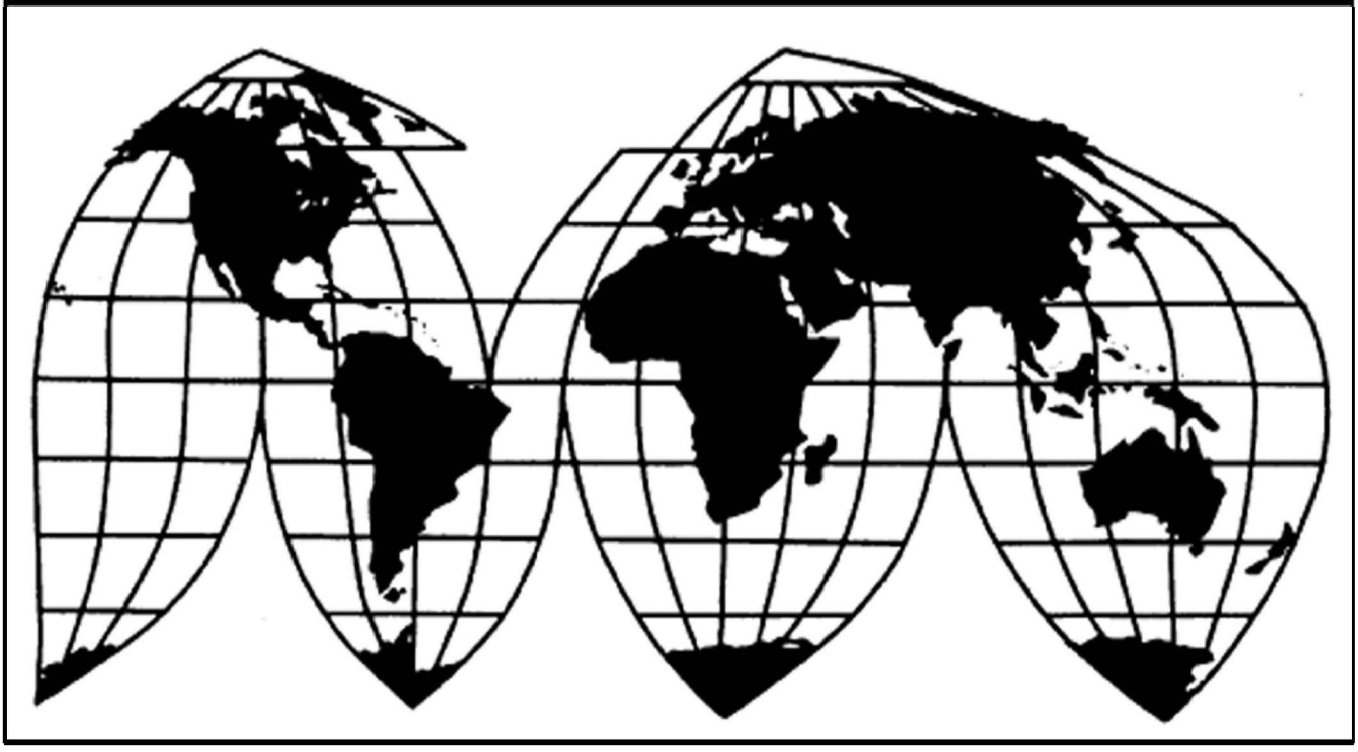
Glycine from China, India, and Japan

Investigation Nos. 701-TA-603-604 and 731-TA-1413-1414 (Final)

Publication 4900 **June 2019**

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Note.—Information that would reveal confidential operations of individual concerns may not be published.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

UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation Nos. 701-TA-603-604 and 731-TA-1413-1414 (Final)

Glycine from China, India, and Japan

DETERMINATIONS

On the basis of the record[1] developed in the subject investigations, the United States International Trade Commission ("Commission") determines, pursuant to the Tariff Act of 1930 ("the Act"), that an industry in the United States is materially injured by reason of imports of glycine (provided for in subheadings 2922.49.43 and 2922.49.80 of the Harmonized Tariff Schedule of the United States) from India and Japan that the U.S. Department of Commerce ("Commerce") has determined are sold in the United States at less than fair value ("LTFV") and imports of glycine that Commerce has determined are subsidized by the governments of China and India.

BACKGROUND

The Commission, pursuant to sections 705(b) and 735(b) of the Act (19 U.S.C. 1671d(b) and 19 U.S.C. 1673d(b)), instituted these investigations effective March 28, 2018, following receipt of petitions filed with the Commission and Commerce by Chattem Chemicals Inc., Chattanooga, Tennessee, and GEO Specialty Chemicals, Inc., Lafayette, Indiana. The final phase of the investigations was scheduled by the Commission following notification of preliminary determinations by Commerce that imports of glycine from China and India were subsidized within the meaning of section 703(b) of the Act (19 U.S.C. 1671b(b)) and imports of glycine from India and Japan were being sold at LTFV within the meaning of 733(b) of the Act (19 U.S.C. 1673b(b)). Notice of the scheduling of the final phase of the Commission's investigations 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 December 3, 2018 (83 FR 62345). A revised notice of the scheduling of the final phase of the Commission's investigations was published on February 12, 2019 (84 FR 3486). The hearing was held in Washington, DC, on April 30, 2019, and all persons who requested the opportunity were permitted to appear in person or by counsel.

[1] The record is defined in sec. 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 the final phase of these investigations, we determine that an industry in the United States is materially injured by reason of imports of glycine from India and Japan found by the U.S. Department of Commerce ("Commerce") to be sold in the United States at less than fair value and imports of the subject merchandise found by Commerce to be subsidized by the governments of China and India.

I. Background

GEO Specialty Chemicals, Inc. ("GEO") and Chattem Chemicals, Inc. ("Chattem"), domestic producers of glycine, filed the petitions in these investigations, as well as petitions for antidumping and countervailing duty investigations of imports of glycine from Thailand, on March 28, 2018.[1] Commerce issued its final affirmative determinations on April 24, 2019 in its antidumping duty investigations of glycine from India and Japan and its countervailing duty investigations of glycine from China and India, and these determinations were published in the *Federal Register* on May 1, 2019.[2] However, on April 24, 2019, Commerce postponed until further notice its issuance of final determinations in its antidumping and countervailing duty investigations with respect to imports of glycine from Thailand.[3] Commerce stated that it was doing so in light of new information submitted regarding the notice of commencement by U.S. Customs and Border Protection ("CBP") of a formal investigation and imposition of interim measures under the Trade Facilitation and Trade Enforcement Act of 2015 (commonly known as the Enforce and Protect Act).[4] Commerce's memorandum indicated that CBP had stated that it was imposing interim measures as of February 28, 2019, because "based on the record evidence, there is a reasonable suspicion that Newtrend USA {an importer of glycine} entered covered merchandise into the customs territory of the United States through evasion by means of transshipment through Thailand."[5] Commerce stated that it was postponing its final

[1] Confidential Report (CR) at I-1; Public Report (PR) at I-1.

[2] *Glycine From Japan: Final Determination of Sales at Less Than Fair Value*, 84 Fed. Reg. 18484 (May 1, 2019); *Glycine From India: Final Determination of Sales at Less Than Fair Value*, 84 Fed. Reg. 18487 (May 1, 2019); *Glycine From the People's Republic of China: Final Affirmative Countervailing Duty Determination,* 84 Fed. Reg. 18489 (May 1, 2019); *Countervailing Duty Investigation of Glycine From India: Affirmative Final Determination*, 84 Fed. Reg. 18482 (May 1, 2019). There is an existing antidumping duty order on imports of glycine from China dating from 1995. *Antidumping Duty Order: Glycine From the People's Republic of China*, 60 Fed. Reg. 16116 (Mar. 29, 1995); *Glycine From the People's Republic of China: Continuation of Antidumping Duty Orde*r, 82 Fed. Reg. 10745 (Feb. 15, 2017).

[3] April 24, 2019 Department of Commerce Memorandum from Gary Taverman to Jeffrey I. Kessler, Investigations A-549-837 and C-549-838 (EDIS Document No. 676649) ("April 24, 2019 Commerce Thailand Postponement Memorandum").

[4] April 24, 2019 Commerce Thailand Postponement Memorandum at 1-2, 9.

[5] April 24, 2019 Commerce Thailand Postponement Memorandum at 1-2. *See* February 28, 2019 letter from Marisa A. Hill of CBP to Lizbeth Levinson and Hao Wang (EDIS Document No. 676648).

determinations with respect to glycine from Thailand in order to address these issues and protect the integrity of its administrative proceedings.[6]

In light of Commerce's postponement of its final determinations in its antidumping and countervailing duty investigations of glycine from Thailand, our determinations here concern the antidumping duty investigations of glycine from India and Japan and the countervailing duty investigations of glycine from China and India.

Parties to the Investigations. Representatives of petitioners GEO and Chattem appeared at the hearing accompanied by counsel and submitted prehearing and posthearing briefs and final comments.

A group of respondent producers and importers of subject merchandise from Japan participated actively in the final phase of these investigations. Representatives and counsel for Yuki Gosei Kogyo Co., Ltd. ("Yuki Gosei"), Showa Denko K.K., and Ajinomoto Co., Inc., producers and exporters of glycine from Japan, and Ajinomoto Health and Nutrition North America, Inc., an importer of subject merchandise (collectively "Japanese Respondents"), appeared at the hearing and jointly submitted prehearing and posthearing briefs. Yuki Gosei submitted final comments, and Ajinomoto Co., Inc. and Ajinomoto Health and Nutrition North America, Inc. (collectively "Ajinomoto") jointly submitted final comments.

