles. Three of 5 responding U.S. producers, *** importers, and 6 of 7 purchasers reported that there were no distinctive conditions of competition.

Demand trends

Most U.S. producers and purchasers reported an increase in U.S. demand for ammonium sulfate since January 1, 2016 (table II-6). Importer responses were *** split between ***. Foreign producers were split between increase (***) and no change (***).

Table II-6
Ammonium sulfate: Count of firms' responses regarding overall domestic and foreign demand since January 1, 2016, by firm type

Market	Firm type	Increase	No change	Decrease	Fluctuate
U.S. demand	U.S. producers	3	0	0	1
U.S. demand	Importers	***	***	***	***
U.S. demand	Purchasers	4	2	0	1
U.S. demand	Foreign producers	***	***	***	***
Foreign demand	U.S. producers	2	0	0	2
Foreign demand	Importers	***	***	***	***
Foreign demand	Purchasers	2	1	0	2
Demand in China	Foreign producers	***	***	***	***
Demand in other export markets	Foreign producers	***	***	***	***
Demand for end use products	Purchasers	2	1	0	0

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

[21] Original confidential report, p. II-11.

When describing U.S. demand since 2016, U.S. producers and purchasers reported an increase in U.S. demand for ammonium sulfate due to growing demand for crops, less acid rain, and the proven efficacy of sulfur as a nutrient. Foreign producers that reported an increase in U.S. demand cited an increase in the cultivated area of agricultural plantings in the United States, resulting in an increase in demand for ammonium sulfate.

When describing a foreign demand increase, U.S. producer *** reported the importance of sulfur and regulation related to ammonium nitrate. Purchaser *** reported that less mature markets are understanding the value that sulfur brings to crop yields.

When describing increased demand in China, Chinese producers cited the promotion of the usefulness of sulfur fertilizers, increased demand for nitrogen fertilizer, larger areas being cultivated, and greater use of advanced fertilizers. When describing demand in other export markets, foreign producers cited the increase in the area of agricultural plantings in Africa, Southeastern Asia, and South America and increased use of fertilizers.

Purchasers were also asked how demand for end-use products has changed since 2016. Two of 3 responding purchasers reported an increase in demand for end-use products. Purchaser *** reported an increase due to farmer demand.

Two U.S. producers, *** importers, four purchasers, and *** foreign producers expect U.S. demand to increase over the next two years (table II-7). Domestic interested party PCI projects that U.S. demand for the remainder of 2022 and 2023 will *** and AdvanSix projects ***.[22]

[22] Domestic interested parties' posthearing brief, p. 8.

Respondents claim that the war in Ukraine has reduced the supply of ammonium sulfate in a number of markets.[23] They state that the war has led to a gas shortage in Europe, causing 70 percent of ammonia production in Europe to be suspended.[24] In addition, they state that Russia has halted its exports to Europe of ammonia, a key input in European production of ammonium sulfate.[25] They add that reduced European production explains the increase in European fertilizers prices and increased European imports from "non-traditional sources."[26] In addition, respondents state that "although Russian ammonium sulfate has not been directly sanctioned as a result of the war in Ukraine, due to restrictions on payments and other factors, the exports of ammonium sulfate from Russia have decreased drastically since February."[27] According to respondents, this creates a supply gap which Chinese producers can fill.[28]

Respondents expect increased demand in Brazil in 2022 and 2023.[29]

Table II-7
Ammonium sulfate: Count of firms' responses regarding anticipated overall domestic and foreign demand, by firm type

Number of firms reporting

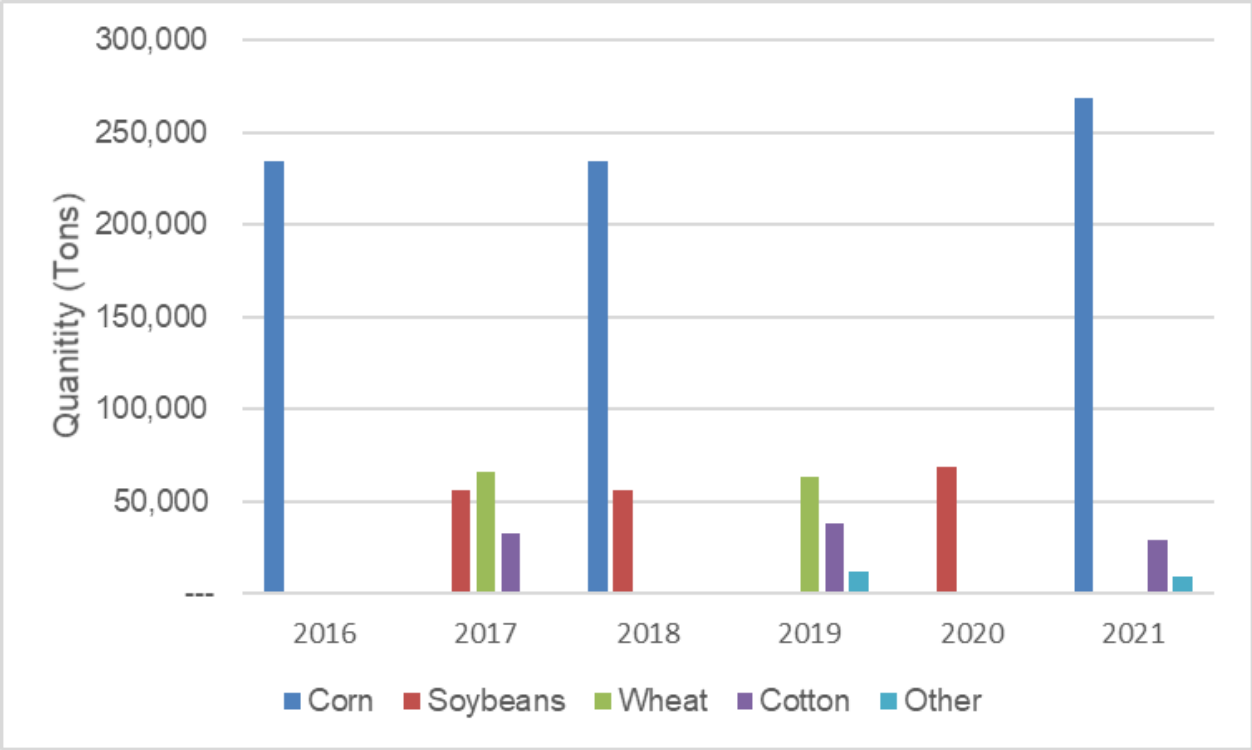
Market	Firm type	Increase	No change	Decrease	Fluctuate
U.S. demand	U.S. producers	2	1	0	1
U.S. demand	Importers	***	***	***	***
U.S. demand	Purchasers	4	2	0	1
U.S. demand	Foreign producers	***	***	***	***
Foreign demand	U.S. producers	2	0	0	2
Foreign demand	Importers	***	***	***	***
Foreign demand	Purchasers	2	1	0	2
Demand in subject country	Foreign producers	***	***	***	***
Demand in other export markets	Foreign producers	***	***	***	***

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

[23] Respondents' prehearing brief, pp. 26-31.
[24] Respondents' prehearing brief, p. 31.
[25] Respondents' prehearing brief, p. 29.
[26] Respondents' prehearing brief, pp. 29-31.
[27] Respondents' prehearing brief, p. 28.
[28] Respondents' prehearing brief, p. 28.
[29] Respondents' posthearing brief, p. 6.

Demand for ammonium sulfate is generally driven by agricultural plantings, specifically for the replenishment of sulfur in soils. Ammonium sulfate is used on a variety of crops including barley, corn, cotton, peanuts, rice, sorghum, soybeans, and wheat (figure II-1). Corn crops have used the most sulfur in recent years by a wide margin. U.S. farmers applied 268,500 tons of sulfur to corn planted acres in 2021, an increase of 14.8 percent from 233,950 tons in 2016.

Figure II-1
U.S. agricultural plantings: Sulfur applied by crop type, 2016-2021



Source: United States Department of Agriculture (USDA), National Agricultural Statistics Service (NASS), Agricultural Chemical Use Survey, 2016-21.

Note: Other includes barley, peanuts, rice, and sorghum. Not all data is available for all years.

Table II-8
U.S. agricultural plantings: Sulfur applied by crop type, 2016-2021

Quantity in tons

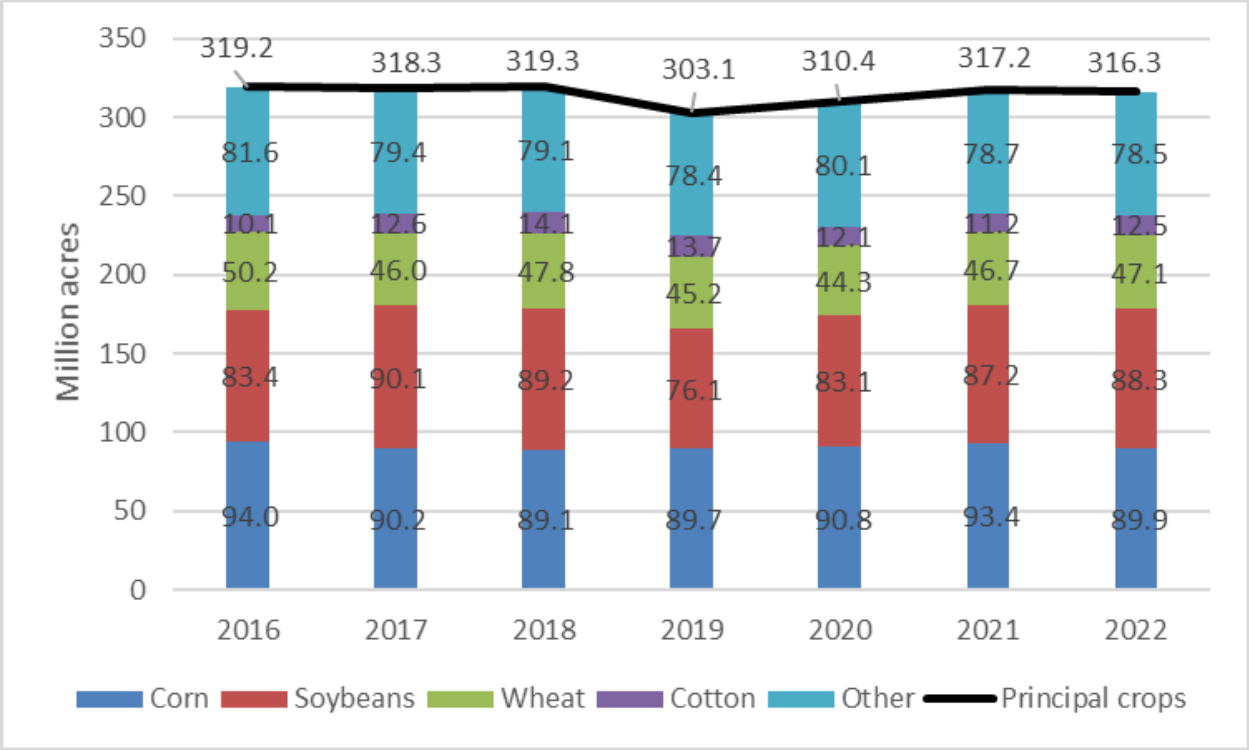
Crop	2016	2017	2018	2019	2020	2021
Corn	233,950	---	234,200	---	---	268,500
Soybeans	---	56,100	55,750	---	68,900	---
Wheat	---	65,600	---	63,250	---	---
Cotton	---	32,500	---	37,600	---	28,650
Other	---	---	1,050	11,700	---	8,900

Source: United States Department of Agriculture (USDA), National Agricultural Statistics Service (NASS), Agricultural Chemical Use Survey, 2016-21.

Note: Other includes barley, peanuts, rice, and sorghum. Not all data is available for all years.

Sulfur applications to corn increased during 2016-21 while the area planted in corn changed relatively little. The area planted for corn grown in the United States was 93.4 million acres in 2021, a slight decrease from 94.0 million acres in 2016 (figure II-2).

Figure II-2
U.S. agricultural plantings: United States size of area planted in acres by crop type, 2016-2022



Source: United States Department of Agriculture (USDA), National Agricultural Statistics Service (NASS), Agricultural Statistics Board, Acreage, June 30, 2017, June 29, 2018, June 28, 2019, June 30, 2020, June 30, 2021, and June 30, 2022.

Note: See table II-9 note.

Table II-9
U.S. agricultural plantings: United States size of area planted in acres by crop type, 2016-2022

Quantity in million acres

Crop	2016	2017	2018	2019	2020	2021	2022
Corn	94.0	90.2	89.1	89.7	90.8	93.4	89.9
Soybeans	83.4	90.1	89.2	76.1	83.1	87.2	88.3
Wheat	50.2	46.0	47.8	45.2	44.3	46.7	47.1
Cotton	10.1	12.6	14.1	13.7	12.1	11.2	12.5
Other	81.6	79.4	79.1	78.4	80.1	78.7	78.5
Principal crops	319.2	318.3	319.3	303.1	310.4	317.2	316.3

Source: United States Department of Agriculture (USDA), National Agricultural Statistics Service (NASS), Agricultural Statistics Board, Acreage, June 30, 2017, June 29, 2018, June 28, 2019, June 30, 2020, June 30, 2021, and June 30, 2022.

Note: Principal crops included in area planted are corn, sorghum, oats, barley, rye, winter wheat, durum wheat, other spring wheat, rice, soybeans, peanuts, sunflower, cotton, dry edible beans, chickpeas, potatoes, sugar beets, canola, and proso millet. Harvested acreage is used for all hay, tobacco, and sugarcane in computing total area planted. This includes double cropped acres and unharvested small grains planted as cover crops.

Substitute products

Most U.S. producers, importers, purchasers, and foreign producers reported that there were no new substitutes for ammonium sulfate and did not anticipate any future changes in substitutes.[30] Of the firms that did report new substitutes, U.S. producer *** reported a new ammonium sulfate-like product that is comprised of about 80 percent ammonium sulfate and the rest of organic matter such as sludge and food waste. Purchaser *** reported that there are nitrogen and phosphate producers that are adding sulfur to their products. U.S. producer *** and importer *** anticipate the future use of urea sulfur.[31]

[30] Substitutes for ammonium sulfate reported in the original investigations include ammonia thiosulfate, anhydrous ammonia, degradable sulfur, elemental sulfur, fertilizer blends, gypsum, and urea for uses in agriculture and fertilizers. Original publication, p. II-8.

[31] Domestic interested parties report that "'urea sulfur' refers to a new co-granulated product" containing ammonium sulfate and urea that "facilitates a more homogeneous application versus the typical blended fertilizer" and has "been imported into the United States in very limited quantities." Domestic interested parties' posthearing brief, exhibit 1, p. 16. Respondents report that ammonium sulfate is less expensive and easier to use than urea sulfur. Respondents' posthearing brief, pp. 13-14.

Substitutability issues

This section assesses the degree to which U.S.-produced ammonium sulfate and imports of ammonium sulfate from China can be substituted for one another by examining the importance of certain purchasing factors and the comparability of ammonium sulfate from domestic and imported sources based on those factors. In this review, information from purchasers and importers regarding imports from China is extremely limited since subject imports have been largely absent from the U.S. market. Only three responding firms reported importing product from China 2016, one imported a small amount in 2022, and ***. No purchasers reported purchasing subject imports and only two purchasers reported being familiar with ammonium sulfate produced in China.

Based on available data, staff believes that there is a moderate-to-high degree of substitutability between domestically produced ammonium sulfate and ammonium sulfate imported from China.[32] Factors contributing to a higher level of substitutability include the importance of price in purchase decisions, no reported purchaser preference for U.S.-produced product, and data that most sales are from inventories rather than produced-to-order which would likely reduce lead time differences. Factors reducing substitutability include quality differences between ammonium sulfate produced in the United States and in China and factors other than price that firms sometimes consider.

Factors affecting purchasing decisions[33]

Purchaser decisions based on source

As shown in table II-10, most purchasers and their customers sometimes or never make purchasing decisions based on the producer or country of origin, with several of these firms citing purchases based on price and quality. One purchaser reported that some agreements require domestic purchases.

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[32] The degree of substitution between domestic and imported ammonium sulfate depends upon the extent of product differentiation between the domestic and imported products and reflects how easily purchasers can switch from domestically produced ammonium sulfate to the ammonium sulfate imported from China (or vice versa) when prices change. The degree of substitution may include such factors as relative prices (discounts/rebates), quality differences (e.g., grade standards, defect rates, etc.), and differences in sales conditions (e.g., lead times between order and delivery dates, reliability of supply, product services, etc.).

[33] All 7 purchasers indicated they had marketing/pricing knowledge of domestic product, 2 of Chinese product, and 3 of product from nonsubject countries. Nonsubject countries reported include Belgium, Germany, Mexico, the Netherlands, and Russia.

Table II-10
Ammonium sulfate: Count of purchasers' responses regarding frequency of purchasing decisions based on producer and country of origin

Firm making decision	Decision based on	Always	Usually	Sometimes	Never
Purchaser	Producer	2	1	4	0
Customer	Producer	0	1	2	3
Purchaser	Country	2	1	2	2
Customer	Country	0	1	2	3

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

Importance of purchasing domestic product

All seven responding purchasers reported that most or all of their purchases did not require purchasing U.S.-produced product. One purchaser reported that domestic product was required by its customers (for 7 percent of its purchases).

Availability of specific product types

All seven responding purchasers reported that all types of ammonium sulfate are available from all country sources.

Most important purchase factors

The most often cited top three factors firms consider in their purchasing decisions for ammonium sulfate were price (7 firms), availability (6 firms), and quality (5 firms) as shown in table II-11. Quality was the most frequently cited first-most important factor (cited by 3 firms), followed by price (2 firms); price was the most frequently reported second-most important factor (4 firms); and availability was the most frequently reported third-most important factor (6 firms).

Table II-11
Ammonium sulfate: Count of purchasers' ranking of factors used in purchasing decisions as reported by purchasers, by factor

Factor	First	Second	Third	Total
Price	2	4	1	7
Availability	0	0	6	6
Quality	3	2	0	5
Supply	1	1	0	2
Logistics capabilities	1	0	0	1

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

Note: Availability and supply were counted separately because purchaser *** reported a distinction between the two factors.

The majority of purchasers (4 of 7) reported that they usually purchase the lowest-priced product. The remaining 3 firms sometimes purchase the lowest-priced product.

Importance of specified purchase factors

Purchasers were asked to rate the importance of 17 factors in their purchasing decisions (table II-12). The factors rated as very important by more than half of responding purchasers were availability, price, product consistency, quality meets industry standards, and reliability of supply (7 each); granule size (6); delivery time and U.S. transportation costs (5 each); and delivery terms (4).

Table II-12
Ammonium sulfate: Count of purchasers' responses regarding importance of purchase factors, by factor

Factor	Very important	Somewhat important	Not important
Availability	7	0	0
Delivery terms	4	3	0
Delivery time	5	2	0
Discounts offered	2	4	1
Extension of credit	2	1	4
Granule size	6	1	0
Minimum quantity requirements	0	1	6
Packaging	1	1	5
Payment terms	2	2	3
Price	7	0	0
Product consistency	7	0	0
Product range	1	2	4
Quality meets industry standards	7	0	0
Quality exceeds industry standards	3	4	0
Reliability of supply	7	0	0
Technical support/service	0	4	3
U.S. transportation costs	5	2	0

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

Lead times

U.S. producers reported selling all ammonium sulfate from inventory, with lead times averaging 23 days.[34]

[34] In the original investigations, importers reported selling *** percent from inventories with lead times ranging from a week to a month. Original confidential report, p. II-14.

Supplier certification

Five of 7 responding purchasers require their suppliers to become certified or qualified to sell ammonium sulfate to their firm. Purchasers reported that the time to qualify a new supplier ranged from 1 to 30 days. Two purchasers reported that foreign suppliers had failed in their attempt to qualify ammonium sulfate or had lost their approved status since 2016: GranMax (Lithuania) and Ultramar (Russia).

Minimum quality specifications

As can be seen from table II-13, five purchasers reported that domestically produced product usually met minimum quality specifications and one purchaser reported that domestic product always met minimum quality specifications. Two purchasers reported that Chinese ammonium sulfate sometimes (1 firm) and rarely or never (1 firm) met minimum quality specifications.

Table II-13
Ammonium sulfate: Count of purchasers' responses regarding suppliers' ability to meet minimum quality specifications, by source

Source of purchases	Always	Usually	Sometimes	Rarely or never
United States	1	5	0	0
China	0	0	1	1
All other sources	1	2	0	1

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

Note: Purchasers were asked how often domestically produced or imported ammonium sulfate meets minimum quality specifications for their own or their customers' uses.

All seven responding purchasers reported factors that determined quality including uniformity, free flowing, dry, granulometry, hardness, storability, nutrient content, minimal dust or powder.

Changes in purchasing patterns

Purchasers were asked about changes in their purchasing patterns from different sources since 2016 (table II-14); reasons reported for increasing domestic purchases included the growing sulfate business, more farmer demand, and fewer import options. Two of seven responding purchasers reported that they had changed suppliers since January 1, 2016. One purchaser dropped or reduced purchases from the United States because it increased purchases of ammonium sulfate produced in Canada.[35]

Table II-14
Ammonium sulfate: Count of purchasers' responses regarding changes in purchase patterns from U.S., China, and nonsubject countries

Source of purchases	Decreased	Increased	Constant	Fluctuated	Did not purchase
United States	1	3	2	1	0
China	0	0	1	0	6
All other sources	0	1	3	0	2
Sources unknown	1	0	1	0	3

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

Purchase factor comparisons of domestic products, Chinese imports, and nonsubject imports

Purchasers were asked a number of questions comparing ammonium sulfate produced in the United States, China, and nonsubject countries. First, purchasers were asked for a country-by-country comparison on the same 17 factors (table II-15) for which they were asked to rate the importance.

Most purchasers reported that U.S.-produced ammonium sulfate was comparable or superior to ammonium sulfate imported from China on every factor except discounts offered and price. Two purchasers each reported that U.S.-produced ammonium sulfate was comparable or inferior to ammonium sulfate imported from China on discounts offered. Most purchasers reported that U.S.-produced ammonium sulfate was inferior (i.e., more expensive) to ammonium sulfate imported from China on price. Responding purchasers reported that availability, price, product consistency, quality meets industry standards, reliability of supply, granule size, delivery time, U.S. transportation costs, and delivery terms were very important factors in their purchasing decisions (table II-12).

[35] The firm (***) reported a new mine in Red Water, Alberta, Canada became operational.

Table II-15
Ammonium sulfate: Count of purchasers' responses comparing U.S.-produced and imported product, by factor and country pair

Factor	Country pair	Superior	Comparable	Inferior
Availability	U.S. v. China	5	0	0
Delivery terms	U.S. v. China	4	1	0
Delivery time	U.S. v. China	5	0	0
Discounts offered	U.S. v. China	1	2	2
Extension of credit	U.S. v. China	2	3	0
Granule size	U.S. v. China	2	3	0
Minimum quantity requirements	U.S. v. China	4	1	0
Packaging	U.S. v. China	3	2	0
Payment terms	U.S. v. China	1	4	0
Price	U.S. v. China	0	1	4
Product consistency	U.S. v. China	3	2	0
Product range	U.S. v. China	0	5	0
Quality meets industry standards	U.S. v. China	3	2	0
Quality exceeds industry standards	U.S. v. China	4	1	0
Reliability of supply	U.S. v. China	4	1	0
Technical support/service	U.S. v. China	4	1	0
U.S. transportation costs	U.S. v. China	1	4	0

Table continued.

Most purchasers reported that U.S.-produced ammonium sulfate was comparable or superior to ammonium imported from nonsubject countries on every factor except discounts offered and price.

Table II-15 Continued
Ammonium sulfate: Count of purchasers' responses comparing U.S.-produced and imported product, by factor and country pair

Factor	Country pair	Superior	Comparable	Inferior
Availability	U.S. v. Nonsubject sources	4	0	1
Delivery terms	U.S. v. Nonsubject sources	2	2	1
Delivery time	U.S. v. Nonsubject sources	3	1	1
Discounts offered	U.S. v. Nonsubject sources	1	2	2
Extension of credit	U.S. v. Nonsubject sources	2	3	0
Granule size	U.S. v. Nonsubject sources	2	3	0
Minimum quantity requirements	U.S. v. Nonsubject sources	3	2	0
Packaging	U.S. v. Nonsubject sources	3	1	1
Payment terms	U.S. v. Nonsubject sources	1	4	0
Price	U.S. v. Nonsubject sources	0	2	3
Product consistency	U.S. v. Nonsubject sources	4	1	0
Product range	U.S. v. Nonsubject sources	1	4	0
Quality meets industry standards	U.S. v. Nonsubject sources	1	4	0
Quality exceeds industry standards	U.S. v. Nonsubject sources	2	3	0
Reliability of supply	U.S. v. Nonsubject sources	3	2	0
Technical support/service	U.S. v. Nonsubject sources	3	1	1
U.S. transportation costs	U.S. v. Nonsubject sources	1	4	0

Table continued.

Most purchasers reported that ammonium sulfate imported from China was comparable to ammonium imported from nonsubject countries on every factor except granule size, reliability of supply, and technical support/service.[36]

Table II-15 Continued
Ammonium sulfate: Count of purchasers' responses comparing imported Chinese and imported nonsubject product, by factor and country pair

Factor	Country pair	Superior	Comparable	Inferior
Availability	China v. Nonsubject sources	0	4	0
Delivery terms	China v. Nonsubject sources	0	3	1
Delivery time	China v. Nonsubject sources	0	3	1
Discounts offered	China v. Nonsubject sources	0	4	0
Extension of credit	China v. Nonsubject sources	0	4	0
Granule size	China v. Nonsubject sources	1	2	2
Minimum quantity requirements	China v. Nonsubject sources	0	4	0
Packaging	China v. Nonsubject sources	0	3	1
Payment terms	China v. Nonsubject sources	0	4	0
Price	China v. Nonsubject sources	1	3	0
Product consistency	China v. Nonsubject sources	1	2	1
Product range	China v. Nonsubject sources	0	3	1
Quality meets industry standards	China v. Nonsubject sources	0	3	1
Quality exceeds industry standards	China v. Nonsubject sources	0	3	1
Reliability of supply	China v. Nonsubject sources	0	2	2
Technical support/service	China v. Nonsubject sources	0	2	2
U.S. transportation costs	China v. Nonsubject sources	0	3	1

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

Note: A rating of superior means that price/U.S. transportation cost is generally lower. For example, if a firm reported "U.S. superior," it meant that the U.S. product was generally priced lower than the imported product.

[36] Purchaser *** reported both comparable and inferior on granule size.

Comparison of U.S.-produced and imported ammonium sulfate

In order to determine whether U.S.-produced ammonium sulfate can generally be used in the same applications as imports from China, U.S. producers, importers, and purchasers were asked whether the products can always, frequently, sometimes, or never be used interchangeably. As shown in tables II-16 to II-18, most U.S. producers reported that domestically produced ammonium sulfate and ammonium sulfate imported from China are "always" interchangeable; most importers reported "frequently" interchangeable; and most purchasers reported "frequently" or "sometimes" interchangeable.

Table II-16
Ammonium sulfate: Count of U.S. producers reporting the interchangeability between product produced in the United States and in other countries, by country pair

Country pair	Always	Frequently	Sometimes	Never
United States vs. China	3	1	1	0
United States vs. Other	3	1	1	0
China vs. Other	2	1	0	0

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

Table II-17
Ammonium sulfate: Count of importers reporting the interchangeability between product produced in the United States and in other countries, by country pair

Country pair	Always	Frequently	Sometimes	Never
United States vs. China	***	***	***	***
United States vs. Other	***	***	***	***
China vs. Other	***	***	***	***

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

Table II-18
Ammonium sulfate: Count of purchasers reporting the interchangeability between product produced in the United States and in other countries, by country pair

Country pair	Always	Frequently	Sometimes	Never
United States vs. China	1	2	2	0
United States vs. Other	1	3	1	0
China vs. Other	0	2	1	0

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

*** responding foreign producers reported that ammonium sulfate produced and sold in China is interchangeable with ammonium sulfate exported to the United States and/or to third-country markets.

In addition, U.S. producers, importers, and purchasers were asked to assess how often differences other than price were significant in sales of ammonium sulfate from the United States, China, or nonsubject countries. As seen in tables II-19 to II-21, 3 of 5 responding U.S. producers indicated that factors other than price were "never" significant in sales of ammonium sulfate when compared to product imported from China while *** responding importers and 3 of 5 responding purchasers reported "sometimes." Purchaser *** reported that ammonium sulfate from China often has higher metal levels than what is reported and is not suitable for some domestic uses.

Table II-19
Ammonium sulfate: Count of U.S. producers reporting the significance of differences other than price between product produced in the United States and in other countries, by country pair

Country pair	Always	Frequently	Sometimes	Never
United States vs. China	0	0	2	3
United States vs. Other	0	1	1	3
China vs. Other	0	0	1	2

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

Table II-20
Ammonium sulfate: Count of importers reporting the significance of differences between product produced in the United States and in other countries, by country pair

Country pair	Always	Frequently	Sometimes	Never
United States vs. China	***	***	***	***
United States vs. Other	***	***	***	***
China vs. Other	***	***	***	***

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

Table II-21
Ammonium sulfate: Count of purchasers reporting the significance of differences between product produced in the United States and in other countries, by country pair

Country pair	Always	Frequently	Sometimes	Never
United States vs. China	1	1	3	0
United States vs. Other	1	1	2	0
China vs. Other	1	0	2	0

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

Elasticity estimates

This section discusses elasticity estimates. Parties did not comment on these estimates in their prehearing or posthearing briefs.

U.S. supply elasticity

The domestic supply elasticity for ammonium sulfate measures the sensitivity of the quantity supplied by U.S. producers to changes in the U.S. market price of ammonium sulfate. The elasticity of domestic supply depends on several factors including the level of excess capacity, the ease with which producers can alter capacity, producers' ability to shift to production of other products, the existence of inventories, and the availability of alternate markets for U.S.-produced ammonium sulfate. Analysis of these factors above indicates that the U.S. industry has the ability to somewhat increase or decrease shipments to the U.S. market; an estimate in the range of 3 to 5 is suggested.

U.S. demand elasticity

The U.S. demand elasticity for ammonium sulfate measures the sensitivity of the overall quantity demanded to a change in the U.S. market price of ammonium sulfate. This estimate depends on factors discussed above such as the existence, availability, and commercial viability of substitute products, as well as the component share of the ammonium sulfate in the production of any downstream products. Based on the available information, the aggregate demand for ammonium sulfate is likely to be relatively inelastic; a range of -0.25 to -0.75 is suggested.

Substitution elasticity

The elasticity of substitution depends upon the extent of product differentiation between the domestic and imported products.[37] Product differentiation, in turn, depends upon such factors as quality (e.g., chemistry, appearance, etc.) and conditions of sale (e.g., availability, sales terms/discounts/promotions, etc.). Based on available information, the elasticity of substitution between U.S.-produced ammonium sulfate and imported ammonium sulfate is likely to be in the range of 3 to 5. Factors contributing to a higher level of substitutability include the importance of price in purchase decisions, no reported purchaser preference for U.S.-produced product, and that most sales are from inventories rather than produced-to-order which would likely reduce lead time differences. Factors reducing substitutability include quality differences between ammonium sulfate produced in the United States and in China and factors other than price that firms sometimes consider.

[37] The substitution elasticity measures the responsiveness of the relative U.S. consumption levels of the Chinese imports and the domestic like products to changes in their relative prices. This reflects how easily purchasers switch from the U.S. product to the Chinese products (or vice versa) when prices change.

Part III: Condition of the U.S. industry

Overview

The information in this section of the report was compiled from responses to the Commission's questionnaires. Six firms, which accounted for *** percent of U.S. production of ammonium sulfate during 2021, supplied information on their operations in these reviews and other proceedings on ammonium sulfate.[1] [2] [3]

Table III-1 presents events in the U.S. industry since January 1, 2016.

Table III-1
Ammonium sulfate: Important industry events since 2016

Item	Firm	Event
Investment	***	***.
Improvement	***	***.
Interruption	***	***.

Sources: Domestic interested party's response to the notice of institution, March 3, 2022, pp. 25--26.

Changes experienced by the industry

Producers in the United States were asked to report any change in the character of their operations or organization relating to the production of ammonium sulfate since 2016. Three of six producers indicated in their questionnaires that they had experienced such changes. Table III-2 presents the changes identified by these producers.

[1] One firm, ***, provided production and trade data in its U.S. producer questionnaire response, but did not provide complete and/or useable pricing and financial data. *** was unable to obtain data from ***. Email with ***, December 7, 2022. Unless otherwise noted, ***'s production and trade data are included in all discussions of U.S. producers' ammonium sulfate production and trade information received via questionnaire responses, and ***'s information is not included in any discussions of U.S. producers' financial and pricing information received via questionnaire responses.

[2] *** accounted for *** percent of U.S. production of ammonium sulfate in 2021, and responding U.S. producers not including *** accounted for *** percent of U.S. production of ammonium sulfate in 2021.

[3] Estimate of total U.S. production of ammonium sulfate in 2021 is based on data submitted in the domestic interested party's response to the notice of institution. Domestic interested party's response to the notice of institution, exh. 20.

Table III-2
Ammonium sulfate: Reported changes in operations since January 1, 2016

Type of change	Firm name and narrative on changes in operations
Expansions	***
Acquisitions	***
Prolonged shutdowns or curtailments	***
Force majeure events	***

Table continued.

Table III-2 Continued
Ammonium sulfate: Reported changes in operations since January 1, 2016

Type of change	Firm name and narrative on changes in operations
Other	***
Other	***

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

Anticipated changes in operations

The Commission asked domestic producers to report anticipated changes in the character of their operations relating to the production of ammonium sulfate. Their responses appear in table III-3.

Table III-3
Ammonium sulfate: Anticipated changes in operations

Type of Change	Firm name and narrative on changes in operations
Anticipated change	***
Anticipated change	***
Anticipated change	***

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

U.S. production, capacity, and capacity utilization

Table III-4 presents U.S. producers' production, capacity, and capacity utilization. The collective annual production capacity for the responding U.S. producers fluctuated from 2016 to 2021, with an overall increase of 0.2 percent over the period.[4] Changes in the production capacity of *** accounted for the entirety of changes in responding U.S. producers' reported production capacity from 2016 to interim 2022. The largest year-on-year change in capacity was 2019-2020, when ***'s reported capacity decreased by *** percent.

[4] In its U.S. producer questionnaire response, *** stated that it ***. ***. ***'s U.S. producer questionnaire response, section II-2a.

Total production volume for all firms decreased irregularly by 3.7 percent during 2016-2021, and was 2.7 percent higher in interim 2022 compared to interim 2021. Following a year-on-year increase of 3.5 percent from 2016-2017, total production then declined each subsequent year of the data collection period for a net decline of 6.9 percent during 2017-21. *** did not report an overall decline in production during 2016-21. *** reported an *** percent increase in production during 2016-21, with interim 2022 production *** percent lower than interim 2021, and *** reported a *** percent increase in production during 2016-21, with interim 2022 production *** percent higher than interim 2021. Of the firms that did report overall declines in production during 2016-21, *** and *** reported the largest declines, with net declines in production of *** percent and *** percent, respectively.

Overall capacity utilization fluctuated over the period examined, decreasing by 3.2 percentage points during 2016-21.[5] *** reported an overall increase in capacity utilization during 2016-21, an increase of *** percentage points.[6] *** reported declines in capacity utilization during 2016-21 between *** percentage points. The aggregate capacity utilization rate for interim 2022 was 1.9 percentage points higher than in interim 2021, driven solely by higher capacity utilization rates reported by ***.

*** reported producing out-of-scope merchandise using the same equipment as subject production in any period.

[5] Regarding the impact of the COVID-19 pandemic, *** indicated that the U.S. Government deemed their operations essential critical infrastructure, and *** able to maintain their ammonium sulfate operations. *** cited a reduction in consumer demand caused by the COVID-19 pandemic, while *** cited delayed deliveries of ammonium sulfate to distributors and retailers. *** indicated that Covid-19 did not impact their ammonium sulfate operations. U.S. producers' questionnaire responses, section II-2b.

[6] *** noted several changes to its operations in the period of review, stating that ***. *** also noted that ***. ***'s U.S. producer questionnaire response, section II-2a.

Table III-4

Ammonium sulfate: Firm-by-firm U.S. producers' average production capacity, by period

Capacity

Capacity in short tons

Firm	2016	2017	2018
AdvanSix	***	***	***
BASF	***	***	***
Dakota	***	***	***
Martin Resources	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	3,637,844	3,640,221	3,637,608

Table continued.

Table III-4 Continued

Ammonium sulfate: Firm-by-firm U.S. producers' average production capacity, by period

Capacity

Capacity in short tons

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
BASF	***	***	***	***	***
Dakota	***	***	***	***	***
Martin Resources	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	3,658,327	3,632,690	3,643,694	1,818,819	1,823,592

Table continued.

Table III-4 Continued

Ammonium sulfate: Firm-by-firm U.S. producers' production, by period

Production

Production in short tons

Firm	2016	2017	2018
AdvanSix	***	***	***
BASF	***	***	***
Dakota	***	***	***
Martin Resources	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	3,006,502	3,110,958	3,093,653

Table continued.

Table III-4 Continued
Ammonium sulfate: Firm-by-firm U.S. producers' production, by period

Production

Production in short tons

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
BASF	***	***	***	***	***
Dakota	***	***	***	***	***
Martin Resources	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	3,067,491	2,943,482	2,894,954	1,471,580	1,510,867

Table continued.

Table III-4 Continued
Ammonium sulfate: Firm-by-firm U.S. producers' capacity utilization, by period

Capacity utilization

Capacity utilization ratios in percent

Firm	2016	2017	2018
AdvanSix	***	***	***
BASF	***	***	***
Dakota	***	***	***
Martin Resources	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	82.6	85.5	85.0

Table continued.

Table III-4 Continued
Ammonium sulfate: Firm-by-firm U.S. producers' capacity utilization, by period

Capacity utilization

Capacity utilization ratios in percent

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
BASF	***	***	***	***	***
Dakota	***	***	***	***	***
Martin Resources	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	83.8	81.0	79.5	80.9	82.9

Table continued.

Table III-4 Continued
Ammonium sulfate: Firm-by-firm U.S. producers' share of production, by period

Share of production

Share of production in percent

Firm	2016	2017	2018
AdvanSix	***	***	***
BASF	***	***	***
Dakota	***	***	***
Martin Resources	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	100.0	100.0	100.0

Table continued.

Table III-4 Continued
Ammonium sulfate: Firm-by-firm U.S. producers' share of production, by period

Share of production

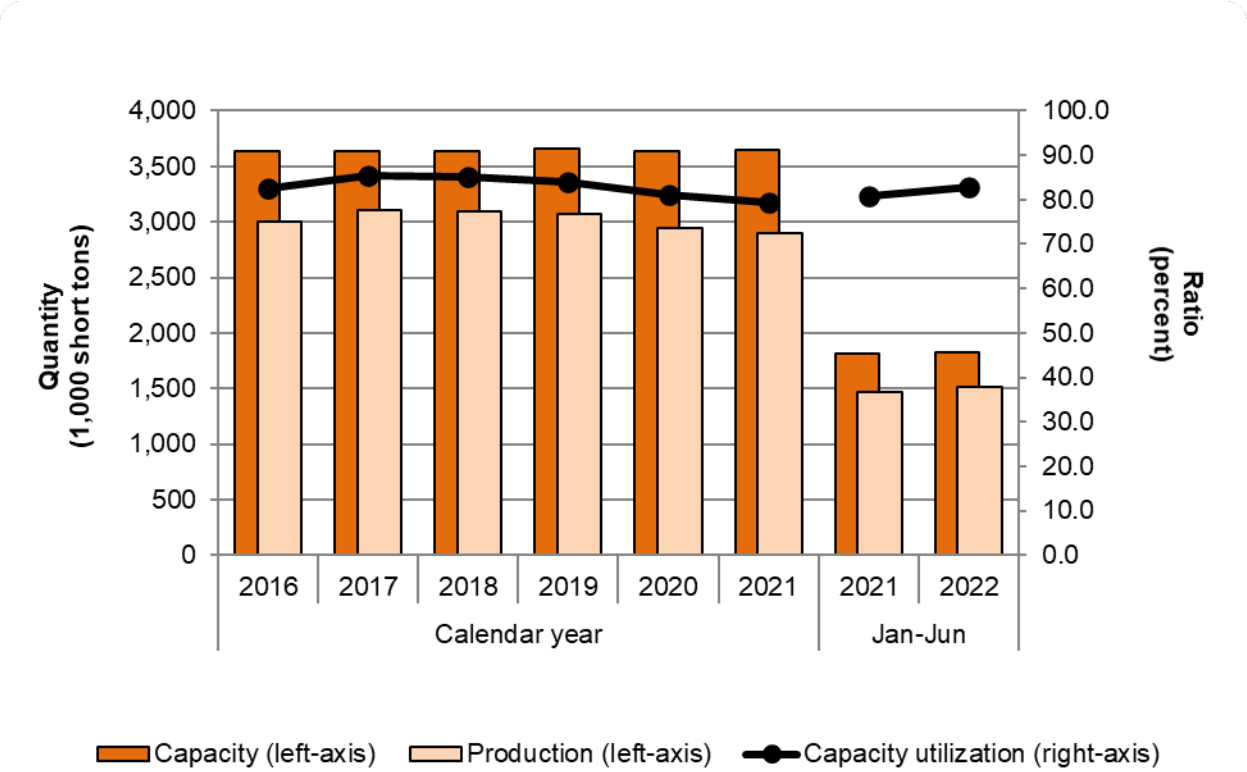
Share of production in percent

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
BASF	***	***	***	***	***
Dakota	***	***	***	***	***
Martin Resources	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	100.0	100.0	100.0	100.0	100.0

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

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

Figure III-1
Ammonium sulfate: U.S. producers' production, capacity, and capacity utilization, by period



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

Constraints on capacity

All of the six responding U.S. producers responded to the question on production capacity constraints in the manufacturing process. ***.

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

Table III-5 presents U.S. producers' U.S. shipments, export shipments, and total shipments.[7] Other than in 2018-19, U.S. shipments of ammonium sulfate by quantity increased each year during 2016-21, an increase of 22.7 percent for the period, the entirety of which came from decreasing U.S. inventories and exports shipments given the net declines in U.S. production over the same period discussed earlier. Responding U.S. producers reported similar trends for U.S. shipments by value, with year-on-year increases for all years other than 2018-19 for an overall increase of 50.8 during 2016-21. U.S. shipments by quantity in interim 2022 were 20.0 percent lower than interim 2021, and 85.9 percent higher by value. The unit value of reported U.S. shipments fluctuated between 167 and 187 dollars per short ton during 2016-20, followed by a year-on-year increase of 29.4 percent during 2020-21. Unit values of U.S. shipments were then 132.5 percent higher in interim 2022 than in interim 2021. As a share of total shipments by quantity, U.S. shipments increased by 12.2 percentage points during 2016-21, and 10.3 percentage points as a share of total shipments by value.

U.S. producers' export shipments of ammonium sulfate by quantity decreased each year during 2016-21 for an overall decrease of *** percent. Interim 2022 export shipments by quantity were then *** percent higher than interim 2021.[8] Export shipments by value fluctuated during 2016-21 for an overall decrease of *** percent during the period. Unlike export shipments by quantity, export shipments by value did experience a year-on-year increase of *** percent from 2020 to 2021. The 2020-21 increase in export shipments by value corresponded with a year-on-year decrease in export shipments by quantity over the same period, resulting in a *** percent increase in the unit value of export shipments from 2020-2021. Prior to 2021, the unit value of export shipments had decreased irregularly by *** percent during 2016-2020. The unit value of export shipments reported for interim 2022 was *** percent higher than interim 2021. As a share of quantity, export shipments decreased irregularly *** percentage points during 2016-21, and decreased *** by percentage points as a share of value over the same period.

Total shipments of ammonium sulfate by U.S. producers, by quantity, first increased annually from 2016-18, an increase of *** percent, and then decreased *** percent from

[7] ***. Email with ***, December 7, 2022. Tables which show U.S. producers' shipments of ammonium sulfate, excluding *** data, by location, by granule size, and by period, are contained in Appendix F of this report.

[8] ***. U.S. producers' questionnaire responses, section II-4.

2018 to 2019. Subsequently, total shipments by quantity increased each year during 2019-21, The net result of these fluctuations was an overall increase of *** percent during 2016-21. Total shipments by value decreased irregularly by *** percent from 2016-2020, and then increased *** percent year-on-year from 2020 to 2021, resulting in an overall increase of *** percent in total shipments by value during 2016-2021. U.S. producers then reported total shipments by value for interim 2022 that were *** percent higher than in interim 2021. The unit value of total shipments increased irregularly by *** percent during 2016-21, driven by a *** percent year-on-year increase from 2020-2021. U.S. producers total reported shipments' unit values in interim 2022 were *** percent higher than interim 2021.[9]

Table III-5
Ammonium sulfate: U.S. producers' shipments, by destination and period

Quantity in short tons; value in 1,000 dollars; unit value in dollars per short ton; shares in percent

Item	Measure	2016	2017	2018
U.S. shipments	Quantity	1,996,441	2,281,430	2,420,935
Export shipments	Quantity	***	***	***
Total shipments	Quantity	***	***	***
U.S. shipments	Value	362,524	381,717	438,115
Export shipments	Value	***	***	***
Total shipments	Value	***	***	***
U.S. shipments	Unit value	182	167	181
Export shipments	Unit value	***	***	***
Total shipments	Unit value	***	***	***
U.S. shipments	Share of quantity	67.5	74.4	75.6
Export shipments	Share of quantity	***	***	***
Total shipments	Share of quantity	***	***	***
U.S. shipments	Share of value	73.3	79.9	81.0
Export shipments	Share of value	***	***	***
Total shipments	Share of value	***	***	***

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

[9] In regards to the unit values reported for interim 2022, *** indicated that "***. Email with ***, October 24, 2022.

Table III-5 Continued
Ammonium sulfate: U.S. producers' shipments, by destination and period

Quantity in short tons; value in 1,000 dollars; unit value in dollars per short tons; shares in percent

Item	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
U.S. shipments	Quantity	2,146,003	2,365,976	2,449,558	1,347,550	1,077,873
Export shipments	Quantity	***	***	***	***	***
Total shipments	Quantity	***	***	***	***	***
U.S. shipments	Value	400,684	407,976	546,553	272,301	506,316
Export shipments	Value	***	***	***	***	***
Total shipments	Value	***	***	***	***	***
U.S. shipments	Unit value	187	172	223	202	470
Export shipments	Unit value	***	***	***	***	***
Total shipments	Unit value	***	***	***	***	***
U.S. shipments	Share of quantity	75.4	77.4	79.7	83.5	79.3
Export shipments	Share of quantity	***	***	***	***	***
Total shipments	Share of quantity	***	***	***	***	***
U.S. shipments	Share of value	82.8	84.8	83.7	89.2	84.5
Export shipments	Share of value	***	***	***	***	***
Total shipments	Share of value	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires

Table III-6 presents U.S. producers' U.S. shipments by granule size and period. As a share of shipments of all granule sizes by quantity, shipments of small granules fluctuated between 27.8 and 33.2 percent over the period of review, and between 25.3 and 30.0 percent as a share of value. Shipments of large granules as a share of the quantity of shipments of all granule sizes fluctuated between 66.8 and 72.2 over the period examined, and between 70.0 and 74.7 as a share of value. Large granules as a share of total shipments by quantity were 2.6 percentage points lower in interim 2022 compared to interim 2021, and 0.4 percentage points higher as a share of value.

Although the unit value for large and small granules both reported overall increases during 2016-21 of 13.5 and 26.5 percent, respectively, the unit value of large granules was higher than that of small granules in all periods. The interim 2022 unit values of both small and large granules were the highest in the period of review, and they were 108.9 percent and 142.6 percent higher in interim 2022 relative to interim 2021, respectively.