In addition, Nestle Purina PetCare Company ("Nestle Purina"), a purchaser and end user of glycine, submitted prehearing and posthearing briefs and final comments; while Nestle Purina did not appear at the hearing, its counsel read a statement on its behalf.[7] FUJIFILM Electronics Materials U.S.A., Inc., a purchaser of glycine, did not appear as a party in the investigations, but submitted a written statement after the hearing. Paras Intermediates Private Limited and Avid Organics Pvt. Ltd., both Indian producers of glycine, submitted written comments after the hearing.

Data Coverage. U.S. industry data are based on the questionnaire responses from two domestic producers that accounted for all known domestic production of glycine in 2017.[8] U.S. import data are based on official Commerce import statistics.[9] The Commission received questionnaire responses from 25 U.S. importers of glycine, which in 2017 accounted for *** percent of subject imports from China, *** percent of subject imports from India, *** percent of subject imports from Japan, *** percent of subject imports from Thailand, *** percent of imports from all other sources, and 95.2 percent of imports from all sources.[10] Data concerning the subject industries are based on questionnaire responses from four producers from India that accounted for *** percent of U.S. imports of glycine from India in 2017; three producers

[6] April 24, 2019 Commerce Thailand Postponement Memorandum at 9.

[7] Hearing Transcript ("Hearing Tr.") at 156-58 (Stoel).

[8] CR at I-6, III-1; PR at I-5, III-1.

[9] CR at I-6; PR at I-5.

[10] CR at I-6, IV-1; PR at I-5, IV-1.

from Japan that accounted for *** percent of U.S. imports from Japan in 2017; and one producer from Thailand that accounted for all U.S. imports from Thailand in 2017.[11]

II. Domestic Like Product

A. In General

In determining whether an industry in the United States is materially injured or threatened with material injury by reason of imports of subject merchandise, the Commission first defines the "domestic like product" and the "industry."[12] Section 771(4)(A) of the Tariff Act of 1930, as amended ("the Tariff Act"), defines the relevant domestic industry as the "producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[13] In turn, the Tariff Act defines "domestic like product" as "a product which is like, or in the absence of like, most similar in characteristics and uses with, the article subject to an investigation."[14]

The decision regarding the appropriate domestic like product in an investigation is a factual determination, and the Commission has applied the statutory standard of "like" or "most similar in characteristics and uses" on a case-by-case basis.[15] No single factor is dispositive, and the Commission may consider other factors it deems relevant based on the facts of a particular investigation.[16] The Commission looks for clear dividing lines among

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[11] CR at I-7, VII-7, VII-15, VII-23-24; PR at I-5, VII-6, VII-10, VII-14 to VII-15. No producer or exporter from China responded to the Commission's questionnaire. CR at VII-3; PR at VII-3. According to estimates provided by the three responding Japanese producers, the reported production of those firms accounted for approximately *** percent of overall production of glycine in Japan in 2017. CR at VII-15; PR at VII-10. The one responding Thai producer, Newtrend Food Ingredient (Thailand) Co., Ltd., reported that it accounts for all glycine production in Thailand. CR at VII-24; PR at VII-14. The responding Indian producers did not provide data estimating their percentage of total glycine production in India. CR at VII-7 n.9; PR at VII-6 n.9.

[12] 19 U.S.C. § 1677(4)(A).

[13] 19 U.S.C. § 1677(4)(A).

[14] 19 U.S.C. § 1677(10).

[15] *See*, *e.g.*, *Cleo Inc. v. United States*, 501 F.3d 1291, 1299 (Fed. Cir. 2007); *NEC Corp. v. Department of Commerce*, 36 F. Supp. 2d 380, 383 (Ct. Int'l Trade 1998); *Nippon Steel Corp. v. United States*, 19 CIT 450, 455 (1995); *Torrington Co. v. United States*, 747 F. Supp. 744, 749 n.3 (Ct. Int'l Trade 1990), *aff'd*, 938 F.2d 1278 (Fed. Cir. 1991) ("every like product determination 'must be made on the particular record at issue' and the 'unique facts of each case'"). The Commission generally considers a number of factors, including the following: (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) customer and producer perceptions of the products; (5) common manufacturing facilities, production processes, and production employees; and, where appropriate, (6) price. *See Nippon*, 19 CIT at 455 n.4; *Timken Co. v. United States*, 913 F. Supp. 580, 584 (Ct. Int'l Trade 1996).

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

possible like products and disregards minor variations.[17] Although the Commission must accept Commerce's determination as to the scope of the imported merchandise that is subsidized or sold at less than fair value,[18] the Commission determines what domestic product is like the imported articles Commerce has identified.[19]

B. Product Description

Commerce defined the scope of the imported merchandise in these investigations as follows:

> The merchandise covered by this investigation is glycine at any purity level or grade. This includes glycine of all purity levels, which covers all forms of crude or technical glycine including, but not limited to, sodium glycinate, glycine slurry and any other forms of amino acetic acid or glycine. Subject merchandise also includes glycine and precursors of dried crystalline glycine that are processed in a third country, including, but not limited to, refining or any other processing that would not otherwise remove the merchandise from the scope of this investigation if performed in the country of manufacture of the in-scope glycine or precursors of dried crystalline glycine. Glycine has the Chemical Abstracts Service (CAS) registry number of 56–40–6. Glycine and glycine slurry are classified under Harmonized Tariff Schedule of the United States (HTSUS) subheading 2922.49.43.00. Sodium glycinate is classified in the HTSUS under 2922.49.80.00. While the HTSUS subheadings and CAS registry number are provided for convenience and customs purposes, the written description of the scope of this investigation is dispositive.[20]

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

[18] *See*, *e.g., USEC, Inc. v. United States*, 34 Fed. Appx. 725, 730 (Fed. Cir. 2002) ("The ITC may not modify the class or kind of imported merchandise examined by Commerce."); *Algoma Steel Corp. v. United States*, 688 F. Supp. 639, 644 (Ct. Int'l Trade 1988), *aff'd*, 865 F.3d 240 (Fed. Cir.), *cert. denied*, 492 U.S. 919 (1989).

[19] *Hosiden Corp. v. Advanced Display Mfrs*., 85 F.3d 1561, 1568 (Fed. Cir. 1996) (the Commission may find a single like product corresponding to several different classes or kinds defined by Commerce); *Cleo*, 501 F.3d at 1298 n.1 ("Commerce's {scope} finding does not control the Commission's {like product} determination."); *Torrington*, 747 F. Supp. at 748-52 (affirming the Commission's determination defining six like products in investigations in which Commerce found five classes or kinds).

[20] *Glycine From Japan: Final Determination of Sales at Less Than Fair Value*, 84 Fed. Reg. 18484, 18486 (May 1, 2019); *Glycine From India: Final Determination of Sales at Less Than Fair Value*, 84 Fed. Reg. 18487, 18488 (May 1, 2019); *Glycine From the People's Republic of China: Final Affirmative*

(Continued...)

Glycine is an organic chemical and a nonessential amino acid that is produced naturally by humans and other organisms as a building block for proteins. Commercial production of glycine uses traditional methods of chemical synthesis. Glycine is most commonly sold in its dry form as a white, free-flowing powder. Glycine is used as a sweetener and flavor enhancer in food, beverages, and pharmaceuticals, and is also used in personal care products and pet care products.[21] Glycine is most commonly sold in two grades: United States Pharmacopeial Convention ("USP") grade, which is typically used for pharmaceutical and food applications, and technical grade, which is used for industrial applications. Some applications, including some pharmaceutical applications and semiconductor manufacturing, require glycine with higher purity. USP-grade glycine, technical-grade glycine and higher-purity glycine are all chemically identical, but differ by the kinds and amounts of impurities in the product.[22]

C. Arguments of the Parties

Petitioners' *Arguments*. Petitioners argue that the Commission should define a single domestic like product consisting of all glycine, coextensive with the scope of the investigations, as it did in the preliminary determinations. They argue that there is no new information in the record to warrant a different finding, and that the record does not contain enough data for the Commission to evaluate the two arguments advocating separate domestic like products that Japanese Respondents raised "at the eleventh hour."[23] Petitioners dispute Japanese Respondents' contention that the domestic industry does not produce the two products in question.[24]

Respondents' *Arguments*. Japanese Respondents argue that Japanese subject producers produce two high purity specialty products that are not produced by the domestic industry: "dual-certified" glycine for used in intravenous ("IV") therapy solutions and ultra-pure glycine for use in semiconductor applications.[25] Japanese Respondents argue that both of these specialty products have distinct physical characteristics and uses, channels of distribution, and premium prices that distinguish them from other forms of glycine, and that the Commission

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(…Continued)
Countervailing Duty Determination, 84 Fed. Reg. 18489, 18490 (May 1, 2019); *Countervailing Duty Investigation of Glycine From India: Affirmative Final Determination*, 84 Fed. Reg. 18482, 18483 (May 1, 2019).

[21] CR at I-4 to I-5, I-17 to I-18; PR at I-4, I-13 to I-14.

[22] CR at I-17 to I-18; PR at I-13 to I-14.

[23] Petitioners' Prehearing Brief at 9-11; Petitioners' Posthearing Brief, Response to Commission Questions, at 1-3, 8, 12.