Table III-6
Ammonium sulfate: U.S. producers' shipments, by granule size and period

Quantity in short tons; value in 1,000 dollars; unit value in dollars per short ton; shares in percent

Item	Measure	2016	2017	2018
Small granules	Quantity	601,601	685,530	803,196
Large granules	Quantity	1,394,840	1,595,900	1,617,739
All granule sizes	Quantity	1,996,441	2,281,430	2,420,935
Small granules	Value	102,082	107,169	131,403
Large granules	Value	260,442	274,548	306,712
All granule sizes	Value	362,524	381,717	438,115
Small granules	Unit value	170	156	164
Large granules	Unit value	187	172	190
All granule sizes	Unit value	182	167	181
Small granules	Share of quantity	30.1	30.0	33.2
Large granules	Share of quantity	69.9	70.0	66.8
All granule sizes	Share of quantity	100.0	100.0	100.0
Small granules	Share of value	28.2	28.1	30.0
Large granules	Share of value	71.8	71.9	70.0
All granule sizes	Share of value	100.0	100.0	100.0

Table continued.

Table III-6 Continued
Ammonium sulfate: U.S. producers' shipments, by granule size and period

Quantity in short tons; value in 1,000 dollars; unit value in dollars per short ton; shares in percent

Item	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
Small granules	Quantity	631,363	679,571	735,382	374,900	328,223
Large granules	Quantity	1,514,640	1,686,405	1,714,176	972,650	749,650
All granule sizes	Quantity	2,146,003	2,365,976	2,449,558	1,347,550	1,077,873
Small granules	Value	106,205	105,109	141,637	70,138	128,253
Large granules	Value	294,479	302,867	404,916	202,163	378,063
All granule sizes	Value	400,684	407,976	546,553	272,301	506,316
Small granules	Unit value	168	155	193	187	391
Large granules	Unit value	194	180	236	208	504
All granule sizes	Unit value	187	172	223	202	470
Small granules	Share of quantity	29.4	28.7	30.0	27.8	30.5
Large granules	Share of quantity	70.6	71.3	70.0	72.2	69.5
All granule sizes	Share of quantity	100.0	100.0	100.0	100.0	100.0
Small granules	Share of value	26.5	25.8	25.9	25.8	25.3
Large granules	Share of value	73.5	74.2	74.1	74.2	74.7
All granule sizes	Share of value	100.0	100.0	100.0	100.0	100.0

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

Note: Small granules are anywhere from >0 mm to <2 mm in size, whereas large granules are 2 mm in size or more.

U.S. producers' inventories

Table III-7 presents U.S. producers' end-of-period inventories and the ratio of these inventories to U.S. producers' production, U.S. shipments, and total shipments. U.S. producers' end-of-period inventories decreased irregularly by 52.5 percent during 2016-2021. The largest year-on-year decline during this period was the 52.4 percent decline in U.S. producers' end-of-period inventories reported in 2020-21, resulting in end-of-period inventories being at their lowest level in 2021 relative to the data collection period. Following a decrease of 19.5 percent from 2016 to 2018, inventories then experienced a year-on-year increase of 67.2 percent from 2018 to 2019.[10] End-of-period inventories of ammonium sulfate subsequently decreased each year during 2019-21 for a 64.7 percent decrease over that period. U.S. producers' inventories as

[10] *** reported end-of-period inventory decreases of *** percent and *** percent, respectively, from 2017-2018, followed by year-on-year increases of *** percent for *** and *** percent for *** between 2018-19. *** reported a *** percent increase in inventories of ammonium sulfate from 2018-19.

a ratio to production, U.S. shipments, and total shipments followed a similar trajectory as the aggregate quantities, with each ratio first declining from 2016-2018, increasing year-on-year in 2018-2019, and then declining each year during 2019-21, ending in 2021 at their lowest levels observed over the data collection period. Following the 2020-21 year-on-year decrease for end-of-period inventories, inventories reported for interim Jan-Jun 2022 were 54.3 percent higher than in interim Jan-Jun 2021, with corresponding rebounds in the associated inventory ratio numbers.

Table III-7
Ammonium sulfate: U.S. producers' inventories and their ratio to select items, by period

Quantity in short tons; inventory ratios in percent

Item	Measure	2016	2017	2018
End-of-period inventory	Quantity	349,435	373,329	281,330
Inventory to U.S. production	Ratio	11.6	12.0	9.1
Inventory to U.S. shipments	Ratio	17.5	16.4	11.6
Inventory to total shipments	Ratio	***	***	***

Table continued.

Table III-7 Continued
Ammonium sulfate: U.S. producers' inventories and their ratio to select items, by period

Quantity in short tons; inventory ratios in percent

Item	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
End-of-period inventory	Quantity	470,518	349,177	166,087	197,400	304,605
Inventory to U.S. production	Ratio	15.3	11.9	5.7	6.7	10.1
Inventory to U.S. shipments	Ratio	21.9	14.8	6.8	7.3	14.1
Inventory to total shipments	Ratio	***	***	***	***	***

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

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

U.S. producers' imports from subject sources

*** reported importing ammonium sulfate from China during 2016-21 nor in either interim period. Additionally, *** reported being related to any U.S. importer of ammonium sulfate from China.

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

*** reported purchasing ammonium sulfate from China during 2016-21 nor in either interim period.

U.S. employment, wages, and productivity

Table III-8 shows U.S. producers' employment-related data.[11] The number of production and related workers ("PRWs") increased each year during 2016-19, and then decreased each year during 2019-21, for an overall increase of *** percent during 2016-21. PRWs reported in interim 2022 were *** percent higher than interim 2021. Total hours worked decreased irregularly during 2016-21 by *** percent. Unit labor costs increased irregularly by *** percent during 2016-21, with interim 2022 unit labor costs *** percent higher than interim 2021.

Table III-8
Ammonium sulfate: U.S. producers' employment related data, by period

Item	2016	2017	2018
Production and related workers (PRWs) (number)	***	***	***
Total hours worked (1,000 hours)	***	***	***
Hours worked per PRW (hours)	***	***	***
Wages paid ($1,000)	***	***	***
Hourly wages (dollars per hour)	***	***	***
Productivity (short tons per 1,000 hours)	***	***	***
Unit labor costs (dollars per short ton)	***	***	***

Table continued.

Table III-8 Continued
Ammonium sulfate: U.S. producers' employment related data, by period

Item	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
Production and related workers (PRWs) (number)	***	***	***	***	***
Total hours worked (1,000 hours)	***	***	***	***	***
Hours worked per PRW (hours)	***	***	***	***	***
Wages paid ($1,000)	***	***	***	***	***
Hourly wages (dollars per hour)	***	***	***	***	***
Productivity (short tons per 1,000 hours)	***	***	***	***	***
Unit labor costs (dollars per short ton)	***	***	***	***	***

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

Note: One U.S. producer *** did not report its employment related information. As a result, productivity and unit labor cost calculations remove that producer's production numbers from their calculation

[11] Table III-8 does not include data from U.S. producer ***. Email with ***, November 7, 2022.

Financial experience of U.S. producers

Background[12]

Five U.S. producers (AdvanSix, Dakota, Martin, PCI and Simplot) provided usable financial results on their ammonium sulfate operations. *** responding U.S. producers reported financial data on a calendar year and on a GAAP basis.[13] [14]

Figure III-2 presents each responding firm's share of the total reported net sales quantity in 2021.[15]

[12] The following abbreviations may be used in the tables and/or text of this section: generally accepted accounting principles ("GAAP"), fiscal year ("FY"), net sales ("NS"), cost of goods sold ("COGS"), selling, general, and administrative expenses ("SG&A expenses"), average unit values ("AUVs"), research and development expenses ("R&D expenses"), and return on assets ("ROA").

[13] ***. U.S. producers' questionnaire response, section II-4 and email from ***, December 7, 2022.

[14] ***. U.S. producers' questionnaire response, section III-2.

[15] ***. Email from ***, October 19, 2022, and U.S. producers' questionnaire responses, sections III-3 and III-5.

Figure III-2
Ammonium sulfate: Share of net sales quantity in 2021, by firm

* * * * * * *

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

Operations on ammonium sulfate

Table III-9 presents aggregated data on U.S. producers' operations in relation to ammonium sulfate, while table III-10 presents corresponding changes in AUVs. Table III-11 presents selected company-specific financial data.

Table III-9
Ammonium sulfate: Results of operations of U.S. producers, by item and period

Quantity in short tons; value in 1,000 dollars; ratios in percent

Item	Measure	2016	2017	2018
Total net sales	Quantity	***	***	***
Total net sales	Value	***	***	***
COGS: Natural gas	Value	***	***	***
COGS: Other raw materials.	Value	***	***	***
COGS: All raw materials	Value	***	***	***
COGS: Direct labor	Value	***	***	***
COGS: Other factory	Value	***	***	***
COGS: Total	Value	***	***	***
Gross profit or (loss)	Value	***	***	***
SG&A expenses	Value	***	***	***
Operating income or (loss)	Value	***	***	***
All other expense/(income), net	Value	***	***	***
Net income or (loss)	Value	***	***	***
Depreciation/amortization	Value	***	***	***
Cash flow	Value	***	***	***
COGS: Natural gas	Ratio to NS	***	***	***
COGS: Other raw materials.	Ratio to NS	***	***	***
COGS: All raw materials	Ratio to NS	***	***	***
COGS: Direct labor	Ratio to NS	***	***	***
COGS: Other factory	Ratio to NS	***	***	***
COGS: Total	Ratio to NS	***	***	***
Gross profit	Ratio to NS	***	***	***
SG&A expense	Ratio to NS	***	***	***
Operating income or (loss)	Ratio to NS	***	***	***
Net income or (loss)	Ratio to NS	***	***	***

Table continued on next page.

Table III-9 Continued
Ammonium sulfate: Results of operations of U.S. producers, by item and period

Quantity in short tons ; value in 1,000 dollars; ratios in percent

Item	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
Total net sales	Quantity	***	***	***	***	***
Total net sales	Value	***	***	***	***	***
COGS: Natural gas	Value	***	***	***	***	***
COGS: Other raw materials.	Value	***	***	***	***	***
COGS: All raw materials	Value	***	***	***	***	***
COGS: Direct labor	Value	***	***	***	***	***
COGS: Other factory	Value	***	***	***	***	***
COGS: Total	Value	***	***	***	***	***
Gross profit or (loss)	Value	***	***	***	***	***
SG&A expenses	Value	***	***	***	***	***
Operating income or (loss)	Value	***	***	***	***	***
All other expense/(income), net	Value	***	***	***	***	***
Net income or (loss)	Value	***	***	***	***	***
Depreciation/amortization	Value	***	***	***	***	***
Cash flow	Value	***	***	***	***	***
COGS: Natural gas	Ratio to NS	***	***	***	***	***
COGS: Other raw materials.	Ratio to NS	***	***	***	***	***
COGS: All raw materials	Ratio to NS	***	***	***	***	***
COGS: Direct labor	Ratio to NS	***	***	***	***	***
COGS: Other factory	Ratio to NS	***	***	***	***	***
COGS: Total	Ratio to NS	***	***	***	***	***
Gross profit	Ratio to NS	***	***	***	***	***
SG&A expense	Ratio to NS	***	***	***	***	***
Operating income or (loss)	Ratio to NS	***	***	***	***	***
Net income or (loss)	Ratio to NS	***	***	***	***	***

Table continued on next page.

Table III-9 Continued
Ammonium sulfate: Results of operations of U.S. producers, by item and period

Shares in percent; unit values in dollars per short ton; count in number of firms reporting

Item	Measure	2016	2017	2018
COGS: Natural gas	Share	***	***	***
COGS: Other raw materials.	Share	***	***	***
COGS: Raw materials	Share	***	***	***
COGS: Direct labor	Share	***	***	***
COGS: Other factory	Share	***	***	***
COGS: Total	Share	***	***	***
Total net sales	Unit value	***	***	***
COGS: Natural gas	Unit value	***	***	***
COGS: Other raw materials.	Unit value	***	***	***
COGS: All raw materials	Unit value	***	***	***
COGS: Direct labor	Unit value	***	***	***
COGS: Other factory	Unit value	***	***	***
COGS: Total	Unit value	***	***	***
Gross profit or (loss)	Unit value	***	***	***
SG&A expenses	Unit value	***	***	***
Operating income or (loss)	Unit value	***	***	***
Net income or (loss)	Unit value	***	***	***
Operating losses	Count	***	***	***
Net losses	Count	***	***	***
Data	Count	***	***	***

Table continued on next page.

Table III-9 Continued
Ammonium sulfate: Results of operations of U.S. producers, by item and period

Shares in percent; unit values in dollars per short ton; count in number of firms reporting

Item	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
COGS: Natural gas	Share	***	***	***	***	***
COGS: Other raw materials.	Share	***	***	***	***	***
COGS: Raw materials	Share	***	***	***	***	***
COGS: Direct labor	Share	***	***	***	***	***
COGS: Other factory	Share	***	***	***	***	***
COGS: Total	Share	***	***	***	***	***
Total net sales	Unit value	***	***	***	***	***
COGS: Natural gas	Unit value	***	***	***	***	***
COGS: Other raw materials.	Unit value	***	***	***	***	***
COGS: All raw materials	Unit value	***	***	***	***	***
COGS: Direct labor	Unit value	***	***	***	***	***
COGS: Other factory	Unit value	***	***	***	***	***
COGS: Total	Unit value	***	***	***	***	***
Gross profit or (loss)	Unit value	***	***	***	***	***
SG&A expenses	Unit value	***	***	***	***	***
Operating income or (loss)	Unit value	***	***	***	***	***
Net income or (loss)	Unit value	***	***	***	***	***
Operating losses	Count	***	***	***	***	***
Net losses	Count	***	***	***	***	***
Data	Count	***	***	***	***	***

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

Note: Shares represent the share of COGS.

Table III-10
Ammonium sulfate: Changes in AUVs between comparison periods

Changes in percent

Item	2016-21	2016-17	2017-18	2018-19	2019-20	2020-21	Jan-Jun 2021-22
Total net sales	▲***	▼***	▲***	▲***	▼***	▲***	▲***
COGS: Natural gas	▲***	▲***	▼***	▼***	▼***	▲***	▲***
COGS: Other raw materials.	▲***	▼***	▲***	▼***	▼***	▲***	▲***
COGS: All raw materials	▲***	▼***	▲***	▼***	▼***	▲***	▲***
COGS: Direct labor	▲***	▲***	▲***	▲***	▼***	▲***	▲***
COGS: Other factory	▲***	▲***	▲***	▲***	▼***	▲***	▲***
COGS: Total	▲***	▼***	▲***	▼***	▼***	▲***	▲***
Gross profit or (loss)	▲***	▼***	▼***	▲***	▲***	▲***	▲***
SG&A expense	▲***	▲***	▼***	▲***	▼***	▲***	▲***
Operating income or (loss)	▲***	▼***	▼***	▲***	▲***	▲***	▲***
Net income or (loss)	▲***	▼***	▼***	▲***	▲***	▲***	▲***

Table continued.

Table III-10 Continued
Ammonium sulfate: Changes in AUVs between comparison periods

Changes in dollars per short ton

Item	2016-21	2016-17	2017-18	2018-19	2019-20	2020-21	Jan-Jun 2021-22
Total net sales	▲***	▼***	▲***	▲***	▼***	▲***	▲***
COGS: Natural gas	▲***	▲***	▼***	▼***	▼***	▲***	▲***
COGS: Other raw materials.	▲***	▼***	▲***	▼***	▼***	▲***	▲***
COGS: All raw materials	▲***	▼***	▲***	▼***	▼***	▲***	▲***
COGS: Direct labor	▲***	▲***	▲***	▲***	▼***	▲***	▲***
COGS: Other factory	▲***	▲***	▲***	▲***	▼***	▲***	▲***
COGS: Total	▲***	▼***	▲***	▼***	▼***	▲***	▲***
Gross profit or (loss)	▲***	▼***	▼***	▲***	▲***	▲***	▲***
SG&A expense	▲***	▲***	▼***	▲***	▼***	▲***	▲***
Operating income or (loss)	▲***	▼***	▼***	▲***	▲***	▲***	▲***
Net income or (loss)	▲***	▼***	▼***	▲***	▲***	▲***	▲***

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

Note: Period changes preceded by a "▲" represent an increase, while period changes preceded by a "▼" represent a decrease. Zeroes, null values, and undefined calculations are suppressed and shown as "---".

Table III-11
Ammonium sulfate: Firm-by-firm total net sales quantity, by period

Net sales quantity

Quantity in short tons

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm total net sales quantity, by period

Net sales quantity

Quantity in short tons

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm total net sales value, by period

Net sales value

Value in 1,000 dollars

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm total net sales value, by period

Net sales value

Value in 1,000 dollars

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm COGS, by period

COGS

Value in 1,000 dollars

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm COGS, by period

COGS

Value in 1,000 dollars

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm gross profit or (loss), by period

Gross profit or (loss)

Value in 1,000 dollars

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm gross profit or (loss), by period

Gross profit or (loss)

Value in 1,000 dollars

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm SG&A expenses, by period

SG&A expenses

Value in 1,000 dollars

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm SG&A expenses, by period

SG&A expenses

Value in 1,000 dollars

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm operating income or (loss), by period

Operating income or (loss)

Value in 1,000 dollars

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm operating income or (loss), by period

Operating income or (loss)

Value in 1,000 dollars

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm net income or (loss), by period

Net income or (loss)

Value in 1,000 dollars

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm net income or (loss), by period

Net income or (loss)

Value in 1,000 dollars

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm ratio of COGS to net sales value, by period

COGS to net sales ratio

Ratios in percent

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm ratio of COGS to net sales value, by period

COGS to net sales ratio

Ratios in percent

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm ratio of gross profit or (loss) to net sales value, by period

Gross profit or (loss) to net sales ratio

Ratios in percent

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued .

Table III-11 Continued
Ammonium sulfate: Firm-by-firm ratio of gross profit or (loss) to net sales value, by period

Gross profit or (loss) to net sales ratio

Ratios in percent

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm ratio of SG&A expenses to net sales value, by period

SG&A expenses to net sales ratio

Ratios in percent

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm ratio of SG&A expenses to net sales value, by period

SG&A expenses to net sales ratio

Ratios in percent

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm ratio of operating income or (loss) to net sales value, by period

Operating income or (loss) to net sales ratio

Ratios in percent

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm ratio of operating income or (loss) to net sales value, by period

Operating income or (loss) to net sales ratio

Ratios in percent

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm ratio of net income or (loss) to net sales value, by period

Net income or (loss) to net sales ratio

Ratios in percent

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm ratio of net income or (loss) to net sales value, by period

Net income or (loss) to net sales ratio

Ratios in percent

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit net sales value, by period

Unit net sales value

Unit values in dollars per short ton

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit net sales value, by period

Unit net sales value

Unit values in dollars per short ton

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit raw material costs, by period

Unit raw material

Unit values in dollars per short ton

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit raw material costs, by period

Unit raw material

Unit values in dollars per short ton

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit direct labor cost, by period

Unit direct labor

Unit values in dollars per short ton

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit direct labor cost, by period

Unit direct labor

Unit values in dollars per short ton

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit other factory costs, by period

Unit other factory costs

Unit values in dollars per short ton

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit other factory costs, by period

Unit other factory costs

Unit values in dollars per short ton

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit COGS, by period

Unit COGS

Unit values in dollars per short ton

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit COGS, by period

Unit COGS

Unit values in dollars per short ton

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit gross profit or (loss), by period

Unit gross profit or (loss)

Unit values in dollars per short ton

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit gross profit or (loss), by period

Unit gross profit or (loss)

Unit values in dollars per short ton

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit SG&A expenses, by period

Unit SG&A expenses

Unit values in dollars per short ton

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit SG&A expenses, by period

Unit SG&A expenses

Unit values in dollars per short ton

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit operating income or (loss), by period

Unit operating income or (loss)

Unit values in dollars per short ton

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit operating income or (loss), by period

Unit operating income or (loss)

Unit values in dollars per short ton

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

Table continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit net income or (loss), by period

Unit net income or (loss)

Unit values in dollars per short ton

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Table Continued.

Table III-11 Continued
Ammonium sulfate: Firm-by-firm unit net income or (loss), by period

Unit net income or (loss)

Unit values in dollars per short ton

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

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

Net sales

Total revenue consists mainly of commercial sales, with a small amount of internal consumption and transfers to related firms. In 2021, internal consumption and transfers to related firms accounted for *** and *** percent of total revenue, respectively. Internal consumption and transfers to related firms are included in the financial data but not shown separately in this section of the report.[16] [17]

As shown in table III-9, total sales quantity increased from 2016 to 2018, then declined from 2018 to 2019 before increasing by *** percent in 2020, then declining in 2021 by *** percent. Total sales quantity increased overall from 2016 to 2021 by *** percent, and was *** percent lower in interim 2022 compared with interim 2021. Total net sales values declined by *** percent from 2016 to 2017 despite the *** percent increase in quantity that same year, and followed the same trends as sales quantities for 2018, 2019 and 2020. In 2021, total net sales value increased by *** percent despite the slight decline in sales quantity (*** percent) that same year. Total net sales values overall increased by *** percent from 2016 to 2021, and was *** percent higher in interim 2022 compared with interim 2021. On a firm-by-firm basis, while the directional trends of sales quantity trended differently from 2016 to 2018, *** U.S. producers showed a decline in 2019 followed by an increase in 2020, and only *** U.S. producers (***) showed an increase in 2021. *** U.S. producers showed lower sales quantities in interim 2022 compared with interim 2021 (the two largest U.S. producers attributed the decline to unfavorable weather conditions).[18] U.S. producers were

[16] ***. Email from ***, October 18 and October 19, 2022.
[17] ***. Email from ***, October 19, 2022.
[18] ***. Email from ***, November 1, 2022. ***. Email from ***, November 1, 2022.

more uniform in trends in sales values, *** U.S. producers reported a substantial increase in sales values in 2021 and in interim 2022 compared with interim 2021 driven primarily by the prices of nitrogen fertilizers and raw material inputs.[19] On an average per-short-ton basis, net sales value slightly increased from $*** in 2016 to $*** in 2019, then declined to $*** in 2020 before increasing to a high of $*** in 2021. Net sales values were higher in interim 2022 at $*** compared with interim 2021 at $***. On a firm-by-firm basis, *** U.S. producers reported a decrease in their unit values from 2016 to 2017, and reported an increase from 2017 to 2019 followed by a decline in 2020, and a substantial increase in 2021. *** firms reported higher unit sales values in interim 2022 compared with interim 2021.

[19] For example, ***. Email from ***, October 17, 2022. ***. Email from ***, October 17, 2022. ***. Email from ***, October 17, 2022. ***. Email from ***, October 19, 2022.

Cost of goods sold and gross profit or loss

Raw material costs, direct labor and other factory costs accounted for *** percent of total COGS, respectively in 2021.[20] [21]

Total raw material costs, the largest component of COGS, was largely affected by the cost of its primary components (ammonia and sulfuric acid). Raw material costs declined in 2017 by *** percent then increased in 2018 by *** percent before declining in 2019 and 2020. Raw material costs increased by *** from 2020 to 2021, and were *** percent higher in interim 2022 compared with interim 2021. On an average per-short-ton basis, raw material costs irregularly increased from $*** in 2016 to $*** in 2018, then declined to $*** and $*** in 2019 and 2020, respectively before increasing to a high of $*** in 2021. Raw material costs were higher in interim 2022 at $*** compared with interim 2021 at $***. As shown in table III-11, unit values of raw material cost differ among U.S. producers. The differences in unit values between firms can be attributed to the different routes by which ammonium sulfate is produced.[22] While raw material costs differed largely in unit values, U.S. producers reported similar patterns in trends. *** U.S. producers showed a substantial increase in raw material cost unit values in 2021, and all *** reported significantly

[20] Natural gas accounted for *** percent of total COGS and *** percent of total raw materials cost in 2021. *** were the *** U.S. producers to report the use of natural gas as part of their primary input in the manufacturing of ammonium sulfate. The cost of natural gas overall increased from 2016 to 2021 and was higher in interim 2022 compared with interim 2021. U.S. producers' questionnaire response, section III-9a.