[24] Petitioners' Posthearing Brief at 14 and Response to Commission Questions at 95-96, 108, 111-12; Hearing Tr. at 51-54 (Allen, Hughes).

[25] According to Japanese Respondents, "dual-certified" glycine means glycine that has been certified for use in pharmaceutical IV solutions by both the U.S. Food and Drug Administration ("FDA") and the European Directorate for the Quality of Medicines and HealthCare ("EDQM"). Japanese Respondents' Prehearing Brief at 5-11; Japanese Respondents' Posthearing Brief at 1-2.

should define both of these products as distinct domestic like products.[26] Japanese Respondents assert that the "most similar" domestically produced product to dual-certified glycine is FDA-certified glycine produced by Chattem, which they state is similar in characteristics to dual-certified glycine but lacks EDQM certification.[27] They state that the domestic product most "like" ultra-pure glycine for use in semiconductor applications is technical grade low-impurity glycine produced by Chattem.[28]

At the Commission hearing, Japanese Respondents were asked whether they had raised these like product issues in their comments on the Commission's draft final phase questionnaires and if not, why not. Counsel stated that they had not been sure that they wanted to raise like product issues at that point, but subsequently decided to raise like product issues in their prehearing brief.[29] However, in their posthearing brief, Japanese Respondents contend that they did raise their like product issue with respect to dual-certified glycine in their comments on the draft final phase questionnaires, and that the Commission has ample data to make a determination as to this proposed separate domestic like product.[30] Japanese Respondents do not claim that they raised their like product argument with respect to ultra-high purity glycine for use in semiconductor applications in their comments on the draft questionnaires.

D. Analysis

Based on the record, we define a single domestic like product that is coextensive with the scope of these investigations.

In the preliminary determinations, the Commission defined a single domestic like product coextensive with the scope of the investigations. Petitioners had argued without opposition that the Commission should find a single domestic like product coextensive with the scope of the investigations.[31] In its like product analysis, the Commission addressed two issues: (1) whether all grades, or purity levels, of glycine should be in the same domestic like product, and (2) whether sodium glycinate and glycine slurry are separate domestic like products. The Commission found, using its traditional six-factor analysis, that all grades of glycine are encompassed in a single domestic like product, stating that all grades of glycine have common physical characteristics and end uses, share common channels of distribution, and generally

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[26] Japanese Respondents' Prehearing Brief at 5-13; Japanese Respondents' Posthearing Brief at 1-2 and Appendix 1 at 1-24, 27-28.

[27] Japanese Respondents' Posthearing Brief at 1-2.

[28] Japanese Respondents' Posthearing Brief at 1-2 and Appendix 2 at 4-6.

[29] Counsel replied to Commissioner Williamson: "I think we reviewed the questionnaires and thought actually they gave us the information we needed. At that time, obviously we were not sure if we wanted to raise domestic like product issues…. I think we saw facts that made us think we should bring the domestic like product issues to your attention and so we did in our pre-hearing brief." Hearing Tr. at 159 (Stoel).

[30] Japanese Respondents' Posthearing Brief at 1-2 and Appendix 1 at 1-2, 21-24 and Exhibit A.

[31] *Glycine from China, India, Japan, and Thailand*, Inv. Nos. 701-TA-603-605 and 731-TA-1413-1415 (Preliminary), USITC Pub. 4786 at 6 (May 2018) *("Preliminary Determinations").*

share common production processes, facilities, and employees.[32] The Commission further found, using its five-factor semi-finished product analysis, that sodium glycinate and glycine slurry are not distinct domestic like products from glycine, given the dedication of those products to production of glycine, the absence of a separate market for those upstream products, and the relatively small cost of converting sodium glycinate and slurry into glycine.[33]

Japanese Respondents did not raise any domestic like product arguments in the preliminary phase of the investigations or in their comments on the draft final phase questionnaires.[34] Although Japanese Respondents now contend that they fully raised a domestic like product issue with respect to dual-certified glycine in their comments on the draft final phase questionnaires, a review of their comments indicates that they requested shipment data regarding glycine certified for use by the FDA and/or the EDQM, but did not make any argument or suggestion regarding a separate like product. To the contrary, they stated that collection of the data they requested would "enable the Commission to more directly gauge the competition between subject imports and the domestic like product."[35] Importantly, although Japanese Respondents have repeatedly asserted that there is no domestic production of either of the imported products at issue, they failed to identify a domestically produced product "like" or "most similar in characteristics and uses" to either of these imported products until after they were requested to do so by Commissioners at the hearing.[36]

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[32] *Preliminary Determinations*, USITC Pub. 4786 at 7-8, 9.

[33] *Preliminary Determinations*, USITC Pub. 4786 at 8-9.

[34] CR at I-22 to I-23; PR at I-17.

[35] June 22, 2018 letter from Jonathan Stoel to Secretary Barton with Ajinomoto's Comments on Draft Questionnaires, at 1-2 (EDIS Document No. 648505); *see* Japanese Respondents' Posthearing Brief at Appendix 1, Exhibit A. Japanese Respondents' comments on the draft questionnaires did not contain any argument for a separate domestic like product based on discussion of the Commission's six like product factors. Moreover, they did not request that the questionnaires seek the views of producers, importers, and purchasers about the six like product factors. Nor did they request that the Commission collect several types of information that it would need to conduct a material injury analysis should it find separate like products. Specifically, they did not request that the Commission collect separate financial data with respect to a proposed domestic industry producing a proposed separate like product, or collect specific pricing data corresponding to sales of the proposed like product. They requested shipment quantities, but not shipment values (which would be necessary for calculating average unit values). *Id.*

[36] Japanese Respondents' Posthearing Brief at 1-2; Hearing Tr. at 163-64 (Maruyama, Levinson, responding to Commissioner Williamson), 167-68 (Levinson, responding to Commissioner Schmidtlein); 197-98 (Maruyama, Levinson, responding to Commissioner Kearns). As noted, in their prehearing brief and hearing presentation on the like product issue, Japanese Respondents argued that the Commission should find that two imported products from Japan that they assert are not produced domestically are separate domestic like products. Japanese Respondents' Prehearing Brief at 4-13; Hearing Tr. at 147-51 (Maruyama). However, the Commission does not define a domestic like product that is not produced domestically. *See, e.g., Certain Aluminum Extrusions from China*, Inv. Nos. 701-TA-475 and 731-TA-1177 (Review), USITC Pub. 4677 at 11-16 (Mar. 2017); *Grain-Oriented Electrical Steel from Germany, Japan, and Poland*, Inv. Nos. 731-TA-1233, 1234, and 1236 (Final), USITC Pub. 4491 at 10 & n.49 (Sept. 2014). This is because the statute defines the "domestic like product" as "a product which is like, or in the (Continued...)

There remains a factual dispute between the parties about whether the domestic industry in fact produces the specialty products at issue.[37] Because of this, the record is not clear concerning what domestically produced products are most similar to the two imported articles that are the focus of the Japanese Respondents' argument. Moreover, because Japanese Respondents did not raise an actual domestic like product issue in their comments on the draft questionnaires, the Commission did not collect, and thus does not have, all the data that would be necessary to examine the performance of the domestic industry producing such a separate domestic like product.[38]

Moreover, even if we were to consider Japanese Respondents' arguments on the merits, we find that they were already effectively addressed by the Commission's analysis in the preliminary determinations, which found that all grades and purity levels of glycine within the scope definition are a single like product. In particular, the Commission found that all glycine, regardless of grade, has the same chemical structure, differing only by the amount of impurities in the product, and that glycine has a wide variety of uses.[39] It further found that each of the domestic producers uses the same production process, facilities, and employees for all grades of glycine that it produces, although USP-grade glycine used for pharmaceutical application undergoes an additional purification step."[40] Additionally, it found that all domestically produced glycine shares similar channels of distribution, and is perceived to be a similar product.[41] The current record continues to support these findings.[42] Japanese Respondents' arguments posit that there are some specialty glycine products with higher purity, a more precise manufacturing process, special certifications, specialized end uses and purchasers, and premium prices. The Commission acknowledged such distinctions generally in the preliminary

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(…Continued)
absence of like, most similar in characteristics and uses with, the article subject to an investigation." 19 U.S.C. § 1677(10). The Commission has reasoned that defining a domestic like product that is not produced domestically would contradict the statute's mandate to identify a *domestic* item that is like or most similar to subject imports. For imported products not made domestically, the Commission has found that parties seeking a separate domestic like product must identify a domestically produced variant that is "most similar in characteristics and uses" with such imported product. Accordingly, the Commission's consistent practice has been to reject requests by parties to define a domestic like product for imported merchandise not manufactured domestically and for which parties have not identified a domestically produced variant most similar in characteristics and uses. *Sodium Gluconate, Gluconic Acid, and Derivative Products from China and France*, Inv. Nos. 701-TA-590 and 731-TA-1397-98 (Preliminary), USITC Pub. 4756 at 8-9 (Jan. 2018).

[37] Japanese Respondents' Prehearing Brief at 4-13; Hearing Tr. at 147-51 (Maruyama), 160-61 (Levinson), 177-79 (Lish); Petitioners' Posthearing Brief at 14 and Response to Commission Questions at 95-96, 108, 111-12; Hearing Tr. at 51-54 (Allen, Hughes).

[38] *See* 19 C.F.R. § 207.20(b).

[39] *Preliminary Determinations*, USITC Pub. 4786 at 7.

[40] *Preliminary Determinations*, USITC Pub. 4786 at 7.

[41] *Preliminary Determinations*, USITC Pub. 4786 at 7.

[42] *See generally* CR at I-17 to I-24; PR at I-13 to I-17; Petitioners' Posthearing Brief, Response to Commission Questions, at 1-13.

determinations, but found them to be an insufficient basis for finding separate domestic like products.[43]

Accordingly, we define a single domestic like product that is coextensive with the scope of the investigations, as we did in the preliminary determinations.

III. Domestic Industry

The domestic industry is defined as the domestic "producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[44] 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.

These investigations do not present any domestic industry or related parties issues.[45]

Accordingly, we define the domestic industry to consist of GEO and Chattem, the two known U.S. producers of the domestic like product.

[43] *Preliminary Determinations*, USITC Pub. 4786 at 7-9.

[44] 19 U.S.C. § 1677(4)(A).

[45] Neither U.S. producer reported importing or purchasing glycine during the period of investigation. CR at III-8; PR at III-4. *** is a *** subsidiary of ***, an Indian firm that did not produce, export or import subject merchandise during the period. CR at III-2; PR at III-1; CR/PR at Table III-2. Petitioners argue that the Commission should find a single domestic industry consisting of both U.S. producers. Petitioners' Prehearing Brief at 11. Japanese Respondents do not specifically address domestic industry issues apart from their request for separate domestic like products.

IV. Cumulation[46]

For purposes of evaluating the volume and effects for a determination of material injury by reason of subject imports, section 771(7)(G)(i) of the Tariff Act requires the Commission to cumulate subject imports from all countries as to which petitions were filed and/or investigations self-initiated by Commerce on the same day, if such imports compete with each other and with the domestic like product in the U.S. market. In assessing whether subject imports compete with each other and with the domestic like product, the Commission generally has considered four factors:

(1) the degree of fungibility between subject imports from different countries and between subject imports and the domestic like product, including consideration of specific customer requirements and other quality related questions;

(2) the presence of sales or offers to sell in the same geographic markets of subject imports from different countries and the domestic like product;

(3) the existence of common or similar channels of distribution for subject imports from different countries and the domestic like product; and

(4) whether the subject imports are simultaneously present in the market.[47]

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[46] Pursuant to Section 771(24) of the Tariff Act, imports from a subject country of merchandise corresponding to a domestic like product that account for less than 3 percent of all such merchandise imported into the United States during the most recent 12 months for which data are available preceding the filing of the petition shall generally be deemed negligible. 19 U.S.C. §§ 1671b(a), 1673b(a), 1677(24)(A)(i), 1677(24)(B); *see also* 15 C.F.R. § 2013.1 (developing countries for purposes of 19 U.S.C. § 1677(36)). The statute further provides that subject imports from a single country which comprise less than 3 percent of total such imports of the product may not be considered negligible if there are several countries subject to investigation with negligible imports and the sum of such imports from all those countries collectively accounts for more than 7 percent of the volume of all such merchandise imported into the United States. 19 U.S.C. § 1677(24)(A)(ii). In the case of countervailing duty investigations involving developing countries (as designated by the United States Trade Representative), the statute indicates that the negligibility limits are 4 percent and 9 percent, rather than 3 percent and 7 percent. 19 U.S.C. § 1677(24)(B). The U.S. Trade Representative has designated India as a developing country to which the 4 percent negligibility threshold pertains in countervailing duty investigations. 15 C.F.R. § 2013.1.

Subject imports from China, India, and Japan exceed the statutory negligibility threshold. Based on official import statistics, during the period March 2017 through February 2018, the 12-month period preceding the filing of the petitions, subject imports from China accounted for 5.9 percent of total U.S. imports of glycine by quantity, subject imports from India accounted for 27.2 percent, and subject imports from Japan accounted for 42.1 percent. Derived from CR/PR at Tables IV-3 to IV-4 (using 13,007,000 pounds as the denominator for all calculations). Thus, since imports from each subject country exceed the pertinent statutory threshold, we find that subject imports from China, India, and Japan are not negligible.

While no single factor is necessarily determinative, and the list of factors is not exclusive, these factors are intended to provide the Commission with a framework for determining whether the subject imports compete with each other and with the domestic like product.[48] Only a "reasonable overlap" of competition is required.[49]

Petitioners argue that subject imports from all subject countries should be cumulated. They assert that subject imports from all sources are highly fungible with each other and the domestic like product, stating that U.S. shipments of the domestic like product and imports from each subject country were primarily of USP grade.[50] Petitioners argue that there is geographic overlap between the domestic like product and subject imports from all sources, imports from each subject country and the domestic like product are sold through similar channels of distribution, and subject imports from all sources had a simultaneous presence in the U.S. market, competing with the domestic like product throughout the period of investigation.[51] Petitioners contend that Japanese Respondents' arguments that subject imports from Japan should not be cumulated with imports from other subject sources are based on considerations irrelevant to the Commission's cumulation analysis and are factually unsupported by the record.[52] [53]

Japanese Respondents argue that the Commission should not cumulate subject imports from Japan with subject imports from China and India for purposes of its analysis of present material injury. They contend that the four prongs of the Commission's traditional cumulation analysis are only illustrative, and that the Commission can and should examine other factors to determine that subject imports from Japan do not compete with the other subject imports and the domestic like product in the U.S. market.[54] They assert that imports from Japan, unlike

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[47] *See Certain Cast-Iron Pipe Fittings from Brazil, the Republic of Korea, and Taiwan*, Inv. Nos. 731-TA-278-280 (Final), USITC Pub. 1845 (May 1986), *aff'd*, *Fundicao Tupy, S.A. v. United States*, 678 F. Supp. 898 (Ct. Int'l Trade), aff'd, 859 F.2d 915 (Fed. Cir. 1988).

[48] *See*, *e.g.*, *Wieland Werke, AG v. United State*s, 718 F. Supp. 50 (Ct. Int'l Trade 1989).

[49] The Statement of Administrative Action (SAA) to the Uruguay Round Agreements Act (URAA), expressly states that "the new section will not affect current Commission practice under which the statutory requirement is satisfied if there is a reasonable overlap of competition." H.R. Rep. No. 103-316, Vol. I at 848 (1994) (*citing Fundicao Tupy, S.A. v. United States*, 678 F. Supp. at 902); *see Goss Graphic Sys., Inc. v. United States*, 33 F. Supp. 2d 1082, 1087 (Ct. Int'l Trade 1998) ("cumulation does not require two products to be highly fungible"); *Wieland Werke, AG*, 718 F. Supp. at 52 ("Completely overlapping markets are not required.").

[50] Petitioners' Prehearing Brief at 14-17.

[51] Petitioners' Prehearing Brief at 17-20.

[52] Petitioners' Posthearing Brief, Answers to Commission Questions, at 36-41.

[53] Petitioners assert that subject imports currently reported as being from Thailand were in fact transshipments of Chinese-origin glycine, and should be classified by the Commission as subject imports from China and cumulated with the other subject imports regardless of Commerce's final determination. Petitioners' Prehearing Brief at 20-30. We address the treatment of imports reported to the Commission as subject imports from Thailand in section V.B.2 below.

[54] Japanese Respondents' Prehearing Brief at 30-31; Japanese Respondents' Posthearing Brief at 3. Japanese Respondents also argue that the Commission cannot cumulate imports from Thailand with (Continued...)

imports from the other subject sources, are only subject to allegations of dumping and are not subject to allegations of countervailable subsidization, which they contend indicates that imports from Japan do not compete in the U.S. market in the same manner as imports from the other subject countries.[55] Japanese Respondents argue that the fact that imports from the other subject sources have also been subject to allegations and/or findings of circumvention, while subject imports from Japan have not, indicates a significant difference in the way that subject imports from Japan compete in the U.S. market as compared to imports from the other subject sources.[56] Furthermore, they assert that subject imports from Japan are the only import source that supplies the specialized applications of purchasers in the injectable pharmaceutical and semiconductor industries, as to which there is no competitive overlap with other sources of subject imports or the domestic industry.[57] Japanese Respondents state that subject imports from Japan were sold to end users, while subject imports from other sources were sold primarily through distributors, indicating a clear difference in channels of distribution.[58] Finally, they contend that subject imports from Japan participated "responsibly" in the U.S. market in their pricing behavior, distinguishing them from imports from the other subject sources.[59]

We consider subject imports from China, India, and Japan on a cumulated basis, because the record indicates that the statutory criteria for cumulation of imports from these three subject countries are satisfied. As an initial matter, petitioners filed the antidumping/countervailing duty petitions with respect to imports from China, India, and Japan on the same day, March 28, 2018.[60]

However, for purposes of these final determinations on glycine from China, India, and Japan, subject imports from Thailand are not eligible for cumulation. Commerce made negative preliminary determinations in both its antidumping and countervailing duty investigations with respect to glycine from Thailand.[61] Commerce did not make an affirmative final determination

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imports from other subject sources because Commerce made negative preliminary determinations with respect to imports from Thailand in both its antidumping and countervailing duty investigations, and has not made an affirmative final determination in either investigation. Japanese Respondents' Posthearing Brief at 6-8.

[55] Japanese Respondents' Prehearing Brief at 32-34; Japanese Respondents' Posthearing Brief at 4.

[56] Japanese Respondents' Prehearing Brief at 34-35; Japanese Respondents' Posthearing Brief at 3.

[57] Japanese Respondents' Prehearing Brief at 35-38; Japanese Respondents' Posthearing Brief at 5; Yuki Gosei's Final Comments at 3-4.