[21] ***. U.S. producers' questionnaire response, section III-7, and Email from ***, October 19, 2022.

[22] ***. Email from ***, October 21, 2022. ***. Email from ***, October 25, 2022.

higher raw material costs in interim 2022 compared with interim 2021.[23] As a ratio to net sales, raw material costs irregularly increased from *** percent in 2016 to *** percent in 2018, then declined to *** percent in 2020 before increasing to *** percent in 2021. Raw material costs were higher in interim 2022 at *** percent compared with interim 2021 at *** percent.

Table III-12 presents details on specific raw material inputs as a share of total raw material costs in 2021. Sulfuric acid accounted for the largest share of raw material costs accounting for *** percent, while ammonia and other raw material inputs accounted for *** percent respectively. Natural gas reported by *** accounted for *** percent of total raw material costs in 2021.

Table III-12
Ammonium sulfate: Raw material costs in the last full year of the period

Value in 1,000 dollars; share of value in percent

Item	Value	Share of value
Natural gas	***	***
Ammonia	***	***
Sulfuric acid	***	***
Other material inputs	***	***
Raw materials other than natural gas	***	***
Total	***	***

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

Note: Other material inputs were reported by ***.

[23] ***. Email from ***, October 17, 2022. ***. Email from ***, October 17, 2022. ***. Email from ***, October 17, 2022.

Direct labor costs, the smallest component of COGS, increased from 2016 to 2018 then declined in 2019, before increasing again in 2020 and 2021. Direct labor costs overall increased by *** percent from 2016 to 2021, and were *** percent higher in interim 2022 compared with interim 2021. On an average per-short-ton basis, direct labor costs fluctuated within a narrow range of $*** and $*** from 2016 to 2021, and were higher in interim 2022 at $*** compared with interim 2021 at $***. As shown in table III-11, *** U.S. producers reported an increase in their direct labor costs unit values from 2016 to 2021, and *** reported higher direct labor costs in interim 2022 compared with interim 2021.[24] As a ratio to net sales, direct labor irregularly increased from *** percent in 2016 to *** percent in 2020, then declined to *** percent in 2021, and were lower in interim 2022 at *** percent compared with interim 2021 at *** percent.

Other factory costs, the second largest share of COGS, increased from 2016 to 2019 then declined in 2020, before increasing again in 2021. Other factory costs overall increased by *** percent from 2016 to 2021, and were *** percent lower in interim 2022 compared with interim 2021. On an average per-short-ton basis, other factory costs increased from $*** in 2016 to $*** in 2019, then decreased to $*** in 2020 before increasing to a high of $*** again in 2021. Other factory costs were higher in interim 2022 at $*** compared with interim 2021 at $***. As shown in table III-11, *** U.S. producers except *** reported an increase in their other factory costs unit values from 2016 to 2021, and *** reported higher other factory costs in interim 2022 compared with interim 2021.[25] [26] As a ratio to net sales, other factory costs irregularly increased from *** percent in 2016 to *** percent in 2019, then declined to *** percent in 2021, and were lower in interim 2022 at *** percent compared with interim 2021 at *** percent.

Total COGS increased overall by *** percent from 2016 to 2021, and were *** percent higher in interim 2022 compared with interim 2021, primarily due to the increase in

[24] ***. Email from ***, October 21, 2022.
[25] ***. Email from ***, October 17, 2022.
[26] ***. Email from ***, November 1, 2022.

raw material costs from 2016 to 2021 and in the interim periods. On an average per-short-ton basis, total COGS increased from $*** in 2016 to $*** in 2018 then declined to $*** in 2020 before increasing to a high of $*** in 2021. Total COGS were higher in interim 2022 at $*** compared with interim 2021 at $***. As a ratio to net sales, total COGS increased from *** percent in 2016 to *** percent in 2018 then declined to *** percent in 2021, and were lower in interim 2022 at *** percent compared with interim 2021 at *** percent.

As shown in table III-11, gross profit irregularly decreased from $*** in 2016 to $*** in 2018 before increasing to $*** in 2021, and was substantially higher in interim 2022 at $*** compared with $*** in interim 2021. On a company specific basis, *** U.S. producers except *** showed an increase in their gross profits between 2016 and 2021, and *** showed higher gross profits in interim 2022 compared with interim 2021. As a ratio to net sales, gross profit declined from *** percent in 2016 to *** percent in 2018, then increased to *** percent in 2021, and was higher in interim 2022 at *** percent compared with interim 2021 at *** percent.

SG&A expenses and operating income or loss

Total SG&A expenses increased by *** percent from 2016 to 2021 and were *** percent higher in interim 2022 compared with interim 2021. The corresponding SG&A expense ratio irregularly increased from *** percent in 2016 to *** percent in 2020 then declined to *** percent in 2021, and was lower in interim 2022 at *** percent compared with interim 2021 at *** percent. [27] [28] Operating income declined from $*** in 2016 to $*** in 2017, and further declined into an operating loss of $*** in 2018, before improving to a positive operating income of $*** in 2021. Operating income was higher in interim 2022 at $*** compared to interim 2021 at $***. As a ratio to net sales, operating income declined from *** percent in 2016 to a negative *** percent in 2018, then increased to a positive *** percent in 2021, and was higher in interim 2022 at *** percent compared to interim 2021 at *** percent. On a company-specific basis, U.S. producers varied in directional trends during the full-year periods, and were more uniform

[27] ***. Email from ***, November 1, 2022.
[28] ***. Email from ***, October 20, 2022.

in the interim periods. ***, reported operating losses from 2017 to 2019 that improved to operating profits in 2020 and 2021, while *** U.S. producer did not report any operating losses. *** firms reported a higher operating income in interim 2022 compared with interim 2021.

All other expenses and net income or loss

Classified below the operating income level are interest expense, other expense, and other income. In table III-9 these items are aggregated and only the net amount is shown. The majority of the amount shown were interest and other expenses reported primarily by ***.[29] [30] The net amount shown irregularly increased from 2016 to 2021 and was lower in interim 2022 compared with interim 2021.

Net income declined from $*** in 2016 to a net loss of $*** in 2017 and 2018, respectively, before improving to a positive $*** in 2021. Net income was higher in interim 2022 at $*** compared with $*** in interim 2021. On a company-specific basis, similar to operating profit, U.S. producers varied in directional trends during the full-year periods, and were more uniform in the interim periods, showing a higher net income in interim 2022 compared with interim 2021. As a ratio to net sales, net income decreased from a positive *** percent in 2016 to a negative *** percent in 2018, then increased to a positive *** percent in 2021, and was higher in interim 2022 at *** percent compared with *** percent in interim 2021.

[29] ***. Email from ***, October 17, 2022. ***. U.S. producers' questionnaire response, section II-2a and Emails from ***, October 20, and November 3, 2022.

[30] A variance analysis is most useful when cost structures do not vary too widely, and the methodology is most sensitive at the plant or firm level, rather than the aggregated industry level. A variance analysis is not shown due to the differences in cost structures between primary producers and co-producers of ammonium sulfate.

Capital expenditures and research and development expenses

Table III-13 presents capital expenditures, by firm, and table III-15 presents R&D expenses, by firm. Tables III-14 and III-16 present the firms' narrative explanations of the nature, focus, and significance of their capital expenditures and R&D expenses, respectively. Total capital expenditures (largely reflecting the data of ***) increased from *** in 2016 to $*** million in 2018, then declined to $*** in 2021, and were slightly higher in interim 2022 at $*** compared with $*** in interim 2021.[31] [32] R&D expenses declined overall from 2016 to 2021 and were lower in interim 2022 compared with interim 2021.[33]

Table III-13
Ammonium sulfate: U.S. producers' capital expenditures, by firm and period

Value in 1,000 dollars

Firm	2016	2017	2018
AdvanSix	***	***	***
Dakota	***	***	***
Martin	***	***	***
PCI	***	***	***
Simplot	***	***	***
All firms	***	***	***

Continued on next page.

[31] ***. Email from ***, October 17, 2022.

[32] ***. Email from ***, October 20, 2022.

[33] R&D expenses were reported by ***. ***. Email from ***, October 17, 2022. *** explained that ***. Email from ***, October 17, 2022.

Table III-13 Continued
Ammonium sulfate: U.S. producers' capital expenditures, by firm and period

Value in 1,000 dollars

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
AdvanSix	***	***	***	***	***
Dakota	***	***	***	***	***
Martin	***	***	***	***	***
PCI	***	***	***	***	***
Simplot	***	***	***	***	***
All firms	***	***	***	***	***

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

Table III-14
Ammonium sulfate: Narrative descriptions of U.S. producers' capital expenditures, by firm

Firm	Narrative on capital expenditures
AdvanSix	***
Dakota	***
Martin	***
PCI	***
Simplot	***

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

Table III-15
Ammonium sulfate: U.S. producers' R&D expenses, by firm and period

Value in 1,000 dollars

Firm	2016	2017	2018
***	***	***	***
***	***	***	***
All firms	***	***	***

Continued.

Table III-15 Continued
Ammonium sulfate: U.S. producers' R&D expenses, by firm and period

Value in 1,000 dollars

Firm	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
***	***	***	***	***	***
***	***	***	***	***	***
All firms	***	***	***	***	***

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

Table III-16
Ammonium sulfate: Narrative descriptions of U.S. producers R&D expenses, by firm

Firm	Narrative on R&D expenses
***	***
***	***

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

Assets and return on assets

Table III-17 presents data on the U.S. producers' total net assets, while table III-18 presents their operating ROA.[34] Table IIII-19 presents U.S. producers' narrative responses explaining their major asset categories and any significant changes in asset levels over time. Total net assets increased from $*** in 2016 to $*** in 2021. Return on assets irregularly increased from *** percent in 2016 to *** percent in 2021.

Table III-17
Ammonium sulfate: U.S. producers' total net assets, by firm and period

Value in 1,000 dollars

Firm	2016	2017	2018	2019	2020	2021
AdvanSix	***	***	***	***	***	***
Dakota	***	***	***	***	***	***
Martin	***	***	***	***	***	***
PCI	***	***	***	***	***	***
Simplot	***	***	***	***	***	***
All firms	***	***	***	***	***	***

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

[34] The operating ROA is calculated as operating income divided by total assets. With respect to a firm's overall operations, the total asset value reflects an aggregation of a number of assets which are generally not product specific. Thus, high-level allocations are generally required in order to report a total asset value on a product-specific basis.

Table III-18
Ammonium sulfate: U.S. producers' ROA, by firm and period

Ratio in percent

Firm	2016	2017	2018	2019	2020	2021
AdvanSix	***	***	***	***	***	***
Dakota	***	***	***	***	***	***
Martin	***	***	***	***	***	***
PCI	***	***	***	***	***	***
Simplot	***	***	***	***	***	***
All firms	***	***	***	***	***	***

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

Table III-19
Ammonium sulfate: Narrative descriptions of U.S. producers' total net assets, by firm

Firm	Narrative on assets
***	***
***	***
***	***

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

Part IV: U.S. imports and the foreign industry

U.S. imports

Overview

The Commission issued questionnaires to 21 potential importers of ammonium sulfate between 2016 to 2021. Nine firms provided data and information in response to the questionnaires, while four firms indicated that they had not imported ammonium sulfate during the period for which data were collected. Based on official Commerce statistics for imports of ammonium sulfate, importers' questionnaire data accounted for 56.8 percent of total U.S. imports during 2016-2021 and 37.9 percent of total imports from China during 2016-2021. This report relies on official Commerce import statistics for import volume for ammonium sulfate using HTS subheading 3102.21.00.[1]

Imports from subject and nonsubject countries

Table IV-1 and figure IV-1 present information on U.S. imports of ammonium sulfate from China and all other sources over the period examined. In 2016, the last full year before the imposition of the orders on imports, subject imports comprised 35.3 percent of all imports by quantity and 30.1 percent by value. Following the imposition of these orders resulting from the original investigation, subject imports declined to less than 0.05 percent of total imports for each year during 2017-20, and ceased entirely during 2021 to June 2022.[2] [3]

U.S. imports from nonsubject sources increased in each year during 2016-21, except from 2017 to 2018, increasing 170.8 percent between 2016 and 2021. The majority of this increase in nonsubject imports occurred during 2019-2021, during which time the quantity nonsubject imports increased by 69.7 percent. The increase in nonsubject imports resulted in a

[1] Official U.S. import statistics of the U.S. Department of Commerce Census Bureau using HTS subheading 3102.21.00.

[2] ***. *** U.S. importer questionnaire response, section II-10.

[3] Importer *** reported importing ***. Email with ***, October 24, 2022.

75.3 percent increase in total imports of ammonium sulfate. Between 2016 and 2021, the total value of imports increased by 136.1 percent, while the value of nonsubject imports increased by 237.9 percent. During this same period, the unit value of U.S. imports of ammonium sulfate from nonsubject sources increased irregularly, first decreasing by 9.1 percent from 2016-2018, followed by a 37.3 percent increase from 2018-2021, and a 24.8 percent increase during 2016-21. Interim 2022 saw the highest unit values for imports of ammonium sulfate from nonsubject sources reported over the period of review, 146.8 percent higher than unit values in interim 2021, and 105.0 percent higher than interim values in calendar 2021.

The ratio of U.S. imports of ammonium sulfate from nonsubject sources to U.S. production by quantity also increased irregularly over the period examined, with an increase of *** percentage points during 2016-2021. Although the ratio of nonsubject imports to U.S. production was *** percentage points lower in interim 2022 compared to interim 2021, interim 2022 remained *** percentage points higher than calendar year 2021.

Table IV-1
Ammonium sulfate: U.S. imports by source and period

Quantity in short tons; value in 1,000 dollars; unit value in dollars per short ton

Source	Measure	2016	2017	2018
China	Quantity	185,521	118	24
Nonsubject sources	Quantity	340,756	469,055	445,312
All import sources	Quantity	526,277	469,173	445,337
China	Value	29,659	34	6
Nonsubject sources	Value	68,741	82,575	81,657
All import sources	Value	98,399	82,609	81,663
China	Unit value	160	291	234
Nonsubject sources	Unit value	202	176	183
All import sources	Unit value	187	176	183

Table continued.

Table IV-1 Continued
Ammonium sulfate: U.S. imports by source and period

Quantity in short tons; value in 1,000 dollars; unit value in dollars per short ton

Source	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
China	Quantity	20	107	---	---	---
Nonsubject sources	Quantity	543,753	885,462	922,597	533,482	509,714
All import sources	Quantity	543,773	885,569	922,597	533,482	509,714
China	Value	8	66	---	---	---
Nonsubject sources	Value	108,526	178,380	232,285	111,565	263,089
All import sources	Value	108,534	178,446	232,285	111,565	263,089
China	Unit value	405	616	---	---	---
Nonsubject sources	Unit value	200	201	252	209	516
All import sources	Unit value	200	202	252	209	516

Table continued.

Table IV-1 Continued
Ammonium sulfate: U.S. imports by source and period

Shares and ratios in percent

Source	Measure	2016	2017	2018
China	Share of quantity	35.3	0.0	0.0
Nonsubject sources	Share of quantity	64.7	100.0	100.0
All import sources	Share of quantity	100.0	100.0	100.0
China	Share of value	30.1	0.0	0.0
Nonsubject sources	Share of value	69.9	100.0	100.0
All import sources	Share of value	100.0	100.0	100.0
China	Ratio	6.2	0.0	0.0
Nonsubject sources	Ratio	11.3	15.1	14.4
All import sources	Ratio	17.5	15.1	14.4

Table continued.

Table IV-1 Continued
Ammonium sulfate: Share of U.S. imports by source and period

Shares in percent

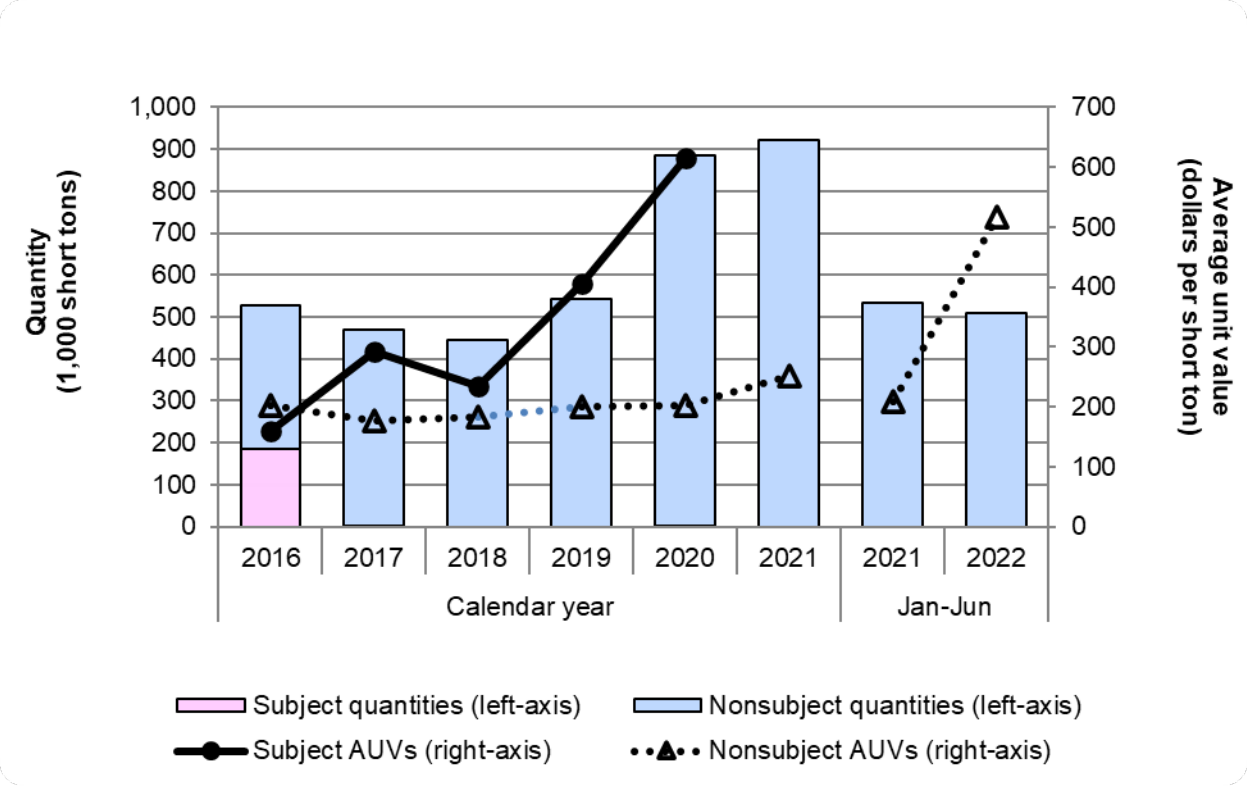
Source	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
China	Share of quantity	0.0	0.0	---	---	---
Nonsubject sources	Share of quantity	100.0	100.0	100.0	100.0	100.0
All import sources	Share of quantity	100.0	100.0	100.0	100.0	100.0
China	Share of value	0.0	0.0	---	---	---
Nonsubject sources	Share of value	100.0	100.0	100.0	100.0	100.0
All import sources	Share of value	100.0	100.0	100.0	100.0	100.0
China	Ratio	0.0	0.0	---	---	---
Nonsubject sources	Ratio	17.7	30.1	31.9	36.3	33.7
All import sources	Ratio	17.7	30.1	31.9	36.3	33.7

Source: Compiled from official U.S. imports statistics of the U.S. Department of Commerce using HTS subheading 3102.21.00, accessed September 28, 2022. Imports are based on the imports for consumption data series. Import values reflect the landed duty paid value.

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 “---“.

Figure IV-1
Ammonium sulfate: U.S. import quantities and average unit values, by source and period

Quantity in short tons; share and ratio in percent



Source: Compiled from official U.S. import statistics of the U.S. Department of Commerce using subheading 3102.21.00, accessed September 28, 2022. Imports are based on the imports for consumption data series. Import values reflect landed duty paid value.

Tables IV-2 and IV-3 present data for U.S. imports of ammonium sulfate from subject and nonsubject sources by granule size. Responding importers reported *** of small granule size ammonium sulfate from China in the period of review, and *** of either granule size ammonium sulfate from China after 2017. Large granules accounted for a large share of nonsubject imports throughout the period of review, and the share was higher in 2021 than in 2016. Small granules accounted for a larger share of nonsubject imports in interim 2022 than in interim 2021.

Table IV-2
Ammonium sulfate: U.S. shipments of imports from China, by granule size and period

Quantity in short tons; value in 1,000 dollars; unit value in dollars per short ton; shares in percent

Item	Measure	2016	2017	2018
Small granules	Quantity	***	***	***
Large granules	Quantity	***	***	***
All granule sizes	Quantity	***	***	***
Small granules	Value	***	***	***
Large granules	Value	***	***	***
All granule sizes	Value	***	***	***
Small granules	Unit value	***	***	***
Large granules	Unit value	***	***	***
All granule sizes	Unit value	***	***	***
Small granules	Share of quantity	***	***	***
Large granules	Share of quantity	***	***	***
All granule sizes	Share of quantity	***	***	***
Small granules	Share of value	***	***	***
Large granules	Share of value	***	***	***
All granule sizes	Share of value	***	***	***

Table continued.

Table IV-2 Continued
Ammonium sulfate: U.S. shipments of imports from China, by granule size and period

Quantity in short tons; value in 1,000 dollars; unit value in dollars per short ton; shares in percent

Item	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
Small granules	Quantity	***	***	***	***	***
Large granules	Quantity	***	***	***	***	***
All granule sizes	Quantity	***	***	***	***	***
Small granules	Value	***	***	***	***	***
Large granules	Value	***	***	***	***	***
All granule sizes	Value	***	***	***	***	***
Small granules	Unit value	***	***	***	***	***
Large granules	Unit value	***	***	***	***	***
All granule sizes	Unit value	***	***	***	***	***
Small granules	Share of quantity	***	***	***	***	***
Large granules	Share of quantity	***	***	***	***	***
All granule sizes	Share of quantity	***	***	***	***	***
Small granules	Share of value	***	***	***	***	***
Large granules	Share of value	***	***	***	***	***
All granule sizes	Share of value	***	***	***	***	***

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

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

Note: Small granules are anywhere from >0 mm to <2 mm in size, whereas large granules are 2 mm in size or more.

Table IV-3
Ammonium sulfate: U.S. shipments of imports from nonsubject sources, by granule size and period

Quantity in short tons; value in 1,000 dollars; unit value in dollars per short ton; shares in percent

Item	Measure	2016	2017	2018
Small granules	Quantity	***	***	***
Large granules	Quantity	***	***	***
All granule sizes	Quantity	***	***	***
Small granules	Value	***	***	***
Large granules	Value	***	***	***
All granule sizes	Value	***	***	***
Small granules	Unit value	***	***	***
Large granules	Unit value	***	***	***
All granule sizes	Unit value	***	***	***
Small granules	Share of quantity	***	***	***
Large granules	Share of quantity	***	***	***
All granule sizes	Share of quantity	***	***	***
Small granules	Share of value	***	***	***
Large granules	Share of value	***	***	***
All granule sizes	Share of value	***	***	***

Table continued.

Table IV-3 Continued
Ammonium sulfate: U.S. shipments of imports from nonsubject sources, by granule size and period

Quantity in short tons; value in 1,000 dollars; unit value in dollars per short ton; shares in percent

Item	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
Small granules	Quantity	***	***	***	***	***
Large granules	Quantity	***	***	***	***	***
All granule sizes	Quantity	***	***	***	***	***
Small granules	Value	***	***	***	***	***
Large granules	Value	***	***	***	***	***
All granule sizes	Value	***	***	***	***	***
Small granules	Unit value	***	***	***	***	***
Large granules	Unit value	***	***	***	***	***
All granule sizes	Unit value	***	***	***	***	***
Small granules	Share of quantity	***	***	***	***	***
Large granules	Share of quantity	***	***	***	***	***
All granule sizes	Share of quantity	***	***	***	***	***
Small granules	Share of value	***	***	***	***	***
Large granules	Share of value	***	***	***	***	***
All granule sizes	Share of value	***	***	***	***	***

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

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

Note: Small granules are anywhere from >0 mm to <2 mm in size, whereas large granules are 2 mm in size or more.

U.S. inventories of imported merchandise

Table IV-4 presents data for inventories of U.S. imports of ammonium sulfate from China and all other sources held in the United States. *** reported inventories of imports from China during 2017-21, nor during subsequent interim periods, and four of the seven responding firms reported inventories of imports from nonsubject sources.[4] *** was the only firm which reported inventories of subject imports in any period, with inventories of subject imports in 2016 comprising *** percent of inventories of all imports.[5]

[4] *** reported inventories of imports from nonsubject sources. ***. *** U.S. importer questionnaire response, section II-5a.

[5] ***. When asked about the effect of revocation of the orders, *** stated that revocation would ***, and that the subject imports in 2016 ***. *** U.S. importer questionnaire response, section II-5a and II-7.

During 2016-18, inventories of nonsubject imports decreased irregularly by *** percent. Subsequently, inventories of nonsubject imports first increased *** percent from 2018-20, then decreased *** percent from 2020-21, and were *** percent lower in interim 2022 compared to interim 2021. As a ratio to imports, U.S. shipments of imports, and total shipments of imports, U.S. importers' reported inventories from nonsubject sources decreased by *** percentage points, *** percentage points, and *** percentage points, respectively in 2021 compared to 2020.

Table IV-4
Ammonium sulfate: U.S. importers' end-of-period inventories of imports, by source and period

Quantity in short tons; ratios in percent

Measure	Source	2016	2017	2018
Inventories quantity	China	***	***	***
Ratio to imports	China	***	***	***
Ratio to U.S. shipments of imports	China	***	***	***
Ratio to total shipments of imports	China	***	***	***
Inventories quantity	Nonsubject	***	***	***
Ratio to imports	Nonsubject	***	***	***
Ratio to U.S. shipments of imports	Nonsubject	***	***	***
Ratio to total shipments of imports	Nonsubject	***	***	***
Inventories quantity	All	***	***	***
Ratio to imports	All	***	***	***
Ratio to U.S. shipments of imports	All	***	***	***
Ratio to total shipments of imports	All	***	***	***

Table continued.

Table IV-4 Continued
Ammonium sulfate: U.S. importers' end-of-period inventories of imports, by source and period

Quantity in short tons; ratios in percent

Measure	Source	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
Inventories quantity	China	***	***	***	***	***
Ratio to imports	China	***	***	***	***	***
Ratio to U.S. shipments of imports	China	***	***	***	***	***
Ratio to total shipments of imports	China	***	***	***	***	***
Inventories quantity	Nonsubject	***	***	***	***	***
Ratio to imports	Nonsubject	***	***	***	***	***
Ratio to U.S. shipments of imports	Nonsubject	***	***	***	***	***
Ratio to total shipments of imports	Nonsubject	***	***	***	***	***
Inventories quantity	All	***	***	***	***	***
Ratio to imports	All	***	***	***	***	***
Ratio to U.S. shipments of imports	All	***	***	***	***	***
Ratio to total shipments of imports	All	***	***	***	***	***

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

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

U.S. importers' imports subsequent to June 30, 2022

The Commission requested importers to indicate whether they had imported or arranged for the importation of ammonium sulfate from China for delivery after June 30, 2022. Their reported data is presented in table IV-5. *** indicated arranged imports from China, and three of the eight responding firms indicated arranged imports from nonsubject countries. Importers *** and *** were the only firms to report arranged imports from nonsubject sources in Jul-Sep 2022, with *** accounting for *** percent of arranged nonsubject imports in Oct-Dec 2022, and *** percent for all successive periods.[6] *** comprised *** percent of arranged nonsubject imports in Oct-Dec 2022.[7]

[6] *** stated that the entirety of its arranged nonsubject imports are sourced from Canada. Email with ***, October 26, 2022.

[7] ***'s arranged nonsubject imports in Oct-Dec 2022 are sourced from Belgium. Email with ***, October 27, 2022.

Table IV-5
Ammonium sulfate: U.S. importers' arranged imports, by source and period

Quantity in short tons

Source	Jul-Sep 2022	Oct-Dec 2022	Jan-Mar 2023	Apr-Jun 2023	Total
China	***	***	***	***	***
Nonsubect sources	***	***	***	***	***
All import sources	***	***	***	***	***

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

The industry in China

Overview

During the final phase of the original investigations, the Commission received foreign producer/exporter questionnaires from one firm, Bluestar-Adisseo Nanjing Co., Ltd. ("Bluestar"), which accounted for *** of production of ammonium sulfate in China. Bluestar *** over the period of investigation.[8]

In these first full-five year reviews, the Commission issued questionnaires to seven producers/exporters in China and received responses from seven firms: Hengshui Hengji Agricultural Material Co., Ltd. ("Hengji Ag"), Tianjin Shengrui Agricultural Science and Technology Co., Ltd. ("Shengrui Ag"), Jiangsu Songjia Petrochemical Co., Ltd. ("Songjia Petro"), Wuzhoufeng Agricultural Science and Technology Co., Ltd. ("Wuzhoufeng"), Yunnan Yingfu Trading Company ("Yingfu"), Yantai Hongyi Agri-tech Development Co., Ltd., and Yantai Zhongde Agriculture Technology Co., Ltd. ("Zhongde Ag"). These firms collectively accounted for approximately *** percent of total ammonium sulfate production in China in 2021.[9]

Table IV-6 presents information on the ammonium sulfate operations of the responding producers and exporters in China.

[8] Investigation Nos. 701-TA-562 and 731-TA-1329 (Final): Ammonium Sulfate from China, Confidential Staff Report, INV-PP-014, January 27, 2017 ("Original confidential report"), p. VII-3.

[9] Coverage figure based on responses to foreign producer questionnaires, section II-5.

Table IV-6
Ammonium sulfate: Summary data on producers in China, 2021

Firm	Production (short tons)	Share of reported production (percent)	Exports to the United States (short tons)	Share of reported exports to the United States (percent)	Total shipments (short tons)	Share of firm's total shipments exported to the United States (percent)
Hengji Ag	***	***	***	***	***	***
Hongyi	***	***	***	***	***	***
Shengrui Ag	***	***	***	***	***	***
Songjia Petro	***	***	***	***	***	***
Wuzhoufeng Ag	***	***	***	***	***	***
Yingfu	***	***	***	***	***	***
Zhongde Ag	***	***	***	***	***	***
All firms	***	***	***	***	***	***

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

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

Table IV-7 presents events in China's industry since January 1, 2016.

Table IV-7
Ammonium sulfate: Recent developments in the Chinese industry

Item	Firm	Event
Capacity increase	Multiple	During 2017-21, annual production capacity in China reportedly increased *** percent from *** short tons to *** short tons.
Regulation	Multiple	China customs began inspections to control the exports of 29 types of fertilizers, but not ammonium sulfate, on October 15, 2021.

Sources: *** in Domestic interested party's response to the notice of institution, March 3, 2022, exh. 1. "China customs to inspect fertilizer exports from October 15." Argus Media. October 13, 2021. https://www.argusmedia.com/zh/news/2263001-china-customs-to-inspect-fertilizer-exports-from-15-oct?backToResults=true#:~:text=China's%20General%20Administration%20of%20Customs,will%20be%20subject%20to%20inspections.

Changes in operations

Producers in China were asked to report any change in the character of their operations or organization relating to the production of ammonium sulfate since 2016. Four of six producers indicated in their questionnaires that they had experienced such changes. Table IV-8 presents the changes identified by these producers.

Table IV-8
Ammonium sulfate: Reported changes in operations in China since January 1, 2016, by firm

Item	Firm name and narrative on changes in operations
Plant openings	***
Plant openings	***
Plant openings	***
Plant openings	***
Expansions	***

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

Operations on ammonium sulfate

Table IV-9 presents information on the ammonium sulfate operations of the responding producers in China. During 2016-18, Chinese producers' production capacity ***, and then increased *** percent during 2018-21.[10] The reported aggregate increase in capacity over the period of review is the result of capacity increases by *** and ***. *** from 2016-18, and then reported an *** increase in its first two years of reporting capacity for ammonium sulfate production, at which point capacity plateaued.[11] In the case of ***, capacity was stable from 2016-19, after which capacity increased *** percent from 2019-20 and *** percent from 2020-21.[12]

Chinese producers' production volumes also increased each year during 2016-21, with an increase of *** percent over the period.

[10] According to ***. Domestic interested party's prehearing brief, exh. 1.

[11] *** stated that its "***. *** foreign producer questionnaire response, sections II-2a and II-8a.

[12] ***. *** questionnaire response, section II-2a. ***. *** foreign producer questionniare response, section II-8a.

*** had overall increases in production during 2016-21.[13] [14] The largest increase by absolute quantity was reported by ***, an increase in production of ammonium sulfate of *** during 2016-21.[15] This increase in production during 2016-21 resulted in year-on-year increases in capacity utilization over the same period, with 2021 capacity utilization *** percentage points higher than in 2016.

Home market shipments by quantity declined in 2017 and in 2019 but otherwise grew during the period, with 2021 home market shipments *** percent higher than in 2016. While ***'s home market shipments declined by *** percent during 2016-2021, interim 2022 shipments were *** higher compared to interim 2021. The overall increase in home market shipments was driven primarily by a *** percent increase in home market shipments during 2016-21 reported by ***.[16] Chinese producers' home market shipments, in terms of value, increased by *** percent during the same period, leading to a *** percent increase in the unit values of home market shipments during 2016-2021. Total home market shipments as a share of total shipments of ammonium sulfate fluctuated between *** and *** percent during 2016-2021, and were *** percentage points higher in interim 2022 compared to interim 2021.

*** reported exports to the United States during the period of review. Total reported exports by quantity increased *** percent during 2016-21, with total exports by value also increasing *** percent over the same period, resulting in an increase of *** percent in the unit value of total exports. As reported exports to the United

[13] ***. Email from ***, November 4, 2022.

[14] Of those firms which reported overall increases in production during 2016-21, *** was the only firm to experience a decline from 2019-21, a decline of *** percent. ***, November 4, 2022.

[15] The largest increase in production during 2016-21, as a percentage, was an increase of *** percent reported by ***. ***. ***. *** foreign producer questionnaire response, sections II-2a and II-8a.

[16] In regards to its increased home market shipments over the period of review, *** stated that "***. Email from ***, November 4, 2022.

States and the European Union never comprised more than *** percent of total shipments during the period of review, the growth of total exports was driven by growth of exports to all other markets, which increased *** percent during 2016-21, and growth in exports to Asia, which increased *** percent during 2016-21.[17] [18] The most commonly cited market in the all other markets category was Brazil, cited by the majority of responding foreign producers/exporters as a growing export market.[19] [20]

[17] ***. Email from ***, November 4, 2022.
[18] ***. Email from ***, November 4, 2022.
[19] ***. *** questionniare response, section II-8a. ***. Email from ***, November 4, 2022.
[20] ***. Email from ***, November 4, 2022.

Table IV-9
Ammonium sulfate: Data on industry in China, by period

Quantity in short tons; value in 1,000 dollars

Item	Measure	2016	2017	2018
Capacity	Quantity	***	***	***
Production	Quantity	***	***	***
End-of-period inventories	Quantity	***	***	***
Internal consumption and transfers	Quantity	***	***	***
Commercial home market shipments	Quantity	***	***	***
Home market shipments	Quantity	***	***	***
Exports to the United States	Quantity	***	***	***
Exports to the European Union	Quantity	***	***	***
Exports to Asia	Quantity	***	***	***
Exports to all other markets	Quantity	***	***	***
Export shipments	Quantity	***	***	***
Total shipments	Quantity	***	***	***
Internal consumption and transfers	Value	***	***	***
Commercial home market shipments	Value	***	***	***
Home market shipments	Value	***	***	***
Exports to the United States	Value	***	***	***
Exports to the European Union	Value	***	***	***
Exports to Asia	Value	***	***	***
Exports to all other markets	Value	***	***	***
Export shipments	Value	***	***	***
Total shipments	Value	***	***	***

Table continued.

Table IV-9 Continued
Ammonium sulfate: Data on industry in China, by period

Quantity in short tons; value in 1,000 dollars

Item	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
Capacity	Quantity	***	***	***	***	***
Production	Quantity	***	***	***	***	***
End-of-period inventories	Quantity	***	***	***	***	***
Internal consumption and transfers	Quantity	***	***	***	***	***
Commercial home market shipments	Quantity	***	***	***	***	***
Home market shipments	Quantity	***	***	***	***	***
Exports to the United States	Quantity	***	***	***	***	***
Exports to the European Union	Quantity	***	***	***	***	***
Exports to Asia	Quantity	***	***	***	***	***
Exports to all other markets	Quantity	***	***	***	***	***
Export shipments	Quantity	***	***	***	***	***
Total shipments	Quantity	***	***	***	***	***
Internal consumption and transfers	Value	***	***	***	***	***
Commercial home market shipments	Value	***	***	***	***	***
Home market shipments	Value	***	***	***	***	***
Exports to the United States	Value	***	***	***	***	***
Exports to the European Union	Value	***	***	***	***	***
Exports to Asia	Value	***	***	***	***	***
Exports to all other markets	Value	***	***	***	***	***
Export shipments	Value	***	***	***	***	***
Total shipments	Value	***	***	***	***	***

Table continued.

Table IV-9 Continued
Ammonium sulfate: Data on industry in China, by period

Unit values in short tons; shares and ratios in percent

Item	Measure	2016	2017	2018
Internal consumption and transfers	Unit value	***	***	***
Commercial home market shipments	Unit value	***	***	***
Home market shipments	Unit value	***	***	***
Exports to the United States	Unit value	***	***	***
Exports to the European Union	Unit value	***	***	***
Exports to Asia	Unit value	***	***	***
Exports to all other markets	Unit value	***	***	***
Export shipments	Unit value	***	***	***
Total shipments	Unit value	***	***	***
Capacity utilization ratio	Ratio	***	***	***
Inventory ratio to production	Ratio	***	***	***
Inventory ratio to total shipments	Ratio	***	***	***
Internal consumption and transfers	Share	***	***	***
Commercial home market shipments	Share	***	***	***
Home market shipments	Share	***	***	***
Exports to the United States	Share	***	***	***
Exports to the European Union	Share	***	***	***
Exports to Asia	Share	***	***	***
Exports to all other markets	Share	***	***	***
Export shipments	Share	***	***	***
Total shipments	Share	***	***	***

Table continued.

Table IV-9 Continued
Ammonium sulfate: Data on industry in China, by period

Unit values in short tons; shares and ratios in percent

Item	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
Internal consumption and transfers	Unit value	***	***	***	***	***
Commercial home market shipments	Unit value	***	***	***	***	***
Home market shipments	Unit value	***	***	***	***	***
Exports to the United States	Unit value	***	***	***	***	***
Exports to the European Union	Unit value	***	***	***	***	***
Exports to Asia	Unit value	***	***	***	***	***
Exports to all other markets	Unit value	***	***	***	***	***
Export shipments	Unit value	***	***	***	***	***
Total shipments	Unit value	***	***	***	***	***
Capacity utilization ratio	Ratio	***	***	***	***	***
Inventory ratio to production	Ratio	***	***	***	***	***
Inventory ratio to total shipments	Ratio	***	***	***	***	***
Internal consumption and transfers	Share	***	***	***	***	***
Commercial home market shipments	Share	***	***	***	***	***
Home market shipments	Share	***	***	***	***	***
Exports to the United States	Share	***	***	***	***	***
Exports to the European Union	Share	***	***	***	***	***
Exports to Asia	Share	***	***	***	***	***
Exports to all other markets	Share	***	***	***	***	***
Export shipments	Share	***	***	***	***	***
Total shipments	Share	***	***	***	***	***

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

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

Alternative products

As shown in table IV-10, three responding firms (***) produced other products on the same equipment and machinery used to produce ammonium sulfate.[21] Total production of out-of-scope products fluctuated but increased overall by *** percent during 2016-21. As a share of total production, out-of-scope production accounted for no more than *** percent of overall production on the same equipment and machinery used to produce ammonium sulfate for the period for which data were collected, and that share decreased by *** percentage points during 2016-21.

Table IV-10
Ammonium sulfate: Overall capacity and production on the same equipment as in-scope production in China, by period

Quantity in short tons; shares and ratios in percent

Item	Measure	2016	2017	2018
Overall capacity	Quantity	***	***	***
Ammonium sulfate production	Quantity	***	***	***
Other production	Quantity	***	***	***
Total production	Quantity	***	***	***
Overall capacity utilization	Ratio	***	***	***
Ammonium sulfate production	Share	***	***	***
Other production	Share	***	***	***
Total production	Share	***	***	***

Table continued.

[21] *** indicated that they are able to switch from subject to nonsubject production. *** is able to produce granular ammonium chloride, *** is able to produce urea, compound fertilizer, and heavy calcium superphosphate, with machinery adjustments, cleaning, and testing as constraining factors, and *** is able to produce potassium sulfate granules, potassium magnesium chloride granules, and compound fertilizers. While *** cited machinery adjustments, cleaning, and testing as factors affecting the ability to switch production to these alternative products, *** cited only the market demand for the various products. *** foreign producer questionnaire responses, section II-3e.

Table IV-10 Continued
Ammonium sulfate: Overall capacity and production on the same equipment as in-scope production in China, by period

Quantity in short tons; shares and ratios in percent

Item	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
Overall capacity	Quantity	***	***	***	***	***
Ammonium sulfate production	Quantity	***	***	***	***	***
Other production	Quantity	***	***	***	***	***
Total production	Quantity	***	***	***	***	***
Overall capacity utilization	Ratio	***	***	***	***	***
Ammonium sulfate production	Share	***	***	***	***	***
Other production	Share	***	***	***	***	***
Total production	Share	***	***	***	***	***

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

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

Exports

According to GTA, the leading export markets for ammonium sulfate from China are Brazil, Vietnam, and Indonesia (table IV-11), accounting for 33.6 percent, 10.9 percent, and 10.7 percent of total exports 2021 by quantity. There were no exports of ammonium sulfate from China to the United States in 2021.

Table IV-11
Ammonium sulfate: Exports from China, by period

Quantity in short tons; value in 1,000 dollars

Destination market	Measure	2016	2017	2018
United States	Quantity	108,881	323	80
Brazil	Quantity	686,196	1,110,145	1,473,944
Vietnam	Quantity	776,097	799,451	912,209
Indonesia	Quantity	1,052,086	1,077,910	1,339,176
Malaysia	Quantity	450,557	439,690	474,250
Myanmar	Quantity	208,716	200,985	467,473
Turkey	Quantity	177,693	416,982	467,399
Philippines	Quantity	450,114	477,565	460,893
Thailand	Quantity	172,653	193,357	125,820
All other destination markets	Quantity	1,435,758	1,725,615	1,805,118
All destination markets	Quantity	5,518,752	6,442,023	7,526,362
United States	Value	14,000	33	8
Brazil	Value	82,944	131,279	192,775
Vietnam	Value	68,720	70,853	89,165
Indonesia	Value	96,976	96,580	130,608
Malaysia	Value	39,071	34,730	41,650
Myanmar	Value	20,161	17,912	48,538
Turkey	Value	15,284	36,661	45,442
Philippines	Value	42,873	43,549	46,269
Thailand	Value	16,319	18,816	14,559
All other destination markets	Value	164,923	177,905	202,819
All destination markets	Value	561,271	628,318	811,832

Table continued.

Table IV-11 Continued
Ammonium sulfate: Exports from China, by period

Quantity in short tons; value in 1,000 dollars

Exporting country	Measure	2019	2020	2021
United States	Quantity	42	15,380	---
Brazil	Quantity	1,972,476	2,782,700	3,940,934
Vietnam	Quantity	766,812	816,946	1,276,709
Indonesia	Quantity	1,211,929	1,140,547	1,258,043
Malaysia	Quantity	445,532	516,773	755,809
Myanmar	Quantity	424,567	671,704	595,161
Turkey	Quantity	564,782	166,639	577,243
Philippines	Quantity	397,241	508,023	503,256
Thailand	Quantity	87,931	351,842	419,420
All other destination markets	Quantity	1,873,963	2,574,460	2,413,258
All destination markets	Quantity	7,745,275	9,545,015	11,739,832
United States	Value	6	4,519	---
Brazil	Value	240,343	291,087	737,699
Vietnam	Value	79,359	105,481	281,488
Indonesia	Value	118,276	130,825	249,481
Malaysia	Value	38,843	43,850	139,199
Myanmar	Value	46,727	70,874	90,622
Turkey	Value	52,212	14,910	85,258
Philippines	Value	39,149	42,874	78,201
Thailand	Value	10,083	39,969	90,893
All other destination markets	Value	213,189	268,931	377,431
All destination markets	Value	838,189	1,013,319	2,130,272

Table continued.

Table IV-11 Continued
Ammonium sulfate: Exports from China, by period

Unit value in dollars per short ton; share in percent

Destination market	Measure	2016	2017	2018
United States	Unit value	129	102	98
Brazil	Unit value	121	118	131
Vietnam	Unit value	89	89	98
Indonesia	Unit value	92	90	98
Malaysia	Unit value	87	79	88
Myanmar	Unit value	97	89	104
Turkey	Unit value	86	88	97
Philippines	Unit value	95	91	100
Thailand	Unit value	95	97	116
All other destination markets	Unit value	115	103	112
All destination markets	Unit value	102	98	108
United States	Share of quantity	2.0	0.0	0.0
Brazil	Share of quantity	12.4	17.2	19.6
Vietnam	Share of quantity	14.1	12.4	12.1
Indonesia	Share of quantity	19.1	16.7	17.8
Malaysia	Share of quantity	8.2	6.8	6.3
Myanmar	Share of quantity	3.8	3.1	6.2
Turkey	Share of quantity	3.2	6.5	6.2
Philippines	Share of quantity	8.2	7.4	6.1
Thailand	Share of quantity	3.1	3.0	1.7
All other destination markets	Share of quantity	26.0	26.8	24.0
All destination markets	Share of quantity	100.0	100.0	100.0

Table continued.

Table IV-11 Continued
Ammonium sulfate: Exports from China, by period

Unit value in dollars per short ton; share in percent

Exporting country	Measure	2019	2020	2021
United States	Unit value	134	294	---
Brazil	Unit value	122	105	187
Vietnam	Unit value	103	129	220
Indonesia	Unit value	98	115	198
Malaysia	Unit value	87	85	184
Myanmar	Unit value	110	106	152
Turkey	Unit value	92	89	148
Philippines	Unit value	99	84	155
Thailand	Unit value	115	114	217
All other destination markets	Unit value	114	104	156
All destination markets	Unit value	108	106	181
United States	Share of quantity	0.0	0.2	---
Brazil	Share of quantity	25.5	29.2	33.6
Vietnam	Share of quantity	9.9	8.6	10.9
Indonesia	Share of quantity	15.6	11.9	10.7
Malaysia	Share of quantity	5.8	5.4	6.4
Myanmar	Share of quantity	5.5	7.0	5.1
Turkey	Share of quantity	7.3	1.7	4.9
Philippines	Share of quantity	5.1	5.3	4.3
Thailand	Share of quantity	1.1	3.7	3.6
All other destination markets	Share of quantity	24.2	27.0	20.6
All destination markets	Share of quantity	100.0	100.0	100.0

Source: Official exports statistics under HS subheading 3102.21 as reported by China Customs in the Global Trade Atlas database, accessed October 17, 2022.

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent. United States is shown at the top, all remaining top export destinations shown in descending order of 2020 data.

Third-country trade actions

On November 24, 2022, the Mexican Ministry of Economy extended the suspension of antidumping duties on ammonium sulfate produced in China until November 24, 2023.[22] The duties, originally imposed on February 4, 2015 and extended on March 31, 2022, were initially suspended on May 24, 2022 as part of the Package Against Inflation and Scarcity.