[58] Japanese Respondents' Prehearing Brief at 38-39; Japanese Respondents' Posthearing Brief at 5.

[59] Japanese Respondents' Prehearing Brief at 39-40; Japanese Respondents' Posthearing Brief at 6.

[60] CR at I-1; PR at I-1.

[61] *Glycine from Thailand: Preliminary Determination of Sales at Not Less Than Fair Value*, 83 Fed. Reg. 54717 (Oct. 31, 2018); *Glycine from Thailand: Preliminary Negative Countervailing Duty*
(Continued...)

in either of its investigations of glycine from Thailand prior to the closing of the Commission's record in these investigations on May 22, 2019. Section 771(7)(G)(ii)(1) of the Tariff Act states that the Commission shall not cumulate imports "with respect to which {Commerce} has made a negative preliminary determination, unless {Commerce} subsequently made a final affirmative determination with respect to those imports before the Commission's final determination is made."[62] Thus, given the absence of a final affirmative determination by Commerce in either of its ongoing investigations of glycine from Thailand, the statute precludes the Commission from cumulating subject imports from Thailand with imports from the other subject countries in these investigations.[63]

Fungibility. The record indicates that subject imports from each of the three subject countries eligible for cumulation (China, India, and Japan) are sufficiently fungible with both the domestic like product and each other for purposes of finding a reasonable overlap of competition. USP-grade glycine accounted for a clear majority of U.S. shipments of the domestic like product and of subject imports from China, India, and Japan. In 2017, *** percent of U.S. shipments of glycine were of USP-grade glycine, as were *** percent of subject imports from China, *** percent of subject imports from India, and *** percent of subject

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Determination, Preliminary Negative Critical Circumstances Determination, and Alignment of Final Determination With Final Antidumping Duty Determination, 83 Fed. Reg. 44861 (Sept. 4, 2018).

[62] 19 U.S.C. § 1677(7)(G)(ii)(I). Petitioners argue that subject imports from Thailand remain eligible for cumulation because they are still "subject to investigation" despite the absence of an affirmative final determination of dumping or subsidization by Commerce following its preliminary negative determinations with respect to those imports, relying on and quoting at length from a 1991 decision of the Court of International Trade, *United Eng'g & Forging v. United States*, 15 CIT 561, 582 (1991). Petitioners' Posthearing Brief, Answers to Commission Questions, at 14-15. However, petitioners disregard the subsequent amendment to the statute by the URAA creating new exceptions to cumulation and changing the law on this very point, rendering the 1991 CIT decision inapplicable. *See* SAA at 849 (indicating that the URAA amendment changed the law on cumulation from the "subject to investigation" standard in prior law).

[63] The sole applicable statutory exception is section 771(7)(G)(ii) of the Tariff Act with respect to imports from Thailand, as discussed above. Japanese Respondents argue that the Commission should not cross-cumulate dumped imports from Japan with subsidized imports from China and India because they compete in a different manner in the U.S. market. Japanese Respondents' Prehearing Brief at 32-34; Japanese Respondents' Posthearing Brief at 4. While Japanese Respondents allege that the Commission's determination in *Hot-Rolled Steel Products from India*, Inv. No 701-TA-405 (Section 129 Consistency Determination), USITC Pub. 4599 (March 2016), indicates that U.S. law does not require cross-cumulation, the Commission has determined that it will continue its longstanding practice of cross-cumulating dumped and subsidized imports. *See Polyethylene Terephthalate (PET) Resin from Canada, China, India, and Oman,* Inv. Nos. 701-TA-531-532 and 731-TA-1270-1273 (Final), USITC Pub. 4604 at 9-11 (April 2016); *see also Circular Welded Carbon-Quality Steel Pipe from India, Oman, the United Arab Emirates, and Vietnam*, Inv. Nos. 701-TA-482 to 484 (Final), USITC Pub. 4362 at 12 n.59 (Dec. 2012); *Softwood Lumber from Canada*, Inv. Nos. 701-TA-414 and 731-TA-928 (Final), USITC Pub. 3509 at 29-31 (May 2009); *Bingham & Taylor v. United States*, 815 F.2d 982 (Fed. Cir. 1987). We continue our long-standing practice here.

imports from Japan.[64] Thus, there was substantial overlap between subject imports from China, India, and Japan and the domestic like product with respect to U.S. shipments of USP-grade glycine, notwithstanding Japanese Respondents' contentions that shipments of specialty products from Japan limit the fungibility and competitive overlap of subject imports from Japan with imports from other subject sources and the domestic like product.[65]

*** U.S. producers reported that the domestic like product and subject imports from China, India, and Japan were "frequently" interchangeable, while a majority of responding U.S. importers reported that the domestic like product and subject imports from China, India, and Japan were "always" or "frequently" interchangeable. While a majority of responding U.S. purchasers reported that subject imports from India and Japan were "always" or "frequently" interchangeable with the domestic like product, six of 11 responding purchasers reported that subject imports from China were only "sometimes" or "never" interchangeable with the domestic like product.[66] A majority of responding U.S. importers reported that subject imports from each of the three subject countries eligible for cumulation were "always" or "frequently" interchangeable with each other. A majority of responding purchasers reported that subject imports from India and Japan were "always" or "frequently" interchangeable with each other. However, majorities of responding purchasers reported that subject imports from China and India were only "sometimes" or "never" interchangeable with each other, and that subject imports from China and Japan were also only "sometimes" or "never" interchangeable with each other.[67] Thus, responding U.S. producers and importers generally reported that the domestic like product and subject imports from China, India, and Japan were always or frequently interchangeable, while U.S. purchasers reported some limitations on the interchangeability of subject imports from China with subject imports from India and Japan and the domestic like product.

In purchasers' comparisons of subject imports and the domestic like product, majorities of responding purchasers reported that subject imports from Japan were "comparable" to the domestic like product with respect to 19 out of 20 factors.[68] Similarly, majorities or pluralities of responding purchasers reported that subject imports from India were "comparable" to the domestic like product with respect to 18 out of 20 factors.[69] Majorities or pluralities of

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

[65] Products other than USP-grade glycine constituted a minority of subject imports from Japan in 2017. Glycine slurry for chemical mechanical planarization (CMP) applications accounted for *** percent of U.S. shipments of subject imports from Japan in 2017 and dual-certified glycine for pharmaceutical IV solutions accounted for approximately *** percent. CR/PR at Tables IV-6, IV-7; CR at IV-13 to IV-14; PR at IV-11.

[66] CR/PR at Table II-10.

[67] CR/PR at Table II-10. No U.S. producer reported on the interchangeability among subject imports from China, India, and Japan.

[68] CR/PR at Table II-9. Purchasers found subject imports from Japan to be "superior" to domestic product only with respect to price. *Id.*

[69] CR/PR at Table II-9. Purchasers found domestic product to be "superior" to subject imports from India only with respect to injectability. *Id.* Purchasers were divided as to price, with five purchasers reporting that subject imports from India and domestic product were "comparable," five (Continued...)

responding purchasers reported that subject imports from China were "comparable" to the domestic like product with respect to 12 out of 20 factors.[70]

Channels of Distribution. A *** majority of the U.S. shipments of U.S. producers during the January 2015 to September 2018 period of investigation ("POI") went to end users, but an *** share went to distributors.[71] *** subject imports from Japan during the POI went to end users, with *** percentages (between *** and *** percent during each year or interim period) going to distributors.[72] Subject imports from India went to both distributors and end users, with majorities of U.S. shipments going to distributors in 2016 and 2017, and majorities going to end users in 2015 and January-September ("interim") 2018.[73] Subject imports from China went primarily to distributors, with *** shipments to end users in 2015, but *** shipments to end users during the rest of the POI.[74] One purchaser, ***, reported purchasing subject imports from China, India, and Japan during the POI, but did not report purchasing the domestic like product.[75]

Geographic Overlap. The domestic like product and subject imports from India and Japan were sold in every region of the continental United States. Importers reported selling subject imports from China only in the Northeast region.[76] Thus, there was overlap between subject imports from China, India, and Japan and the domestic like product in the Northeast region.

Simultaneous Presence in Market. Subject imports from Japan were present in the U.S. market in all 45 months of the POI, while subject imports from India were present in the U.S. market in 44 out of 45 months during the POI. Subject imports from China were present in the U.S. market in 28 of 45 months during the POI, and were present in each calendar year of the POI.[77] Subject imports from China, India, and Japan were all present in the U.S. market in every

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reporting that subject imports from India were "superior," and three reporting that domestic product was "superior." *Id.*

[70] CR/PR at Table II-9. Majorities or pluralities of purchasers found subject imports from China to be "superior" to domestic product with respect to four factors: availability, discounts offered, price, and reliability of supply. Purchasers were divided as to four additional factors: antidumping duty orders, delivery time, injectability, and qualifications beyond USP grade. *Id.*

[71] In 2017, *** percent of U.S. shipments of the domestic like product went to end users, while *** percent went to distributors. CR/PR at Table II-1.

[72] In 2017, *** percent of U.S. shipments of subject imports from Japan went to end users, while *** percent went to distributors. CR/PR at Table II-1.

[73] In 2017, *** percent of U.S. shipments of subject imports from India went to distributors, while *** percent went to end users. CR/PR at Table II-1.

[74] In 2017, *** percent of U.S. shipments of subject imports from China went to distributors, while *** percent went to end users. In 2015, *** percent of U.S. shipments of subject imports from China went to distributors, while *** percent went to end users. CR/PR at Table II-1.

[75] CR/PR at Table V-8.

[76] CR/PR at Table II-2.

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

month of 2017.[78] The domestic like product was present in the U.S. market throughout the POI.[79]

Conclusion. There is an overlap between the domestic like product and subject imports from China, India, and Japan with respect to shipments of USP-grade glycine, which accounted for the majority of U.S. shipments from all four sources. Responding U.S. producers and importers generally reported that the domestic like product and subject imports from China, India, and Japan were always or frequently interchangeable, although responding purchasers reported somewhat more limited interchangeability between subject imports from China and the other three sources of product. Nevertheless, the record indicates sufficient fungibility for purposes of establishing a reasonable overlap of competition. There is an overlap in channels of distribution in sales to end users between subject imports from Japan, subject imports from India, and the domestic like product, but only limited overlap between subject imports from Japan (which were sold *** to end users) and subject imports to China (which were sold *** to distributors after 2015); however, the record indicates one common purchaser of subject imports from China and Japan. Moreover, there are not always clear distinctions between distributors and end users; some purchasers reported operating in both capacities.[80] The domestic like product and subject imports from China, India, and Japan were all sold in the Northeast region of the United States. Subject imports from China, India, and Japan and the domestic like product were all present in the U.S. market in a majority of the months in the POI and in every month in 2017. Taking these considerations as a whole, the record indicates that there is a reasonable overlap of competition between and among subject imports from China, India, and Japan and the domestic like product.[81] Accordingly, we consider subject imports from China, India, and Japan on a cumulated basis.

V. Material Injury by Reason of Subject Imports

Based on the record in the final phase of these investigations, we find that an industry in the United States is materially injured by reason of imports of glycine from China, India and Japan that Commerce has found to be sold in the United States at less than fair value and/or subsidized.

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

[79] *See* CR/PR at Tables V-3 to V-5.

[80] CR at II-2 and n.10; PR at II-2 and n.10.

[81] In addition to their arguments about fungibility and channels of distribution, which we have discussed, Japanese Respondents also argued that subject imports from Japan should not be cumulated with imports from China and India because subject imports from Japan are not alleged to be subsidized, have not been subject to circumvention claims, and have participated "responsibly" in the U.S. market. Japanese Respondents' Prehearing Brief at 32-35, 39-40; Japanese Respondents' Posthearing Brief at 3-4, 6. However, Japanese Respondents have failed to show how any of these latter three contentions bear on the inquiry pertinent to cumulation: whether there is a reasonable overlap of competition among and between subject imports from Japan, subject imports from China and India, and the domestic like product. We have concluded that the considerations we typically examine support such a conclusion overall.

A. Legal Standards

In the final phase of antidumping and countervailing duty investigations, the Commission determines whether an industry in the United States is materially injured or threatened with material injury by reason of the imports under investigation.[82] In making this determination, the Commission must consider the volume of subject imports, their effect on prices for the domestic like product, and their impact on domestic producers of the domestic like product, but only in the context of U.S. production operations.[83] The statute defines "material injury" as "harm which is not inconsequential, immaterial, or unimportant."[84] In assessing whether the domestic industry is materially injured by reason of subject imports, we consider all relevant economic factors that bear on the state of the industry in the United States.[85] No single factor is dispositive, and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[86]

Although the statute requires the Commission to determine whether the domestic industry is "materially injured or threatened with material injury by reason of" unfairly traded imports,[87] it does not define the phrase "by reason of," indicating that this aspect of the injury analysis is left to the Commission's reasonable exercise of its discretion.[88] In identifying a causal link, if any, between subject imports and material injury to the domestic industry, the Commission examines the facts of record that relate to the significance of the volume and price effects of the subject imports and any impact of those imports on the condition of the domestic industry. This evaluation under the "by reason of" standard must ensure that subject imports are more than a minimal or tangential cause of injury and that there is a sufficient causal, not merely a temporal, nexus between subject imports and material injury.[89]

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[82] 19 U.S.C. §§ 1671d(b), 1673d(b).

[83] 19 U.S.C. § 1677(7)(B). The Commission "may consider such other economic factors as are relevant to the determination" but shall "identify each {such} factor ... and explain in full its relevance to the determination." 19 U.S.C. § 1677(7)(B).

[84] 19 U.S.C. § 1677(7)(A).

[85] 19 U.S.C. § 1677(7)(C)(iii).

[86] 19 U.S.C. § 1677(7)(C)(iii).

[87] 19 U.S.C. §§ 1671d(a), 1673d(a).

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

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

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In many investigations, there are other economic factors at work, some or all of which may also be having adverse effects on the domestic industry. Such economic factors might include nonsubject imports; changes in technology, demand, or consumer tastes; competition among domestic producers; or management decisions by domestic producers. The legislative history explains that the Commission must examine factors other than subject imports to ensure that it is not attributing injury from other factors to the subject imports, thereby inflating an otherwise tangential cause of injury into one that satisfies the statutory material injury threshold.[90] In performing its examination, however, the Commission need not isolate the injury caused by other factors from injury caused by unfairly traded imports.[91] Nor does the "by reason of" standard require that unfairly traded imports be the "principal" cause of injury or contemplate that injury from unfairly traded imports be weighed against other factors, such as nonsubject imports, which may be contributing to overall injury to an industry.[92] It is clear

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caused by LTFV goods.'" *See also Nippon Steel Corp. v. United States*, 458 F.3d 1345, 1357 (Fed. Cir. 2006); *Taiwan Semiconductor Industry Ass'n v. USITC*, 266 F.3d 1339, 1345 (Fed. Cir. 2001).

[90] SAA at 851-52 ("{T}he Commission must examine other factors to ensure that it is not attributing injury from other sources to the subject imports."); S. Rep. 96-249 at 75 (1979) (the Commission "will consider information which indicates that harm is caused by factors other than less-than-fair-value imports."); H.R. Rep. 96-317 at 47 (1979) ("in examining the overall injury being experienced by a domestic industry, the ITC will take into account evidence presented to it which demonstrates that the harm attributed by the petitioner to the subsidized or dumped imports is attributable to such other factors;" those factors include "the volume and prices of nonsubsidized imports or imports sold at fair value, contraction in demand or changes in patterns of consumption, trade restrictive practices of and competition between the foreign and domestic producers, developments in technology and the export performance and productivity of the domestic industry"); *accord Mittal Steel*, 542 F.3d at 877.

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

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

that the existence of injury caused by other factors does not compel a negative determination.[93]

Assessment of whether material injury to the domestic industry is "by reason of" subject imports "does not require the Commission to address the causation issue in any particular way" as long as "the injury to the domestic industry can reasonably be attributed to the subject imports."[94] The Commission ensures that it has "evidence in the record" to "show that the harm occurred 'by reason of' the LTFV imports," and that it is "not attributing injury from other sources to the subject imports." [95] The Federal Circuit has examined and affirmed various Commission methodologies and has disavowed "rigid adherence to a specific formula."[96]

The question of whether the material injury threshold for subject imports is satisfied notwithstanding any injury from other factors is factual, subject to review under the substantial evidence standard.[97] Congress has delegated this factual finding to the Commission because of the agency's institutional expertise in resolving injury issues.[98]

B. Conditions of Competition and the Business Cycle

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

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

[94] *Mittal Steel*, 542 F.3d at 876 &78; *see also id.* at 873 ("While the Commission may not enter an affirmative determination unless it finds that a domestic industry is materially injured 'by reason of' subject imports, the Commission is not required to follow a single methodology for making that determination ... {and has} broad discretion with respect to its choice of methodology.") *citing United States Steel Group v. United States*, 96 F.3d 1352, 1362 (Fed. Cir. 1996) and S. Rep. 96-249 at 75. In its decision in *Swiff-Train v. United States*, 793 F.3d 1355 (Fed. Cir. 2015), the Federal Circuit affirmed the Commission's causation analysis as comporting with the Court's guidance in *Mittal*.

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

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

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

[98] *Mittal Steel*, 542 F.3d at 873; *Nippon Steel Corp*., 458 F.3d at 1350, *citing U.S. Steel Group*, 96 F.3d at 1357; S. Rep. 96-249 at 75 ("The determination of the ITC with respect to causation is ... complex and difficult, and is a matter for the judgment of the ITC.").

1. Demand Considerations

U.S. demand for glycine depends on the demand for U.S.-produced downstream products in which it is used. Reported end uses for glycine include nutritional supplements, personal care products, pet food/livestock feed, electronic/metal cleaners, industrial mixtures and slurries, and pharmaceutical products (*e.g.,* intravenous solutions). USP-grade glycine is required for products made for human or animal consumption, while technical-grade glycine is used in industrial applications.[99] Glycine accounts for a small share of the cost of most of the end-use products in which it is used.[100] A small number of purchasers account for a large share of apparent U.S. consumption of glycine.[101]

Most responding market participants reported no change in U.S. demand for glycine over the POI, but eight of 27 responding purchasers reported an increase in U.S. demand.[102] Apparent U.S. consumption of glycine declined by *** percent between 2015 and 2017, falling from *** pounds in 2015 to *** pounds in 2016, and then increasing to *** pounds in 2017; it was *** pounds in interim 2017 and lower, at *** pounds, in interim 2018.[103]

2. Supply Considerations

The U.S. glycine market was supplied by three sources during the POI: the domestic industry, cumulated subject imports from China, India, and Japan, and imports not subject to cumulation (including subject imports from Thailand as well as nonsubject imports).