Global market

Global prices for nitrogen fertilizers increased in 2021 as the price of natural gas increased and U.S. production of some fertilizers was damaged by Hurricane Ida and the Texas Arctic blast.[23] Despite these industry-wide price increases, global consumption of ammonium sulfate grew by an estimated *** from 2017 to 2021.[24] The February 2022 Russian invasion of Ukraine likely restricted the trade of Russian fertilizers potentially limiting some global supplies.[25] Pursuant to Public Law 117-110, effective April 9, 2022 all products permitted admission into the customs territory of the United States from Russia (the fourth largest source of U.S. imports of ammonium sulfate in 2021) and Belarus will be assessed the column 2 duty rate of "free."[26]

Table IV-12 presents global export data for HS 3102.21, a category that covers only ammonium sulfate (by source, in descending order of quantity for 2021). During 2016-21, China's exports of ammonium sulfate increased in volume (from 5.5 million short tons to 11.7 million short tons, an increase of 112.7 percent), value (from 561 million dollars to 2.130 billion dollars, an increase of 279.7 percent), and in share of global volume (from 54.7 percent to 73.0 percent, an increase of 18.3 percentage points).

[22] *Diario Oficial de la Federación*, November 24,2022. https://dof.gob.mx/nota_detalle.php?codigo=5672275&fecha=24/11/2022#gsc.tab=0.

[23] "North American Fertilizer Shortage sparks fears of food shortages," The Guardian. November 25, 2021. https://www.theguardian.com/environment/2021/nov/25/fertilizer-shortage-north-america-farmers-food-prices.

[24] ***, in Domestic interested party's response to the notice of institution, March 3, 2022, exh. 2.

[25] "Nitrogen," Issue 22-8. Argus Media. February 24, 2022, in Respondent interested parties' response to the notice of institution, March 21, 2022, exh. 10.

[26] Pub.L. 117-110.

Table IV-12
Ammonium sulfate: Global exports, by reporting country and by period

Quantity in short tons; value in 1,000 dollars

Destination market	Measure	2016	2017	2018
United States	Quantity	1,032,196	761,440	816,284
China	Quantity	5,518,752	6,442,023	7,526,362
South Korea	Quantity	360,137	659,927	584,795
Canada	Quantity	241,140	231,718	165,139
Belgium	Quantity	545,546	537,355	502,349
Japan	Quantity	430,325	489,912	443,233
Taiwan	Quantity	338,795	475,591	506,823
Netherlands	Quantity	474,801	425,806	194,246
Thailand	Quantity	122,297	75,525	114,090
Spain	Quantity	63,731	57,945	69,363
Madagascar	Quantity	142,905	109,063	86,741
Russia	Quantity	130,482	122,882	87,528
All other exporters	Quantity	689,173	936,210	823,425
All reporting exporters	Quantity	10,090,280	11,325,396	11,920,378
United States	Value	167,584	126,320	142,952
China	Value	561,271	628,318	811,832
South Korea	Value	38,387	71,530	70,924
Canada	Value	52,108	43,586	29,637
Belgium	Value	271,684	279,664	292,471
Japan	Value	36,966	41,887	40,731
Taiwan	Value	28,564	39,973	46,935
Netherlands	Value	107,015	95,574	79,811
Thailand	Value	17,086	12,152	14,813
Spain	Value	41,413	39,366	49,507
Madagascar	Value	15,804	12,647	11,798
Russia	Value	62,951	62,042	48,371
All other exporters	Value	183,734	234,068	209,608
All reporting exporters	Value	1,584,565	1,687,126	1,849,390

Table continued.

Table IV-12 Continued
Ammonium sulfate: Global exports, by reporting country and by period

Quantity in short tons; value in 1,000 dollars

Exporting country	Measure	2019	2020	2021
United States	Quantity	756,993	550,133	653,083
China	Quantity	7,745,275	9,545,015	11,739,832
South Korea	Quantity	618,595	430,632	664,376
Canada	Quantity	253,764	485,003	477,455
Belgium	Quantity	521,435	436,639	454,483
Japan	Quantity	448,620	393,657	451,952
Taiwan	Quantity	394,523	228,249	395,924
Netherlands	Quantity	295,605	266,630	254,274
Thailand	Quantity	141,690	115,902	167,468
Spain	Quantity	126,213	169,620	138,246
Madagascar	Quantity	---	33,453	95,776
Russia	Quantity	70,885	90,212	94,703
All other exporters	Quantity	723,400	774,541	490,960
All reporting exporters	Quantity	12,096,998	13,519,686	16,078,530
United States	Value	123,095	102,043	122,665
China	Value	838,189	1,013,319	2,130,272
South Korea	Value	71,518	43,314	120,235
Canada	Value	54,211	111,599	132,266
Belgium	Value	302,240	233,839	393,191
Japan	Value	40,496	30,475	67,927
Taiwan	Value	37,359	18,805	56,836
Netherlands	Value	106,422	100,007	138,334
Thailand	Value	17,247	13,095	29,114
Spain	Value	46,931	44,250	58,523
Madagascar	Value	---	3,610	18,699
Russia	Value	47,557	45,955	80,346
All other exporters	Value	195,764	225,527	299,135
All reporting exporters	Value	1,881,028	1,985,837	3,647,541

Table continued.

Table IV-12 Continued
Ammonium sulfate: Global exports, by reporting country and by period

Unit value in dollars per short ton; share in percent

Destination market	Measure	2016	2017	2018
United States	Unit value	162	166	175
China	Unit value	102	98	108
South Korea	Unit value	107	108	121
Canada	Unit value	216	188	179
Belgium	Unit value	498	520	582
Japan	Unit value	86	85	92
Taiwan	Unit value	84	84	93
Netherlands	Unit value	225	224	411
Thailand	Unit value	140	161	130
Spain	Unit value	650	679	714
Madagascar	Unit value	111	116	136
Russia	Unit value	482	505	553
All other exporters	Unit value	267	250	255
All reporting exporters	Unit value	157	149	155
United States	Share of quantity	10.2	6.7	6.8
China	Share of quantity	54.7	56.9	63.1
South Korea	Share of quantity	3.6	5.8	4.9
Canada	Share of quantity	2.4	2.0	1.4
Belgium	Share of quantity	5.4	4.7	4.2
Japan	Share of quantity	4.3	4.3	3.7
Taiwan	Share of quantity	3.4	4.2	4.3
Netherlands	Share of quantity	4.7	3.8	1.6
Thailand	Share of quantity	1.2	0.7	1.0
Spain	Share of quantity	0.6	0.5	0.6
Madagascar	Share of quantity	1.4	1.0	0.7
Russia	Share of quantity	1.3	1.1	0.7
All other exporters	Share of quantity	6.8	8.3	6.9
All reporting exporters	Share of quantity	100.0	100.0	100.0

Table continued.

Table IV-12 Continued
Ammonium sulfate: Global exports, by reporting country and by period

Unit value in dollars per short ton; share in percent

Exporting country	Measure	2019	2020	2021
United States	Unit value	163	185	188
China	Unit value	108	106	181
South Korea	Unit value	116	101	181
Canada	Unit value	214	230	277
Belgium	Unit value	580	536	865
Japan	Unit value	90	77	150
Taiwan	Unit value	95	82	144
Netherlands	Unit value	360	375	544
Thailand	Unit value	122	113	174
Spain	Unit value	372	261	423
Madagascar	Unit value	---	108	195
Russia	Unit value	671	509	848
All other exporters	Unit value	271	291	609
All reporting exporters	Unit value	155	147	227
United States	Share of quantity	6.3	4.1	4.1
China	Share of quantity	64.0	70.6	73.0
South Korea	Share of quantity	5.1	3.2	4.1
Canada	Share of quantity	2.1	3.6	3.0
Belgium	Share of quantity	4.3	3.2	2.8
Japan	Share of quantity	3.7	2.9	2.8
Taiwan	Share of quantity	3.3	1.7	2.5
Netherlands	Share of quantity	2.4	2.0	1.6
Thailand	Share of quantity	1.2	0.9	1.0
Spain	Share of quantity	1.0	1.3	0.9
Madagascar	Share of quantity	---	0.2	0.6
Russia	Share of quantity	0.6	0.7	0.6
All other exporters	Share of quantity	6.0	5.7	3.1
All reporting exporters	Share of quantity	100.0	100.0	100.0

Source: Official exports statistics under HS subheading 3102.21 reported by various national statistical authorities in the Global Trade Atlas database, accessed October 17, 2022.

Note: Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent. United States is shown at the top, all remaining top export destinations shown in descending order of 2020 data.

Part V: Pricing data

Factors affecting prices

Raw material costs

The primary raw material inputs to ammonium sulfate are ammonia and sulfur. Natural gas is also an input in the production of ammonium sulfate because it is typically used in the production of the raw material ammonia. Raw material costs are a relatively large cost component of ammonium sulfate production. Raw material costs as a share of total cost of goods sold ("COGS") were *** percent in 2016 and increased to *** percent in 2021.[1]

As shown in figure V-1, ammonia prices *** from January 2018 to July 2022, with substantial increases in the first and last quarters of 2021. From a period-low of $*** per short ton in July 2020 to a period-high of $*** in April 2022, ammonia prices increased by *** percent between July 2020 and April 2022. Reasons for this increase include increased prices for natural gas used in ammonia production (see figure V-3)[2] and increased demand for fertilizers which use ammonia.[3] Ammonia prices decreased by *** percent in the second quarter of 2022 and then increased through November 2022.

[1] Raw materials were *** percent of COGS during January-June 2021, and *** percent in January-June 2022 (see table III-7).

[2] The Russian invasion of Ukraine has caused disruptions in the supply of natural gas to Europe resulting in increased natural gas prices and price fluctuations. https://www.cnbc.com/2022/10/28/energy-crisis-europe-gas-prices-drop-but-could-rise-in-coming-months.html.

[3] AgriLife Today, "Fertilizer prices continue record climb," November 9, 2021.

Figure V-1
Published prices: Average anhydrous ammonia prices, by month, 2018-2022

* * * * * * *

Source: Compiled from data obtained from ***, accessed December 9, 2022.

Note: Prices are reported on a U.S. Gulf of Mexico New Orleans (NOLA) basis. Monthly prices shown are simple averages of the published weekly prices within the specified year and month. ***.

Table V-1
Published prices: Average anhydrous ammonia prices, by month, 2018-2022

Price in dollars per short ton

Month	2018	2019	2020	2021	2022
January	***	***	***	***	***
February	***	***	***	***	***
March	***	***	***	***	***
April	***	***	***	***	***
May	***	***	***	***	***
June	***	***	***	***	***
July	***	***	***	***	***
August	***	***	***	***	***
September	***	***	***	***	***
October	***	***	***	***	***
November	***	***	***	***	***
December	***	***	***	***	***

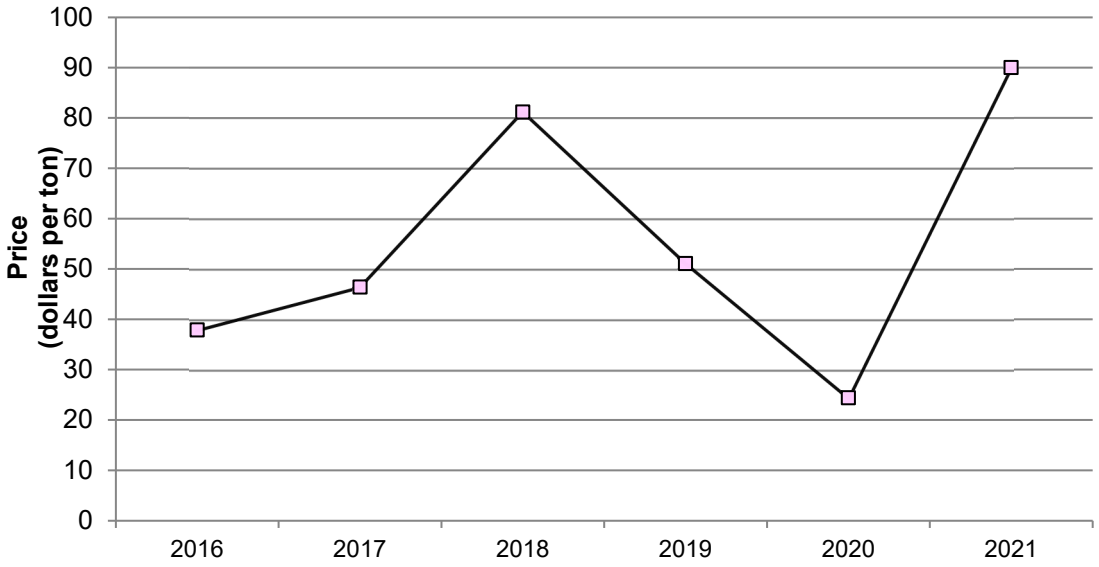
Source: Compiled from data obtained from ***, accessed December 9, 2022.

Note: Prices are reported on a U.S. Gulf of Mexico NOLA basis. Monthly prices shown are simple averages of the published weekly prices within the specified year and month. ***.

Sulfur prices fluctuated during 2016-21 with a low of $24.40 per ton in 2020 and an estimated high of $90.00 per ton in 2021 (figure V-2 and table V-2). The USGS reported that the variability in sulfur prices in the past few years was due to volatility in the demand for sulfur and that the high prices in 2021 were a result of supply issues.[4]

[4] U.S. Department of the Interior, U.S. Geological Survey (USGS), Mineral Commodity Summaries, 2021, 2022.

Figure V-2
Raw materials: Sulfur prices, by year, 2016-2021



Source: U.S. Department of the Interior, U.S. Geological Survey (USGS), Mineral Commodity Summaries, 2021, 2022.

Note: The sulfur price for 2021 is an estimate.

Table V-2
Raw materials: Sulfur prices, by year, 2016-2021

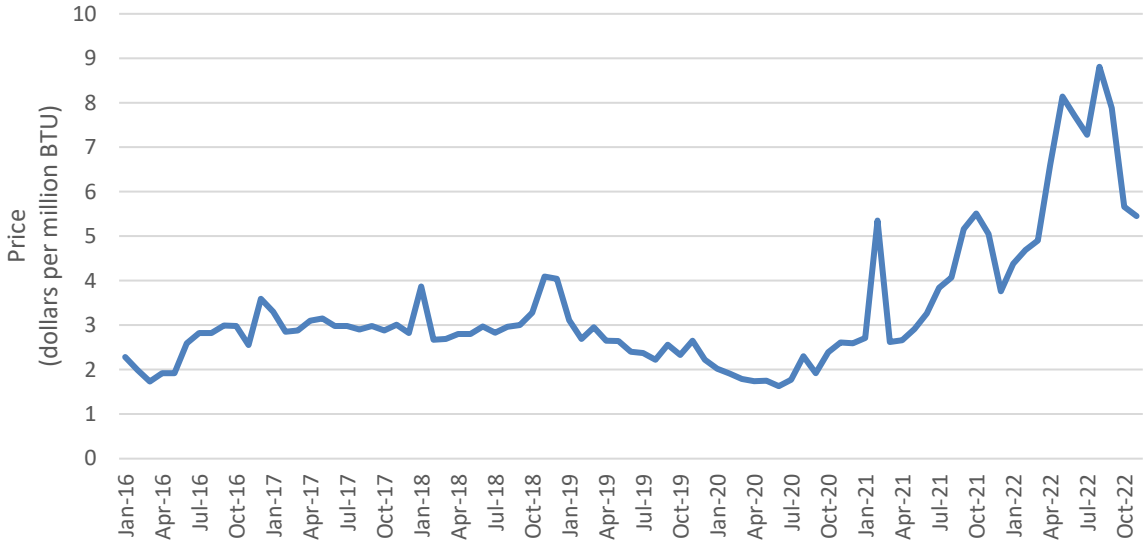
Price in dollars per ton

Year	Price
2016	37.88
2017	46.39
2018	81.16
2019	51.08
2020	24.40
2021 (estimate)	90.00

Source: U.S. Department of the Interior, U.S. Geological Survey (USGS), Mineral Commodity Summaries, 2021, 2022.

Natural gas prices fluctuated during 2016-20 and increased sharply in February 2021, before falling sharply in March 2021 and then increasing more steadily throughout the year before peaking in October 2021 (table V-3). Natural gas prices spiked in February 2021 due to Winter Storm Uri that impacted natural gas and electricity markets in Texas and Oklahoma; prices fell sharply in March followed by price increases continuing to November 2021, decreasing briefly, and sharply increasing again through May 2022. Natural gas price volatility in 2021 occurred due to weather-related consumption and production outages, high international natural gas prices that encouraged exports, and key pipeline outages, amongst other factors.[5] The general increase in natural gas prices from mid-2021 to mid-2022 was due to demand growth that outpaced domestic production growth, which kept inventory levels low.[6] Overall, monthly natural gas prices were 237.7 percent higher in June 2022 compared to January 2016.

Figure V-3
Raw materials: Average natural gas prices, by month, January 2016-November 2022



Source: Compiled from official energy statistics on Henry Hub Natural Gas Spot Prices from the U.S. Department of Energy, U.S. Energy Information Administration, https://www.eia.gov/dnav/ng/hist/rngwhhdm.htm, accessed December 12, 2022.

Note: BTU stands for British Thermal Unit and is used as a unit of heat energy.

[5] U.S. Energy Information Administration, "U.S. natural gas prices spiked in February 2021, then generally increased through October," January 6, 2022, https://www.eia.gov/todayinenergy/detail.php?id=50778, accessed September 15, 2022.

[6] U.S. Energy Information Administration, "U.S. monthly average Henry Hub spot price nearly doubled in 12 months," July 14, 2022, https://www.eia.gov/todayinenergy/detail.php?id=53039, accessed September 15, 2022.

Table V-3
Raw materials: Average natural gas prices, by month, January 2016-November 2022

Price in dollars per million BTU

Month	2016	2017	2018	2019	2020	2021	2022
January	2.28	3.30	3.87	3.11	2.02	2.71	4.38
February	1.99	2.85	2.67	2.69	1.91	5.35	4.69
March	1.73	2.88	2.69	2.95	1.79	2.62	4.90
April	1.92	3.10	2.80	2.65	1.74	2.66	6.60
May	1.92	3.15	2.80	2.64	1.75	2.91	8.14
June	2.59	2.98	2.97	2.40	1.63	3.26	7.70
July	2.82	2.98	2.83	2.37	1.77	3.84	7.28
August	2.82	2.90	2.96	2.22	2.30	4.07	8.81
September	2.99	2.98	3.00	2.56	1.92	5.16	7.88
October	2.98	2.88	3.28	2.33	2.39	5.51	5.66
November	2.55	3.01	4.09	2.65	2.61	5.05	5.45
December	3.59	2.82	4.04	2.22	2.59	3.76	---

Source: Compiled from official energy statistics on Henry Hub Natural Gas Spot Prices from the U.S. Department of Energy, U.S. Energy Information Administration, https://www.eia.gov/dnav/ng/hist/rngwhhdm.htm, accessed December 12, 2022.

Note: BTU stands for British Thermal Unit and is used as a unit of heat energy.

Four of 5 responding U.S. producers reported that the cost of raw materials had increased since January 1, 2016, and *** responding importers reported that these costs fluctuated. U.S. producer *** reported that increases in raw material prices had caused an increase in market prices for ammonium sulfate. U.S. producer *** reported that raw material prices were stable during 2016-21 but natural gas prices increased after the war in Ukraine began, which led to higher prices for ammonia. U.S. producer *** reported that ammonia prices are based on natural gas prices, which are being influenced by offshore natural gas pricing. Importer *** reported that the prices of raw materials move with market demand and that intentional ammonium sulfate production must compete with by-product production of ammonium sulfate.

Six of 7 purchasers reported that they were familiar with the prices of raw materials used in the production of ammonium sulfate. Two of these responding purchasers reported that information on raw material prices had affected their negotiations or contracts to purchase ammonium sulfate since 2016. Purchaser *** reported that rising nitrogen and sulfur prices have increased fertilizer prices.

Transportation costs to the U.S. market

There were no reported imports of ammonium sulfate from China in 2021 according to the official U.S. import statistics of the U.S. Department of Commerce Census Bureau, using HTS statistical reporting number 3102.21.0000. In the original investigation, transportation costs for ammonium sulfate shipped from China to the United States averaged 10 percent in 2015.[7]

U.S. inland transportation costs

U.S. producers reported a mix in transportation arrangements; three U.S. producers reported that they typically arrange transportation to their customers, and three reported that their customers pick up the product.[8] *** responding importers reported that they typically arrange transportation. U.S. producers reported that their U.S. inland transportation costs ranged from *** to *** percent, and one importer reported costs of *** percent.

Pricing practices

Pricing methods

U.S. producers and importers reported setting prices using transaction-by-transaction negotiations, contracts, and price lists (table V-4).[9] (Three firms imported Chinese product in 2016 and one firm imported small amounts in 2022).[10] One U.S. producer reported price setting using other methods.[11] [12]

[7] Original publication, p. V-2.

[8] U.S. producer *** reported both and that it has a mix of sales where the customer picks up the product and where the producer itself delivers.

[9] Multiple firms reported using multiple ways to set prices.

[10] ***.

[11] U.S. producer *** reported setting prices based on the market value at the time of sale.

[12] Importer ***.

Table V-4
Ammonium sulfate: Count of U.S. producers' and importers' reported price setting methods

Number of firms reporting

Method	U.S. producers	U.S. importers
Transaction-by-transaction	6	***
Contract	3	***
Set price list	1	***
Other	1	***
Responding firms	6	***

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

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

U.S. producers reported selling ammonium sulfate mostly in the spot market (table V-5). No data were available for subject imports in this review, however, in the original investigation, the *** of subject import sales in 2015 were on a spot basis.[13]

Table V-5
Ammonium sulfate: U.S. producers' shares of commercial U.S. shipments by type of sale, 2021

Share in percent

Item	U.S. producers
Long-term contracts	***
Annual contract	***
Short-term contracts	***
Spot sales	***
Total	100.0

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

Note: No data were reported for subject imports.

Three U.S. producers reported using short-term contracts to set prices; none allowed for price renegotiations. U.S. producers' short-term contracts were an average of 90 days, had a fixed price and quantity, and were not indexed to raw material prices.

Four purchasers reported that they purchased product monthly, one purchased quarterly, one purchased daily, and one purchased on demand based on seasonality. No firm reported changes to its purchasing frequency since 2016, and all seven responding purchasers reported that they did not expect their purchasing patterns to change in the next two years. Purchasers generally contact one to six suppliers before making a purchase.

[13] Original confidential report, p. V-3.

Chinese producers reported selling *** percent of their exports to markets other than the United States in the spot market in 2021, *** percent under short-term contracts, and *** percent under long-term contracts. Chinese producers reported selling *** percent of their home market sales in China in the spot market and *** percent under short-term contracts.

Domestic interested parties reported that their sales contracts *** surcharges when raw material and natural gas prices increase.[14] Chinese respondents reported that their sales prices are "essentially spot market pricing" and therefore they "do not add surcharges when raw material and natural gas prices increase."[15]

Sales terms and discounts

U.S. producers reported a mix of quoting prices on an f.o.b. and delivered basis and most responding importers reported quoting prices on a delivered basis.[16] Five of six responding U.S. producers reported offering no discounts.[17] One U.S. producer (***) reported offering a customer warehouse allowance discount, rebates on sales agreements, and a prepay program where customers can receive a price advantage. *** responding importers reported offering no discounts. One importer (***) reported offering quantity and total volume discounts.[18]

Price leadership

Four purchasers reported that U.S. producer AdvanSix was a price leader in the ammonium sulfate market. Purchasers indicating the presence of price leaders indicated that AdvanSix led by being the first to set prices and publicize fill programs. Other price leaders reported by purchasers include Inter-Oceanic (two firms), American Plant Food (two firms), Nutrien, Pasadena Nitrogen, NeuAg, and Ultramar.

[14] Domestic interested parties' posthearing brief, exhibit 1, p. 5.

[15] Respondents' posthearing brief, p. 4.

[16] Two U.S. producers and one importer reported both. Reported f.o.b. locations by U.S. producers include ***. Reported f.o.b. locations reported by importers include ***.

[17] However, one of these U.S. producers did report that it does "offer extended payment terms of up to 120 days to assist certain customers in managing their working capital needs."

[18] The firm also considers timing and payment terms for its discount policy.

Price data

The Commission requested U.S. producers and importers to provide quarterly data for the total quantity and f.o.b. value of the following ammonium sulfate products shipped to unrelated U.S. customers during January 2016-June 2022.

Product 1.--Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to distributors.

Product 2.--Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to retailers.

Product 3.--Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to end users.

Five of 6 U.S. producers and *** importers provided usable pricing data for sales of the requested products, although not all firms reported pricing for all products for all quarters.[19] [20] Pricing data reported by these firms accounted for approximately *** percent of U.S. producers' U.S. commercial shipments in 2021 in terms of quantity of ammonium sulfate.[21]

Price data for products 1-3 are presented in tables V-6 to V-8 and figures V-4 to V-7.

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

[20] U.S. producer *** reported U.S. commercial shipments of ammonium sulfate but did not provide usable pricing data, partially because ***. Importer *** reported ***."

[21] Pricing coverage is based on U.S. shipments reported in questionnaires.

Table V-6
Ammonium sulfate: Weighted-average f.o.b. prices and quantities of domestic and imported product 1 and margins of underselling/(overselling), by source and quarter

Price in dollars per short ton, quantity in short tons, margin in percent.

Period	US price	US quantity	China price	China quantity	China margin
2016 Q1	***	***	***	***	***
2016 Q2	***	***	***	***	***
2016 Q3	***	***	***	***	***
2016 Q4	***	***	***	***	***
2017 Q1	***	***	***	***	***
2017 Q2	***	***	***	***	***
2017 Q3	***	***	***	***	***
2017 Q4	***	***	***	***	***
2018 Q1	***	***	***	***	***
2018 Q2	***	***	***	***	***
2018 Q3	***	***	***	***	***
2018 Q4	***	***	***	***	***
2019 Q1	***	***	***	***	***
2019 Q2	***	***	***	***	***
2019 Q3	***	***	***	***	***
2019 Q4	***	***	***	***	***
2020 Q1	***	***	***	***	***
2020 Q2	***	***	***	***	***
2020 Q3	***	***	***	***	***
2020 Q4	***	***	***	***	***
2021 Q1	***	***	***	***	***
2021 Q2	***	***	***	***	***
2021 Q3	***	***	***	***	***
2021 Q4	***	***	***	***	***
2022 Q1	***	***	***	***	***
2022 Q2	***	***	***	***	***

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

Note: Product 1: Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to distributors.

Figure V-4
Ammonium sulfate: Weighted-average prices and quantities of domestic and imported product 1, by source and quarter

Price of product 1

* * * * * * *

Volume of product 1

* * * * * * *

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

Note: Product 1: Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to distributors.

Table V-7
Ammonium sulfate: Weighted-average f.o.b. prices and quantities of domestic and imported product 2 and margins of underselling/(overselling), by source and quarter

Price in dollars per short ton, quantity in short tons, margin in percent.

Period	US price	US quantity	China price	China quantity	China margin
2016 Q1	***	***	***	***	***
2016 Q2	***	***	***	***	***
2016 Q3	***	***	***	***	***
2016 Q4	***	***	***	***	***
2017 Q1	***	***	***	***	***
2017 Q2	***	***	***	***	***
2017 Q3	***	***	***	***	***
2017 Q4	***	***	***	***	***
2018 Q1	***	***	***	***	***
2018 Q2	***	***	***	***	***
2018 Q3	***	***	***	***	***
2018 Q4	***	***	***	***	***
2019 Q1	***	***	***	***	***
2019 Q2	***	***	***	***	***
2019 Q3	***	***	***	***	***
2019 Q4	***	***	***	***	***
2020 Q1	***	***	***	***	***
2020 Q2	***	***	***	***	***
2020 Q3	***	***	***	***	***
2020 Q4	***	***	***	***	***
2021 Q1	***	***	***	***	***
2021 Q2	***	***	***	***	***
2021 Q3	***	***	***	***	***
2021 Q4	***	***	***	***	***
2022 Q1	***	***	***	***	***
2022 Q2	***	***	***	***	***

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

Note: Product 2: Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to retailers.

Figure V-5
Ammonium sulfate: Weighted-average prices and quantities of domestic and imported product 2, by source and quarter

Price of product 2

* * * * * * *

Volume of product 2

* * * * * * *

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

Note: Product 2: Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to retailers.

Table V-8
Ammonium sulfate: Weighted-average f.o.b. prices and quantities of domestic and imported product 3 and margins of underselling/(overselling), by source and quarter

Price in dollars per short ton, quantity in short tons, margin in percent.

Period	US price	US quantity	China price	China quantity	China margin
2016 Q1	***	***	***	***	***
2016 Q2	***	***	***	***	***
2016 Q3	***	***	***	***	***
2016 Q4	***	***	***	***	***
2017 Q1	***	***	***	***	***
2017 Q2	***	***	***	***	***
2017 Q3	***	***	***	***	***
2017 Q4	***	***	***	***	***
2018 Q1	***	***	***	***	***
2018 Q2	***	***	***	***	***
2018 Q3	***	***	***	***	***
2018 Q4	***	***	***	***	***
2019 Q1	***	***	***	***	***
2019 Q2	***	***	***	***	***
2019 Q3	***	***	***	***	***
2019 Q4	***	***	***	***	***
2020 Q1	***	***	***	***	***
2020 Q2	***	***	***	***	***
2020 Q3	***	***	***	***	***
2020 Q4	***	***	***	***	***
2021 Q1	***	***	***	***	***
2021 Q2	***	***	***	***	***
2021 Q3	***	***	***	***	***
2021 Q4	***	***	***	***	***
2022 Q1	***	***	***	***	***
2022 Q2	***	***	***	***	***

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

Note: Product 3: Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to end users.

Figure V-6
Ammonium sulfate: Weighted-average prices and quantities of domestic and imported product 3, by source and quarter

Price of product 3

* * * * * * *

Volume of product 3

* * * * * * *

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

Note: Product 3: Ammonium sulfate in granular form (particles with a diameter of 2.0 millimeters or greater) and sold in bulk, sold to end users.

Price trends

Prices were mostly stable from the first quarter of 2016 (for products 1 and 2) to the end of 2020 (for all products), and then rose sharply in 2021 and 2022. Table V-9 summarizes the price trends, by country and by product. As shown in the table, domestic price increases ranged from *** to *** percent during January 2016-June 2022.

Table V-9
Ammonium sulfate: Summary of price data, by product and source, January 2016-June 2022

Quantity in short tons, price in dollars per short ton

Product	Source	Number of quarters	Quantity	Low price	High price	First quarter price	Last quarter price	Change over period
Product 1	United States	***	***	***	***	***	***	***
Product 1	China	***	***	***	***	***	***	***
Product 2	United States	***	***	***	***	***	***	***
Product 2	China	***	***	***	***	***	***	***
Product 3	United States	***	***	***	***	***	***	***
Product 3	China	***	***	***	***	***	***	***

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

Note: Percent change column is percentage change from the first quarter in 2016 to the second quarter in 2022.

Price comparisons[22]

Comparisons of U.S. and Chinese prices were only available for ***. Comparisons for product 1 were available for *** and comparisons for product 2 were available for ***. As shown in table V-10, prices for ammonium sulfate imported from China were below those for U.S.-produced product in 7 of 8 instances; margins of underselling ranged from *** to *** percent. In the remaining instance, prices for ammonium sulfate from China were *** percent above prices for the domestic product.

[22] In the original investigations, subject imports from China were priced lower than domestic product in 14 of 26 comparisons, with underselling margins ranging from 1.6 to 19.9 percent. Original publication, p. V-11.

Table V-10
Ammonium sulfate: Instances of underselling and overselling and the range and average of margins, by product, January 2016 through June 2022

Quantity in short tons; margin in percent

Item	Type	Number of quarters	Quantity	Average margin	Minimum margin	Maximum margin
Product 1	Underselling	2	***	***	***	***
Product 2	Underselling	5	***	***	***	***
Product 3	Underselling	---	***	***	***	***
All products	Underselling	7	***	***	***	***
Product 1	Overselling	1	***	***	***	***
Product 2	Overselling	---	***	***	***	***
Product 3	Overselling	---	***	***	***	***
All products	Overselling	1	***	***	***	***

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

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

U.S. producers and importers were asked if they were aware of prices of ammonium sulfate in non-U.S. markets. Three of five U.S. producers and *** importers reported that they were not aware of such prices. Of those firms that reported they were aware of prices of ammonium sulfate in non-U.S. markets, U.S. producers *** reported that prices in the U.S. market are higher by as much as $100 per ton compared to the Brazilian market. Importer *** reported that prices in Canada were at a premium to the United States but in 2021, after Nutrien's expansion in Red Water, Alberta, prices became higher in the United States. Importer *** reported that it makes purchases based on the market set by U.S. producers and the global alternative.

Foreign producers were asked to compare market prices of ammonium sulfate in their firm's home market, the United States, and third-country markets. *** reported that ammonium sulfate sold in China is about $15-17 per metric ton cheaper than exported product. *** reported that prices in China are generally lower than prices in the United States and Brazil. The firm also reported that prices in the Brazilian market are generally higher than prices in the U.S. market, but in some peak seasons U.S. prices are higher by about $5-10 per metric ton. *** reported that prices in Brazil are generally higher and more attractive than in China. *** reported that in the past three years, its selling prices to Brazil have increased.

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 5467, February 1, 2022	*Initiation of Five-Year (Sunset) Reviews*	https://www.govinfo.gov/content/pkg/FR-2022-02-01/pdf/2022-02026.pdf
87 FR 5503, February 2, 2022	*Ammonium Sulfate From China; Institution of Five-Year Reviews*	https://www.govinfo.gov/content/pkg/FR-2022-02-01/pdf/2022-01909.pdf
87 FR 29878, May 17, 2022	*Ammonium Sulfate From China; Notice of Commission Determination To Conduct Full Five-Year Reviews*	https://www.govinfo.gov/content/pkg/FR-2022-05-17/pdf/2022-10516.pdf
87 FR 34848, June 8, 2022	*Ammonium Sulfate From the People's Republic of China: Final Results of the Expedited First Sunset Review of the Countervailing Duty Order*	https://www.govinfo.gov/content/pkg/FR-2022-06-08/pdf/2022-12315.pdf
87 FR 34841, June 8, 2022	*Ammonium Sulfate From the People's Republic of China: Final Results of the Expedited First Sunset Review of the Antidumping Duty Order*	https://www.govinfo.gov/content/pkg/FR-2022-06-08/pdf/2022-12313.pdf
87 FR 47463, August 3, 2022	*Ammonium Sulfate From China; Scheduling of Full Five-Year Reviews*	https://www.govinfo.gov/content/pkg/FR-2022-08-03/pdf/2022-16638.pdf
87 FR 58134, September 23, 2022	*Ammonium Sulfate From China; Hearing Update for the Subject Reviews*	https://www.govinfo.gov/content/pkg/FR-2022-09-23/pdf/2022-20608.pdf
87 FR 79352, December 27, 2022	*Ammonium Sulfate From China; Cancellation of Hearing for Full Five-Year Reviews*	https://www.govinfo.gov/content/pkg/FR-2022-12-27/pdf/2022-28027.pdf

Citation	Title	Link
87 FR 79867, December 28, 2022	*Ammonium Sulfate From China; Notice of Scope Ruling Applications Filed in Antidumping and Countervailing Duty Proceedings*	https://www.govinfo.gov/content/pkg/FR-2022-12-28/pdf/2022-28246.pdf

APPENDIX B

FEDERAL REGISTER NOTICE: CANCELLED HEARING

1992. The AMWG makes recommendations to the Secretary of the Interior concerning Glen Canyon Dam operations and other management actions to protect resources downstream of Glen Canyon Dam, consistent with the Grand Canyon Protection Act. The AMWG meets two to three times a year.

Agenda: The AMWG will meet to receive updates on: (1) current basin hydrology and water year 2023 operations; (2) experiments considered for implementation in 2023; (3) the status of threatened and endangered species; (4) long-term funding considerations; and (5) science results from Grand Canyon Monitoring and Research Center staff. The AMWG will also discuss other administrative and resource issues pertaining to the GCDAMP. To view a copy of the agenda and documents related to the above meeting, please visit Reclamation's website at *https://www.usbr.gov/uc/progact/amp/amwg.html.*

Meeting Accessibility/Special Accommodations: Please make requests in advance for sign language interpreter services, assistive listening devices, or other reasonable accommodations. We ask that you contact the person listed in the **FOR FURTHER INFORMATION CONTACT** section of this notice at least seven (7) business days prior to the meeting to give the Department of the Interior sufficient time to process your request. All reasonable accommodation requests are managed on a case-by-case basis.

Public Disclosure of Comments: Time will be allowed on both days for any individual or organization wishing to make extemporaneous and/or formal oral comments. To allow for full consideration of information by the AMWG members, written notice should be provided to the person listed in the **FOR FURTHER INFORMATION CONTACT** section of this notice prior to the meeting. Depending on the number of persons wishing to speak, and the time available, the time for individual comments may be limited. Any written comments received will be provided to the AMWG members.

Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Authority: 5 U.S.C. appendix 2.

William Stewart,

Adaptive Management Group Chief, Upper Colorado Basin—Interior Region 7.

[FR Doc. 2022–28137 Filed 12–23–22; 8:45 am]

BILLING CODE 4332–90–P

INTERNATIONAL TRADE COMMISSION

[Investigation Nos. 701–TA–562 and 731–TA–1329 (Review)]

Ammonium Sulfate From China; Cancellation of Hearing for Full Five-Year Reviews

AGENCY: United States International Trade Commission.

ACTION: Notice.

DATES: Applicable December 1, 2022.

FOR FURTHER INFORMATION CONTACT: Peter Stebbins ((202) 205–2039), Office of Investigations, U.S. International Trade Commission, 500 E Street SW, Washington, DC 20436. Hearing-impaired persons can obtain information on this matter by contacting the Commission's TDD terminal on 202–205–1810. Persons with mobility impairments who will need special assistance in gaining access to the Commission should contact the Office of the Secretary at 202–205–2000. General information concerning the Commission may also be obtained by accessing its internet server (*http://www.usitc.gov*). The public record for these reviews may be viewed on the Commission's electronic docket (EDIS) at *http://edis.usitc.gov.*

SUPPLEMENTARY INFORMATION: On August 1, 2022, the Commission established a schedule for the conduct of the full five-year reviews (87 FR 47463 August 3, 2022), and on September 19, 2022, gave notice of updated information related to the conduct of the hearing for these reviews (87 FR 58134 September 23, 2022). On November 29, 2022, counsel for the Committee for Fair Trade in Ammonium Sulfate filed a request to appear at the hearing. No other parties submitted a request to appear at the hearing. On December 1, 2022, counsel for the Committee for Fair Trade in Ammonium Sulfate filed a request that the Commission cancel the scheduled hearing for these reviews and withdrew its request to appear at the hearing. Counsel indicated a willingness to submit written responses to any Commission questions. Consequently, the public hearing in connection with these reviews, scheduled to begin at 9:30 a.m. on Tuesday, December 6, 2022, is cancelled. Parties to these reviews should respond to any written questions posed by the Commission in their posthearing briefs, which are due to be filed on December 13, 2022.

For further information concerning these reviews see the Commission's notice cited above and the Commission's Rules of Practice and Procedure, part 201, subparts A and B (19 CFR part 201), and part 207, subparts A, D, E, and F (19 CFR part 207).

Authority: These reviews are being conducted under authority of title VII of the Tariff Act of 1930; this notice is published pursuant to section 207.62 of the Commission's rules.

By order of the Commission.

Issued: December 2, 2022.

Katherine Hiner,

Acting Secretary to the Commission.

[FR Doc. 2022–28027 Filed 12–23–22; 8:45 am]

BILLING CODE 7020–02–P

INTERNATIONAL TRADE COMMISSION

[Investigation No. 731–TA–638 (Fifth Review)]

Stainless Steel Wire Rod From India

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 stainless steel wire rod from India 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 May 2, 2022 (87 FR 25671) and determined on August 5, 2022 that it would conduct an expedited review (87 FR 64246, October 24, 2022).

The Commission made this determination pursuant to section 751(c) of the Act (19 U.S.C. 1675(c)). It completed and filed its determination in this review on December 20, 2022. The views of the Commission are contained in USITC Publication 5396 (December 2022), entitled *Stainless Steel Wire Rod from India: Investigation No. 731–TA–638 (Fifth Review).*

By order of the Commission.

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

APPENDIX C

SUMMARY DATA

Table C-1
Ammonium sulfate: Summary data concerning the U.S. market, by item and period

Quantity=short tons; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per short ton; Period changes=percent--exceptions noted

	Reported data							
	Calendar year						Jan-Jun	
Item	2016	2017	2018	2019	2020	2021	2021	2022
U.S. consumption quantity:								
Amount	2,522,718	2,750,603	2,866,272	2,689,776	3,251,545	3,372,155	1,881,032	1,587,587
Producers' share (fn1)	79.1	82.9	84.5	79.8	72.8	72.6	71.6	67.9
Importers' share (fn1):								
China	7.4	0.0	0.0	0.0	0.0	---	---	---
Nonsubject sources	13.5	17.1	15.5	20.2	27.2	27.4	28.4	32.1
All import sources	20.9	17.1	15.5	20.2	27.2	27.4	28.4	32.1
U.S. consumption value:								
Amount	460,923	464,326	519,778	509,218	586,422	778,838	383,866	769,405
Producers' share (fn1)	78.7	82.2	84.3	78.7	69.6	70.2	70.9	65.8
Importers' share (fn1):								
China	6.4	0.0	0.0	0.0	0.0	---	---	---
Nonsubject sources	14.9	17.8	15.7	21.3	30.4	29.8	29.1	34.2
All import sources	21.3	17.8	15.7	21.3	30.4	29.8	29.1	34.2
U.S. imports from:								
China:								
Quantity	185,521	118	24	20	107	---	---	---
Value	29,659	34	6	8	66	---	---	---
Unit value	$160	$291	$234	$405	$616	---	---	---
Ending inventory quantity	***	***	***	***	***	***	***	***
Nonsubject sources:								
Quantity	340,756	469,055	445,312	543,753	885,462	922,597	533,482	509,714
Value	68,741	82,575	81,657	108,526	178,380	232,285	111,565	263,089
Unit value	$202	$176	$183	$200	$201	$252	$209	$516
Ending inventory quantity	***	***	***	***	***	***	***	***
All import sources:								
Quantity	526,277	469,173	445,337	543,773	885,569	922,597	533,482	509,714
Value	98,399	82,609	81,663	108,534	178,446	232,285	111,565	263,089
Unit value	$187	$176	$183	$200	$202	$252	$209	$516
Ending inventory quantity	***	***	***	***	***	***	***	***
U.S. producers':								
Average capacity quantity	3,637,844	3,640,221	3,637,608	3,658,327	3,632,690	3,643,694	1,818,819	1,823,592
Production quantity	3,006,502	3,110,958	3,093,653	3,067,491	2,943,482	2,894,954	1,471,580	1,510,867
Capacity utilization (fn1)	82.6	85.5	85.0	83.8	81.0	79.5	80.9	82.9
U.S. shipments:								
Quantity	1,996,441	2,281,430	2,420,935	2,146,003	2,365,976	2,449,558	1,347,550	1,077,873
Value	362,524	381,717	438,115	400,684	407,976	546,553	272,301	506,316
Unit value	$182	$167	$181	$187	$172	$223	$202	$470
Export shipments:								
Quantity	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	***	***	***
Inventories/total shipments (fn1)	***	***	***	***	***	***	***	***
Production workers	***	***	***	***	***	***	***	***
Hours worked (1,000s)	***	***	***	***	***	***	***	***
Wages paid ($1,000)	***	***	***	***	***	***	***	***
Hourly wages (dollars per hour)	***	***	***	***	***	***	***	***
Productivity (short tons per 1,000 hours)	***	***	***	***	***	***	***	***
Unit labor costs	***	***	***	***	***	***	***	***

Table continued.

Table C-1 Continued
Ammonium sulfate: Summary data concerning the U.S. market, by item and period

Quantity=short tons; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per short ton; Period changes=percent--exceptions noted

Item	Period changes						
	Calendar year						Jan-Jun
	2016-21	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
U.S. consumption quantity:							
Amount	▲33.7	▲9.0	▲4.2	▼(6.2)	▲20.9	▲3.7	▼(15.6)
Producers' share (fn1)	▼(6.5)	▲3.8	▲1.5	▼(4.7)	▼(7.0)	▼(0.1)	▼(3.7)
Importers' share (fn1):							
China	▼(7.4)	▼(7.3)	▼(0.0)	▼(0.0)	▲0.0	▼(0.0)	---
Nonsubject sources	▲13.9	▲3.5	▼(1.5)	▲4.7	▲7.0	▲0.1	▲3.7
All import sources	▲6.5	▼(3.8)	▼(1.5)	▲4.7	▲7.0	▲0.1	▲3.7
U.S. consumption value:							
Amount	▲69.0	▲0.7	▲11.9	▼(2.0)	▲15.2	▲32.8	▲100.4
Producers' share (fn1)	▼(8.5)	▲3.6	▲2.1	▼(5.6)	▼(9.1)	▲0.6	▼(5.1)
Importers' share (fn1):							
China	▼(6.4)	▼(6.4)	▼(0.0)	▲0.0	▲0.0	▼(0.0)	---
Nonsubject sources	▲14.9	▲2.9	▼(2.1)	▲5.6	▲9.1	▼(0.6)	▲5.1
All import sources	▲8.5	▼(3.6)	▼(2.1)	▲5.6	▲9.1	▼(0.6)	▲5.1
U.S. imports from:							
China:							
Quantity	▼(100.0)	▼(99.9)	▼(79.4)	▼(18.2)	▲438.9	▼(100.0)	---
Value	▼(100.0)	▼(99.9)	▼(83.5)	▲41.6	▲719.5	▼(100.0)	---
Unit value	▼(100.0)	▲82.1	▼(19.6)	▲73.1	▲52.1	▼(100.0)	---
Ending inventory quantity	▼***	▼***	***	***	***	***	***
Nonsubject sources:							
Quantity	▲170.8	▲37.7	▼(5.1)	▲22.1	▲62.8	▲4.2	▼(4.5)
Value	▲237.9	▲20.1	▼(1.1)	▲32.9	▲64.4	▲30.2	▲135.8
Unit value	▲24.8	▼(12.7)	▲4.2	▲8.8	▲0.9	▲25.0	▲146.8
Ending inventory quantity	▼***	▼***	▲***	▲***	▲***	▼***	▼***
All import sources:							
Quantity	▲75.3	▼(10.9)	▼(5.1)	▲22.1	▲62.9	▲4.2	▼(4.5)
Value	▲136.1	▼(16.0)	▼(1.1)	▲32.9	▲64.4	▲30.2	▲135.8
Unit value	▲34.7	▼(5.8)	▲4.1	▲8.8	▲1.0	▲24.9	▲146.8
Ending inventory quantity	▼***	▼***	▲***	▲***	▲***	▼***	▼***
U.S. producers':							
Average capacity quantity	▲0.2	▲0.1	▼(0.1)	▲0.6	▼(0.7)	▲0.3	▲0.3
Production quantity	▼(3.7)	▲3.5	▼(0.6)	▼(0.8)	▼(4.0)	▼(1.6)	▲2.7
Capacity utilization (fn1)	▼(3.2)	▲2.8	▼(0.4)	▼(1.2)	▼(2.8)	▼(1.6)	▲1.9
U.S. shipments:							
Quantity	▲22.7	▲14.3	▲6.1	▼(11.4)	▲10.3	▲3.5	▼(20.0)
Value	▲50.8	▲5.3	▲14.8	▼(8.5)	▲1.8	▲34.0	▲85.9
Unit value	▲22.9	▼(7.9)	▲8.2	▲3.2	▼(7.6)	▲29.4	▲132.5
Export shipments:							
Quantity	▼***	▼***	▼***	▼***	▼***	▼***	▲***
Value	▼***	▼***	▲***	▼***	▼***	▲***	▲***
Unit value	▲***	▼***	▲***	▼***	▼***	▲***	▲***
Ending inventory quantity	▼***	▲***	▼***	▲***	▼***	▼***	▲***
Inventories/total shipments (fn1)	▼***	▲***	▼***	▲***	▼***	▼***	▲***
Production workers	▲***	▲***	▲***	▲***	▼***	▼***	▲***
Hours worked (1,000s)	▼***	▼***	▼***	▲***	▲***	▼***	▲***
Wages paid ($1,000)	▲***	▲***	▲***	▲***	▼***	▲***	▲***
Hourly wages (dollars per hour)	▲***	▲***	▲***	▼***	▼***	▲***	▲***
Productivity (short tons per 1,000 hours)	▲***	▲***	▲***	▼***	▼***	▲***	▼***
Unit labor costs	▲***	▼***	▲***	▲***	▲***	▲***	▲***

Table continued.