The domestic industry consists of two U.S. producers, GEO and Chattem.[104] GEO is the larger producer.[105] The domestic industry's capacity to produce glycine was less than apparent U.S. consumption throughout the POI.[106] The domestic industry's capacity utilization rate

[99] Glycine is sold in various other grades, including higher-purity grade and pharmaceutical-grade glycine, but there is not an industry-wide consensus on the names of these other grades. CR at I-18 n.44; PR at I-14 n.44.

[100] CR at II-8 to II-9; PR at II-5 to II-6.

[101] *** U.S. purchasers accounted for approximately *** percent of apparent U.S. consumption in 2017. CR at II-2 n.8; PR at II-1 n.8.

[102] CR/PR at Table II-4; CR at II-9 to II-10; PR at II-6.

[103] CR/PR at Tables IV-10, C-1. When calculated on the basis of net U.S. shipments of imports, which adjusts for importers' inventory changes and re-exports, adjusted apparent U.S. consumption declined from *** pounds in 2015 to *** pounds in 2016, and then increased to *** pounds in 2017; it was *** pounds in interim 2017 and lower, at *** pounds, in interim 2018. CR/PR at Table IV-14.

[104] CR at I-5, III-1; PR at I-4, III-1.

[105] CR at I-5; PR at I-4. In 2017, GEO accounted for *** percent of U.S. production and Chattem accounted for *** percent. CR/PR at Table III-1.

[106] CR/PR at Table C-1.

declined by *** percentage points between 2015 and 2017, although it was higher in interim 2018 than in interim 2017.[107]

While *** reported no supply constraints during the POI, two importers reported that domestic producers were unable to meet demand, and six purchasers reported that U.S. producer *** faced supply constraints.[108] Majorities of responding purchasers reported that the domestic like product was "comparable" to subject imports from India and subject imports from Japan with respect to availability and reliability of supply, although most responding purchasers reported that the domestic like product was "inferior" to subject imports from China with respect to availability and reliability of supply.[109]

The domestic industry's market share increased from *** percent in 2015 to *** percent in 2016, and then declined to *** percent in 2017; it was *** percent in interim 2017, and higher, at *** percent, in interim 2018.[110]

Imports of glycine from China have been subject to an antidumping duty order since 1995, and the current investigation of glycine from China is a countervailing duty investigation only.[111] The market share of cumulated subject imports from China, India, and Japan increased from *** percent in 2015 to *** percent in 2016, and declined *** to *** percent in 2017; it was *** percent in interim 2017, and lower, at *** percent, in interim 2018.[112]

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[107] Capacity utilization declined from *** percent in 2015 to *** percent in 2016 and *** percent in 2017; it was *** percent in interim 2017 and higher, at *** percent, in interim 2018. CR/PR at Tables III-5, C-1.

[108] CR at II-7 to II-8; PR at II-4 to II-5.

[109] CR/PR at Table II-9.

[110] CR/PR at Table IV-11. When calculated on the basis of net U.S. shipments of imports, the domestic industry's adjusted market share increased from *** percent in 2015 to *** percent in 2016, and then declined to *** percent in 2017; it was *** percent in interim 2017 and higher, at *** percent, in interim 2018. CR/PR at Table IV-14.

[111] *Antidumping Duty Order: Glycine From the People's Republic of China*, 60 Fed. Reg. 16116 (Mar. 29, 1995); *Glycine From the People's Republic of China: Continuation of Antidumping Duty Orde*r, 82 Fed. Reg. 10745 (Feb. 15, 2017). Petitioners argue that the Commission should reclassify as imports from China certain imports entered after September 24, 2017 that importer Newtrend USA reported to the Commission as being from Thailand. Petitioners' Prehearing Brief at 26-30; Petitioners' Posthearing Brief, Response to Commission Questions, at 16-27. We acknowledge CBP's decision (referenced above) to impose interim measures directing that certain glycine entered from Thailand by Newtrend USA is subject to the antidumping duty order on glycine from China. *See* February 28, 2019 letter from Marisa A. Hill of CBP to Lizbeth Levinson and Hao Wang (EDIS Document No. 676648) at 7. For purposes of our analysis we have not reclassified imports which Newtrend USA has certified as being of Thai-origin in its U.S. importer questionnaire response submitted to the Commission. CR at VII-23; PR at VII-14. We note that the Department of Commerce in its most recent (preliminary) determinations classified those imports as of Thai-origin but is continuing to investigate their country of origin. *See* April 24, 2019 Commerce Thailand Postponement Memorandum.

[112] CR/PR at Table IV-11. When calculated on the basis of net U.S. shipments of imports, the adjusted market share of cumulated subject imports increased from *** percent in 2015 to *** percent in 2016, and then declined to *** percent in 2017; it was *** percent in interim 2017 and lower, at *** percent, in interim 2018. CR/PR at Table IV-14.

Imports not subject to cumulation include subject imports from Thailand as well as nonsubject imports. The market share of imports not subject to cumulation declined from *** percent in 2015 to *** percent in 2016, and then increased to *** percent in 2017; it was *** percent in interim 2017, and higher, at *** percent, in interim 2018.[113]

3. Substitutability and Other Conditions

Based on the record, we find that there is a high degree of substitutability between domestically produced glycine and cumulated subject imports from China, India, and Japan.[114] A *** of U.S. shipments of both the domestic like product and cumulated subject imports were of USP-grade glycine.[115] Moreover, a substantial percentage of U.S. shipments of both the domestic like product and cumulated subject imports were of FDA-certified glycine.[116]

As discussed in section IV above, responding U.S. producers and importers generally reported that the domestic like product and subject imports from China, India, and Japan were always or frequently interchangeable, although U.S. purchasers reported some limitation on the interchangeability of subject imports from China with the domestic like product.[117]

We find that price is an important factor in purchasing decisions for glycine, while recognizing that other factors are also important, including quality, availability, and reliability of supply. In identifying the three most important factors in their purchasing decisions for glycine, 34 responding purchasers listed price/cost, 33 firms listed quality, and 28 firms listed

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[113] CR/PR at Table IV-11. When calculated on the basis of net U.S. shipments of imports, the adjusted market share of imports not subject to cumulation declined from *** percent in 2015 to *** percent in 2016, and then increased to *** percent in 2017; it was *** percent in interim 2017 and higher, at *** percent, in interim 2018. CR/PR at Table IV-14.

Most imports not subject to cumulation were from Thailand. Nonsubject imports accounted for 1.4 percent of total U.S. imports in 2017, with the largest source of nonsubject imports in 2017 being Germany. CR at II-7; PR at II-4.

[114] CR at II-10; PR at II-7.

[115] In 2017, *** percent of U.S. producers' U.S. shipments were of USP-grade glycine, while *** percent of U.S. shipments of cumulated subject imports were of USP-grade glycine. CR/PR at Table IV-6.

[116] In 2017, *** percent of U.S. producers' U.S. shipments of glycine were FDA-certified, while *** percent of U.S. shipments of cumulated subject imports of glycine were FDA-certified. CR/PR at Table IV-7. We acknowledge that there is some difference in product range between the domestic like product and individual subject sources, such as the glycine slurry for CMP applications produced by subject producers in Japan. Notwithstanding this, we find a high degree of substitutability in light of the overall overlap in product types between the domestic like product and cumulated subject imports.

[117] *** U.S. producers reported that the domestic like product and subject imports from China, India, and Japan were "frequently" interchangeable, and a majority of responding U.S. importers reported that the domestic like product and subject imports from China, India, and Japan were "always" or "frequently" interchangeable. While a majority of responding U.S. purchasers reported that subject imports from India and Japan were "always" or "frequently" interchangeable with the domestic like product, six of 11 responding purchasers reported that subject imports from China were only "sometimes" or "never" interchangeable with the domestic like product. CR/PR at Table II-10.

availability/supply.[118] When purchasers were asked to describe the importance of purchasing factors for glycine, 27 firms reported that price was very important, while 10 reported that price was somewhat important.[119]

Both the domestic like product and cumulated subject imports were sold *** through annual contracts.[120] GEO generally negotiates annual contracts in the fourth quarter of the year to apply in the following calendar year.[121]

Glycine can be produced using two different production methods. U.S. producer GEO uses the hydrogen cyanide ("HCN") process, which uses HCN as its primary feedstock, while U.S. producer Chattem employs the monochloroacetic acid process, which uses monochloroacetic acid and liquid ammonia.[122] Overall, U.S. producers reported that raw materials accounted for *** percent of the total cost of goods sold ("COGS") in 2017, down from *** percent in 2015. However, the different production methods employ different raw material inputs, and the two U.S. producers ***.[123]

C. Volume of Subject Imports

Section 771(7)(C)(i) of the Tariff Act provides that the "Commission shall consider whether the volume of imports of the merchandise, or any increase in that volume, either in absolute terms or relative to production or consumption in the United States, is significant."[124]

The volume of cumulated subject imports was 9.0 million pounds in 2015, 9.4 million pounds in 2016, and 9.9 million pounds in 2017; it was 7.4 million pounds in interim 2017 and 4.2 million pounds in interim 2018.[125]

The market share of cumulated subject imports increased from *** percent in 2015 to *** percent in 2016, and declined *** to *** percent in 2017; it was *** percent in interim 2017, and lower, at *** percent, in interim 2018.[126]

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[118] CR/PR at Table II-6. Quality was the factor most frequently listed as the most important, while availability/supply was the factor most frequently listed as second most important, and price/cost was the factor most frequently listed as third most important. *Id.*

[119] CR/PR at Table II-7. Availability was the factor most frequently listed by purchasers as very important, followed by product consistency, reliability of supply, purity, price, delivery time, qualification as USP grade, and FDA certification. *Id.*

[120] In 2017, *** percent of U.S. producers' U.S. commercial shipments were sold through annual contracts, while *** percent were sold through spot sales. *** percent of U.S. commercial shipments of cumulated subject imports were sold through annual contracts, while *** percent were sold through spot sales, *** percent through short-term contracts, and *** percent through long-term contracts. CR/PR at Table V-2.