Table C-1 Continued
Ammonium sulfate: Summary data concerning the U.S. market, by item and period

Quantity=short tons; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per short ton; Period changes=percent--exceptions noted

	Reported data							
	Calendar year						Jan-Jun	
Item	2016	2017	2018	2019	2020	2021	2021	2022
U.S. producers': Continued								
Net sales:								
Quantity	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***
Cost of goods sold (COGS)	***	***	***	***	***	***	***	***
Gross profit or (loss) (fn2)	***	***	***	***	***	***	***	***
SG&A expenses	***	***	***	***	***	***	***	***
Operating income or (loss) (fn2)	***	***	***	***	***	***	***	***
Net income or (loss) (fn2)	***	***	***	***	***	***	***	***
Unit COGS	***	***	***	***	***	***	***	***
Unit SG&A expenses	***	***	***	***	***	***	***	***
Unit operating income or (loss) (fn2)	***	***	***	***	***	***	***	***
Unit net income or (loss) (fn2)	***	***	***	***	***	***	***	***
COGS/sales (fn1)	***	***	***	***	***	***	***	***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	***	***	***
Net income or (loss)/sales (fn1)	***	***	***	***	***	***	***	***
Capital expenditures	***	***	***	***	***	***	***	***
Research and development expenses	***	***	***	***	***	***	***	***
Net assets	***	***	***	***	***	***	***	***

Table continued.

Table C-1 Continued
Ammonium sulfate: Summary data concerning the U.S. market, by item and period

Quantity=short tons; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per short ton; Period changes=percent--exceptions noted

	Period changes						
	Calendar year						Jan-Jun
Item	2016-21	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
U.S. producers': Continued							
Net sales:							
Quantity	▲***	▲***	▲***	▼***	▲***	▼***	▼***
Value	▲***	▼***	▲***	▼***	▲***	▲***	▲***
Unit value	▲***	▼***	▲***	▲***	▼***	▲***	▲***
Cost of goods sold (COGS)	▲***	▼***	▲***	▼***	▼***	▲***	▲***
Gross profit or (loss) (fn2)	▲***	▼***	▼***	▲***	▲***	▲***	▲***
SG&A expenses	▲***	▲***	▼***	▲***	▲***	▲***	▲***
Operating income or (loss) (fn2)	▲***	▼***	▼***	▲***	▲***	▲***	▲***
Net income or (loss) (fn2)	▲***	▼***	▼***	▲***	▲***	▲***	▲***
Unit COGS	▲***	▼***	▲***	▼***	▼***	▲***	▲***
Unit SG&A expenses	▲***	▲***	▼***	▲***	▼***	▲***	▲***
Unit operating income or (loss) (fn2)	▲***	▼***	▼***	▲***	▲***	▲***	▲***
Unit net income or (loss) (fn2)	▲***	▼***	▼***	▲***	▲***	▲***	▲***
COGS/sales (fn1)	▼***	▲***	▲***	▼***	▼***	▲***	▼***
Operating income or (loss)/sales (fn1)	▲***	▼***	▼***	▲***	▲***	▲***	▲***
Net income or (loss)/sales (fn1)	▲***	▼***	▼***	▲***	▲***	▲***	▲***
Capital expenditures	▼***	▼***	▲***	▼***	▼***	▲***	▲***
Research and development expenses	▼***	▼***	▲***	▼***	▲***	▲***	▼***
Net assets	▲***	▲***	▲***	▼***	▲***	▲***	***

Source: Compiled from data submitted in response to Commission questionnaires and from official U.S. imports statistics of the U.S. Department of Commerce using HTS statistical reporting number 3102.21.0000, accessed September 28, 2022. Imports are based on the imports for consumption data series. Imports values are the landed duty paid value. 508-compliant tables containing these data are contained in parts I, III, and IV of this report.

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

fn1.--Reported data are in percent and period changes are in percentage points.
fn2.--Percent changes only calculated when both comparison values represent profits; The directional change in profitability provided when one or both comparison values represent a loss.

SUMMARY DATA COMPILED FROM THE PREVIOUS PROCEEDING

Table C-1
Ammonium sulfate: Summary data concerning the U.S. market, 2013-15, January to September 2015, and January to September 201
(Quantity=short tons; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per short ton; Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to September		Calendar year			Jan-Sept
	2013	2014	2015	2015	2016	2013-15	2013-14	2014-15	2015-16
U.S. consumption quantity:									
Amount	***	***	***	***	***	***	***	***	***
Producers' share (fn1)	***	***	***	***	***	***	***	***	***
Importers' share (fn1):									
China	***	***	***	***	***	***	***	***	***
Canada	***	***	***	***	***	***	***	***	***
All others sources	***	***	***	***	***	***	***	***	***
Nonsubject sources	***	***	***	***	***	***	***	***	***
All import sources	***	***	***	***	***	***	***	***	***
U.S. consumption value:									
Amount	***	***	***	***	***	***	***	***	***
Producers' share (fn1)	***	***	***	***	***	***	***	***	***
Importers' share (fn1):									
China	***	***	***	***	***	***	***	***	***
Canada	***	***	***	***	***	***	***	***	***
All others sources	***	***	***	***	***	***	***	***	***
Nonsubject sources	***	***	***	***	***	***	***	***	***
All import sources	***	***	***	***	***	***	***	***	***
U.S. imports from:									
China:									
Quantity	47,236	229,000	369,570	303,464	152,503	682.4	384.8	61.4	(49.7)
Value	10,277	60,221	68,251	56,187	25,140	564.1	486.0	13.3	(55.3)
Unit value	$218	$263	$185	$185	$165	(15.1)	20.9	(29.8)	(11.0)
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Canada									
Quantity	276,465	277,523	201,897	161,199	152,934	(27.0)	0.4	(27.3)	(5.1)
Value	78,587	66,848	38,251	29,892	32,735	(51.3)	(14.9)	(42.8)	9.5
Unit value	$284	$241	$189	$185	$214	(33.4)	(15.3)	(21.3)	15.4
Ending inventory quantity	***	***	***	***	***	***	***	***	***
All other sources:									
Quantity	6,751	1,905	29,738	28,593	81,648	340.5	(71.8)	1,461.2	185.6
Value	2,252	875	6,924	6,491	14,432	207.5	(61.1)	691.2	122.4
Unit value	$334	$459	$233	$227	$177	(30.2)	37.7	(49.3)	(22.1)
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Nonsubject sources:									
Quantity	283,216	279,428	231,635	189,792	234,582	(18.2)	(1.3)	(17.1)	23.6
Value	80,840	67,723	45,175	36,383	47,166	(44.1)	(16.2)	(33.3)	29.6
Unit value	$285	$242	$195	$192	$201	(31.7)	(15.1)	(19.5)	4.9
Ending inventory quantity	***	***	***	***	***	***	***	***	***
All import sources:									
Quantity	330,452	508,428	601,205	493,256	387,084	81.9	53.9	18.2	(21.5)
Value	91,117	127,944	113,426	92,570	72,306	24.5	40.4	(11.3)	(21.9)
Unit value	$276	$252	$189	$188	$187	(31.6)	(8.7)	(25.0)	(0.5)
Ending inventory quantity	***	***	***	***	***	***	***	***	***
U.S. producers':									
Average capacity quantity	3,880,320	4,023,610	4,026,948	3,024,177	3,025,962	3.8	3.7	0.1	0.1
Production quantity	3,456,177	3,491,117	3,317,859	2,480,347	2,553,295	(4.0)	1.0	(5.0)	2.9
Capacity utilization (fn1)	89.1	86.8	82.4	82.0	84.4	(6.7)	(2.3)	(4.4)	2.4
U.S. shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Export shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Ending inventory quantity	422,981	242,921	313,336	272,053	409,589	(25.9)	(42.6)	29.0	50.6
Inventories/total shipments (fn1)	12.8	6.7	9.6	8.2	12.5	(3.2)	(6.2)	3.0	4.3
Production workers	633	647	651	654	648	2.8	2.2	0.6	(0.9)
Hours worked (1,000s)	1,443	1,572	1,542	7,093	1,205	6.9	8.9	(1.9)	(83.0)
Wages paid ($1,000)	53,037	57,907	58,850	43,828	46,654	11.0	9.2	1.6	6.4
Hourly wages (dollars)	$36.75	$36.84	$38.16	$6.18	$38.72	3.8	0.2	3.6	526.6
Productivity (short tons per hour)	2.4	2.2	2.2	0.3	2.1	(10.2)	(7.3)	(3.1)	505.9
Unit labor costs	$15.35	$16.59	$17.74	$17.67	$18.27	15.6	8.1	6.9	3.4
Net sales:									
Quantity	3,187,504	3,519,838	3,118,386	2,376,004	2,320,611	(2.2)	10.4	(11.4)	(2.3)
Value	645,746	589,706	546,912	433,218	368,671	(15.3)	(8.7)	(7.3)	(14.9)
Unit value	$203	$168	$175	$182	$159	(13.4)	(17.3)	4.7	(12.9)
Cost of goods sold (COGS)	577,600	610,647	522,546	416,414	330,317	(9.5)	5.7	(14.4)	(20.7)
Gross profit or (loss)	68,146	(20,941)	24,366	16,804	38,354	(64.2)	fn3	fn3	128.2
SG&A expenses	67,421	60,380	183,788	150,769	29,709	172.6	(10.4)	204.4	(80.3)
Operating income or (loss)	725	(81,321)	(159,422)	(133,965)	8,645	fn3	fn3	96.0	fn3
Net income or (loss)	(10,055)	(88,873)	(165,843)	(138,585)	3,718	1,549.4	783.9	86.6	fn3
Capital expenditures	66,473	81,677	51,963	34,567	50,521	(21.8)	22.9	(36.4)	46.2
Unit COGS	$181	$173	$168	$175	$142	(7.5)	(4.3)	(3.4)	(18.8)
Unit SG&A expenses	$21	$17	$59	$63	$13	178.6	(18.9)	243.6	(79.8)
Unit operating income or (loss)	$0	$(23)	$(51)	$(56)	$4	fn3	fn3	121.3	fn3
Unit net income or (loss)	$(3)	$(25)	$(53)	$(58)	$2	1,585.9	700.4	110.6	fn3
COGS/sales (fn1)	89.4	103.6	95.5	96.1	89.6	6.1	14.1	(8.0)	(6.5)
Operating income or (loss)/sales (fn1)	0.1	(13.8)	(29.1)	(30.9)	2.3	(29.3)	(13.9)	(15.4)	33.3
Net income or (loss)/sales (fn1)	(1.6)	(15.1)	(30.3)	(32.0)	1.0	(28.8)	(13.5)	(15.3)	33.0

Notes:

fn1.--Reported data are in percent and period changes are in percentage points.
fn2.--data not collected
fn3.--Undefined.

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

APPENDIX D

EFFECTS OF THE ORDERS AND LIKELY IMPACT OF REVOCATION

Table D-1
Firms' narrative on the impact of the orders and the likely impact of revocation

Response type	Firm type	Firm name and narrative on impact or likely impact
Effect of orders	U.S. producers	***
Effect of orders	U.S. producers	***
Effect of orders	U.S. producers	***
Effect of orders	U.S. producers	***

Response type	Firm type	Firm name and narrative on impact or likely impact
Effect of orders	U.S. producers	***
Likely impact of revocation	U.S. producers	***
Likely impact of revocation	U.S. producers	***

Response type	Firm type	Firm name and narrative on impact or likely impact
Likely impact of revocation	U.S. producers	***
Likely impact of revocation	U.S. producers	***
Likely impact of revocation	U.S. producers	***
Effect of orders	Importers	***
Effect of orders	Importers	***
Effect of orders	Importers	***
Effect of orders	Importers	***
Effect of orders	Importers	***
Effect of orders	Importers	***
Effect of orders	Importers	***
Effect of orders	Importers	***

Response type	Firm type	Firm name and narrative on impact or likely impact
Likely impact of revocation	Importers	***
Effect of orders	Purchasers	***
Effect of orders	Purchasers	***
Effect of orders	Purchasers	***
Effect of orders	Purchasers	***
Effect of orders	Purchasers	***
Effect of orders	Purchasers	***
Likely impact of revocation	Purchasers	***
Likely impact of revocation	Purchasers	***
Likely impact of revocation	Purchasers	***
Likely impact of revocation	Purchasers	***
Likely impact of revocation	Purchasers	***
Likely impact of revocation	Purchasers	***
Effect of orders	Foreign producers	***
Effect of orders	Foreign producers	***
Effect of orders	Foreign producers	***
Effect of orders	Foreign producers	***

Response type	Firm type	Firm name and narrative on impact or likely impact
Effect of orders	Foreign producers	***
Effect of orders	Foreign producers	***
Effect of orders	Foreign producers	***
Likely impact of revocation	Foreign producers	***
Likely impact of revocation	Foreign producers	***
Likely impact of revocation	Foreign producers	***
Likely impact of revocation	Foreign producers	***
Likely impact of revocation	Foreign producers	***

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

APPENDIX E

U.S. PRODUCERS' U.S. SHIPMENTS AND U.S. IMPORTERS' SUBJECT IMPORTS BY CHANNEL OF DISTRIBUTION AND PERIOD

Table E-1
Ammonium sulfate: U.S. producers' U.S. shipments by channel of distribution and period

Quantity in short tons; value in $1,000, unit values in dollars per short ton; shares in percent

Channel	Measure	2016	2017	2018
Distributors	Quantity	***	***	***
Retailers	Quantity	***	***	***
End users	Quantity	***	***	***
All channels	Quantity	***	***	***
Distributors	Value	***	***	***
Retailers	Value	***	***	***
End users	Value	***	***	***
All channels	Value	***	***	***
Distributors	Unit value	***	***	***
Retailers	Unit value	***	***	***
End users	Unit value	***	***	***
All channels	Unit value	***	***	***
Distributors	Share of quantity	***	***	***
Retailers	Share of quantity	***	***	***
End users	Share of quantity	***	***	***
All channels	Share of quantity	***	***	***
Distributors	Share of value	***	***	***
Retailers	Share of value	***	***	***
End users	Share of value	***	***	***
All channels	Share of value	***	***	***

Table continued.

Table E-1 Continued
Ammonium sulfate: U.S. producers' U.S. shipments by channel of distribution and period

Quantity in short tons; value in $1,000, unit values in dollars per short ton; shares in percent

Channel	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
Distributors	Quantity	***	***	***	***	***
Retailers	Quantity	***	***	***	***	***
End users	Quantity	***	***	***	***	***
All channels	Quantity	***	***	***	***	***
Distributors	Value	***	***	***	***	***
Retailers	Value	***	***	***	***	***
End users	Value	***	***	***	***	***
All channels	Value	***	***	***	***	***
Distributors	Unit value	***	***	***	***	***
Retailers	Unit value	***	***	***	***	***
End users	Unit value	***	***	***	***	***
All channels	Unit value	***	***	***	***	***
Distributors	Share of quantity	***	***	***	***	***
Retailers	Share of quantity	***	***	***	***	***
End users	Share of quantity	***	***	***	***	***
All channels	Share of quantity	***	***	***	***	***
Distributors	Share of value	***	***	***	***	***
Retailers	Share of value	***	***	***	***	***
End users	Share of value	***	***	***	***	***
All channels	Share of value	***	***	***	***	***

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

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

Table E-2
Ammonium sulfate: U.S. importers' U.S. shipments of imports from China by channel of distribution and period

Quantity in short tons; value in $1,000, unit values in dollars per short ton; shares in percent

Channel	Measure	2016	2017	2018
Distributors	Quantity	***	***	***
Retailers	Quantity	***	***	***
End users	Quantity	***	***	***
All channels	Quantity	***	***	***
Distributors	Value	***	***	***
Retailers	Value	***	***	***
End users	Value	***	***	***
All channels	Value	***	***	***
Distributors	Unit value	***	***	***
Retailers	Unit value	***	***	***
End users	Unit value	***	***	***
All channels	Unit value	***	***	***
Distributors	Share of quantity	***	***	***
Retailers	Share of quantity	***	***	***
End users	Share of quantity	***	***	***
All channels	Share of quantity	***	***	***
Distributors	Share of value	***	***	***
Retailers	Share of value	***	***	***
End users	Share of value	***	***	***
All channels	Share of value	***	***	***

Table continued.

Table E-2 Continued
Ammonium sulfate: U.S. importers' U.S. shipments of imports from China by channel of distribution and period

Quantity in short tons; value in $1,000, unit values in dollars per short ton; shares in percent

Channel	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
Distributors	Quantity	***	***	***	***	***
Retailers	Quantity	***	***	***	***	***
End users	Quantity	***	***	***	***	***
All channels	Quantity	***	***	***	***	***
Distributors	Value	***	***	***	***	***
Retailers	Value	***	***	***	***	***
End users	Value	***	***	***	***	***
All channels	Value	***	***	***	***	***
Distributors	Unit value	***	***	***	***	***
Retailers	Unit value	***	***	***	***	***
End users	Unit value	***	***	***	***	***
All channels	Unit value	***	***	***	***	***
Distributors	Share of quantity	***	***	***	***	***
Retailers	Share of quantity	***	***	***	***	***
End users	Share of quantity	***	***	***	***	***
All channels	Share of quantity	***	***	***	***	***
Distributors	Share of value	***	***	***	***	***
Retailers	Share of value	***	***	***	***	***
End users	Share of value	***	***	***	***	***
All channels	Share of value	***	***	***	***	***

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

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

Table E-3
Ammonium sulfate: U.S. importers' U.S. shipments of imports from nonsubject sources by channel of distribution and period

Quantity in short tons; value in $1,000, unit values in dollars per short ton; shares in percent

Channel	Measure	2016	2017	2018
Distributors	Quantity	***	***	***
Retailers	Quantity	***	***	***
End users	Quantity	***	***	***
All channels	Quantity	***	***	***
Distributors	Value	***	***	***
Retailers	Value	***	***	***
End users	Value	***	***	***
All channels	Value	***	***	***
Distributors	Unit value	***	***	***
Retailers	Unit value	***	***	***
End users	Unit value	***	***	***
All channels	Unit value	***	***	***
Distributors	Share of quantity	***	***	***
Retailers	Share of quantity	***	***	***
End users	Share of quantity	***	***	***
All channels	Share of quantity	***	***	***
Distributors	Share of value	***	***	***
Retailers	Share of value	***	***	***
End users	Share of value	***	***	***
All channels	Share of value	***	***	***

Table continued.

Table E-3 Continued
Ammonium sulfate: U.S. importers' U.S. shipments of imports from nonsubject sources by channel of distribution and period

Quantity in short tons; value in $1,000, unit values in dollars per short ton; shares in percent

Channel	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
Distributors	Quantity	***	***	***	***	***
Retailers	Quantity	***	***	***	***	***
End users	Quantity	***	***	***	***	***
All channels	Quantity	***	***	***	***	***
Distributors	Value	***	***	***	***	***
Retailers	Value	***	***	***	***	***
End users	Value	***	***	***	***	***
All channels	Value	***	***	***	***	***
Distributors	Unit value	***	***	***	***	***
Retailers	Unit value	***	***	***	***	***
End users	Unit value	***	***	***	***	***
All channels	Unit value	***	***	***	***	***
Distributors	Share of quantity	***	***	***	***	***
Retailers	Share of quantity	***	***	***	***	***
End users	Share of quantity	***	***	***	***	***
All channels	Share of quantity	***	***	***	***	***
Distributors	Share of value	***	***	***	***	***
Retailers	Share of value	***	***	***	***	***
End users	Share of value	***	***	***	***	***
All channels	Share of value	***	***	***	***	***

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

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

APPENDIX F

U.S. PRODUCERS' SHIPMENTS OF AMMONIUM SULFATE EXCLUDING ***

Table F-1
Ammonium sulfate: U.S. producers' shipments excluding *, by location and by period**

Quantity in short tons; Value in 1,000 dollars; Unite values in dollars per short ton; Shares in percent

Item	Measure	2016	2017	2018
U.S. shipments	Quantity	***	***	***
Export shipments	Quantity	***	***	***
Total shipments	Quantity	***	***	***
U.S. shipments	Value	***	***	***
Export shipments	Value	***	***	***
Total shipments	Value	***	***	***
U.S. shipments	Unit value	***	***	***
Export shipments	Unit value	***	***	***
Total shipments	Unit value	***	***	***
U.S. shipments	Share of quantity	***	***	***
Export shipments	Share of quantity	***	***	***
Total shipments	Share of quantity	***	***	***
U.S. shipments	Share of value	***	***	***
Export shipments	Share of value	***	***	***
Total shipments	Share of value	***	***	***

Table continued.

Table F-1 Continued
Ammonium sulfate: U.S. producers' shipments excluding *, by location and by period**

Quantity in short tons; Value in 1,000 dollars; Unite values in dollars per short ton; Shares in percent

Item	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
U.S. shipments	Quantity	***	***	***	***	***
Export shipments	Quantity	***	***	***	***	***
Total shipments	Quantity	***	***	***	***	***
U.S. shipments	Value	***	***	***	***	***
Export shipments	Value	***	***	***	***	***
Total shipments	Value	***	***	***	***	***
U.S. shipments	Unit value	***	***	***	***	***
Export shipments	Unit value	***	***	***	***	***
Total shipments	Unit value	***	***	***	***	***
U.S. shipments	Share of quantity	***	***	***	***	***
Export shipments	Share of quantity	***	***	***	***	***
Total shipments	Share of quantity	***	***	***	***	***
U.S. shipments	Share of value	***	***	***	***	***
Export shipments	Share of value	***	***	***	***	***
Total shipments	Share of value	***	***	***	***	***

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

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

Table F-2
Ammonium sulfate: U.S. producers' shipments excluding *, by granule size and by period**

Quantity in short tons; Value in 1,000 dollars; Unite values in dollars per short ton; Shares in percent

Item	Measure	2016	2017	2018
Small granules	Quantity	***	***	***
Large granules	Quantity	***	***	***
All granule sizes	Quantity	***	***	***
Small granules	Value	***	***	***
Large granules	Value	***	***	***
All granule sizes	Value	***	***	***
Small granules	Unit value	***	***	***
Large granules	Unit value	***	***	***
All granule sizes	Unit value	***	***	***
Small granules	Share of quantity	***	***	***
Large granules	Share of quantity	***	***	***
All granule sizes	Share of quantity	***	***	***
Small granules	Share of value	***	***	***
Large granules	Share of value	***	***	***
All granule sizes	Share of value	***	***	***

Table continued.

Table F-2 Continued
Ammonium sulfate: U.S. producers' shipments excluding *, by granule size and by period**

Quantity in short tons; Value in 1,000 dollars; Unite values in dollars per short ton; Shares in percent

Item	Measure	2019	2020	2021	Jan-Jun 2021	Jan-Jun 2022
Small granules	Quantity	***	***	***	***	***
Large granules	Quantity	***	***	***	***	***
All granule sizes	Quantity	***	***	***	***	***
Small granules	Value	***	***	***	***	***
Large granules	Value	***	***	***	***	***
All granule sizes	Value	***	***	***	***	***
Small granules	Unit value	***	***	***	***	***
Large granules	Unit value	***	***	***	***	***
All granule sizes	Unit value	***	***	***	***	***
Small granules	Share of quantity	***	***	***	***	***
Large granules	Share of quantity	***	***	***	***	***
All granule sizes	Share of quantity	***	***	***	***	***
Small granules	Share of value	***	***	***	***	***
Large granules	Share of value	***	***	***	***	***
All granule sizes	Share of value	***	***	***	***	***

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

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

Note: Small granules are anywhere from >0 mm to <2 mm in size, whereas large granules are 2 mm in size or more.