[121] Conference Tr. at 54-55 (Allen); Hearing Tr. at 89-90 (Hughes). GEO sells *** through ***, while Chattem sells *** through ***. CR at V-3; PR at V-2.

[122] CR at I-21 to I-22, V-1; PR at I-16, V-1.

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

[124] 19 U.S.C. § 1677(7)(C)(i).

[125] CR/PR at Table IV-2.

The ratio of the volume of cumulated subject imports to U.S. production increased from *** percent in 2015 to *** percent in 2016 and *** percent in 2017; it was *** percent in interim 2017 and lower, at *** percent, in interim 2018.[127]

We find that the volume of cumulated subject imports is significant in absolute terms, as well as relative to production and consumption in the United States.

D. Price Effects of the Subject Imports

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

> (I) there has been significant price underselling by the imported merchandise as compared with the price of domestic like products of the United States, and
>
> (II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.[128]

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

The Commission collected quarterly quantity and f.o.b. pricing data on sales of three glycine products shipped to unrelated U.S. customers during the POI.[129] Both U.S. producers and 17 importers provided usable pricing data for sales of the requested products, although not all firms reported pricing data for all products for all quarters.[130] The pricing data reported by

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(…Continued)

[126] CR/PR at Table IV-11. When calculated on the basis of net U.S. shipments of imports, the adjusted market share of cumulated subject imports increased from *** percent in 2015 to *** percent in 2016, and then declined to *** percent in 2017; it was *** percent in interim 2017 and lower, at *** percent, in interim 2018. CR/PR at Table IV-14.

[127] Derived from CR/PR at Tables III-4, IV-2.

[128] 19 U.S.C. § 1677(7)(C)(ii).

[129] CR at V-5; PR at V-3. The three pricing products are:

***Product 1*.--Pharmaceutical-grade glycine** -- a white, odorless, crystalline powder with a sweet taste, having an assay (glycine content) of 98.5 percent to 101.5 percent (dry basis), and ≤ 7ppm chloride, ≤ 65 ppm sulfate, and ≤1 ppm heavy metals.

***Product 2*.--USP-grade glycine** -- a white, odorless, crystalline powder with a sweet taste, having an assay (glycine content) of 98.5 percent to 101.5 percent (dry basis) and ≤ 70 ppm chloride, ≤ 65 ppm sulfate, ≤ 20 ppm heavy metals, and not otherwise qualifying as pharmaceutical-grade glycine.

***Product 3*.--Technical-grade glycine** -- a white, off-white, or slightly yellow crystalline powder, having an assay (glycine content) of 98.5 percent to 101.5 percent (dry basis), with maximum chlorides of 0.4 percent, and not otherwise qualifying as USP-grade glycine.

CR at V-5 to V-6; PR at V-3 to V-4.

[130] CR at V-6; PR at V-4.

these firms accounted for approximately *** percent of the domestic industry's U.S. commercial shipments of glycine in 2017, *** percent of U.S. commercial shipments of subject imports from India, *** percent of U.S. commercial shipments of subject imports from Japan. The Commission received pricing data accounting for *** percent of U.S. commercial shipments of imports from China during 2015, but no pricing data for subject imports from China for 2016, 2017, or 2018.[131]

The pricing data indicate that cumulated subject imports undersold the domestic like product in 46 out of 69 quarterly comparisons, at margins ranging between *** percent and *** percent, and an average underselling margin of *** percent.[132] The data also reflect predominant underselling by volume, with *** pounds of cumulated subject imports associated with instances of underselling, as compared to *** pounds of cumulated subject imports associated with instances of overselling. Thus, *** percent of the quantity of cumulated subject imports covered by the Commission's pricing data was sold during quarters in which the average price of these imports was less than that of the comparable domestic product.[133]

The Commission's pricing Product 2 (USP-grade glycine) accounted for a clear majority of the U.S. shipments of both cumulated subject imports and the domestic like product for which there are pricing data, and USP-grade glycine accounted for a clear majority of overall U.S. shipments of both cumulated subject imports and the domestic like product.[134] Accordingly, our underselling analysis of cumulated subject imports gives particular focus to the data regarding Product 2.[135] Cumulated subject imports of Product 2 undersold the domestic like product in *** out of *** quarterly comparisons.[136] The data also reflect predominant

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[131] CR at V-6; PR at V-4. The record also contains pricing data reflecting *** percent of U.S. commercial shipments of imports from Thailand. *Id.*

[132] CR at V-15; PR at V-5; CR/PR at Table V-7a.

[133] CR/PR at Table V-7a.

[134] The quantity of cumulated subject imports of Product 2 involved in pricing comparisons with the domestic like product during the POI was *** pounds, which was *** percent of the total quantity of cumulated subject imports of all three pricing products (*** pounds) involved in pricing comparisons with the domestic like product. Derived from CR/PR at Table V-7a. U.S. producers' shipments of Product 2 *** pounds accounted for *** percent of U.S. producers' shipments of Products 1-3 combined *** pounds. Derived from CR/PR at Tables V-3 to V-5. As discussed in section V.B.3. above, in 2017, *** percent of U.S. producers' overall U.S. shipments were of USP-grade glycine, while *** percent of overall U.S. shipments of cumulated subject imports were of USP-grade glycine. CR/PR at Table IV-6.

[135] Cumulated subject imports of Product 1 (technical-grade glycine) undersold the domestic like product in *** out of *** quarterly comparisons. The data reflect predominant underselling of Product 1 by volume, with *** pounds of cumulated subject imports of Product 1 associated with instances of underselling, as compared to *** pounds of cumulated subject imports of Product 1 associated with instances of overselling. Thus, *** percent of the quantity of cumulated subject imports of Product 1 covered by the Commission's pricing data was sold during quarters in which the average price of these imports was less than that of the comparable domestic product. CR/PR at Table V-7a. Cumulated subject imports of Product 3 (pharmaceutical-grade glycine) oversold the domestic like product in *** of *** quarterly comparisons, but the volume of cumulated subject imports involved in the overselling pricing comparisons was *** pounds. *Id.*

[136] CR/PR at Table V-7a.

underselling of Product 2 by volume, with *** pounds of cumulated subject imports of Product 2 associated with instances of underselling, as compared to only *** pounds of cumulated subject imports of Product 2 associated with instances of overselling. Thus, *** percent of the quantity of cumulated subject imports of Product 2 covered by the Commission's pricing data was sold during quarters in which the average price of these imports was less than that of the comparable domestic product.[137]

The record therefore indicates pervasive underselling of the domestic like product by cumulated subject imports during the POI. Given the high degree of substitutability between the domestic like product and cumulated subject imports, as well as the importance of price in purchasing decisions for glycine, we find this underselling to be significant.[138]

U.S. producers' prices for Product 2 declined by *** percent from the first quarter of 2015 to the third quarter of 2018, with most of the decline occurring from the fourth quarter of 2016 through the first quarter of 2018.[139] The price of subject imports of Product 2 also declined over the same period, by greater percentages than the domestic like product, with the price of subject imports of Product 2 from India declining by *** percent, the price of subject imports of Product 2 from Japan declining by *** percent, and the price of overall cumulated subject imports of Product 2 declining by *** percent.[140] U.S. producers' prices for Product 1 and Product 3 fluctuated over the POI, increasing from the first quarter of 2015 to the third quarter of 2018 by *** percent for Product 1, and by *** percent for Product 3.[141]

As previously discussed, Product 2 (USP-grade glycine) accounted for a clear majority (approximately *** percent) of U.S. shipments of both cumulated subject imports and the domestic like product, and we therefore find the data for Product 2 particularly illustrative in our analysis of pricing trends. Moreover, four purchasers reported that domestic producers reduced their prices in response to lower-priced cumulated subject imports, with the average price reduction estimated at 16.3 percent.[142] As discussed in section V.C.3 above, the domestic industry makes most of its sales through annual contracts, in which, according to GEO, contract prices negotiated in the fourth quarter of one year generally apply for the following calendar year, and thus the reduction in the domestic industry's prices for Product 2 in 2017 continued to affect the industry's prices for Product 2 in interim 2018.[143]

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[137] Derived from CR/PR at Table V-7a.

[138] We note that 14 purchasers responding to the Commission's lost sales/lost revenue survey reported that they had purchased lower-priced subject imports from China, India, and/or Japan rather than the domestic like product, and that price was a primary reason for purchasing subject imports rather than the domestic like product. CR at V-21; PR at V-7; CR/PR at Table V-10.

[139] CR/PR at Table V-6; CR at V-14; PR at V-5.

[140] CR/PR at Tables V-4, V-6. Pricing data for Product 2 from China were available for only ***. CR/PR at Table IV-4.

[141] CR/PR at Table V-6, CR at V-14; PR at V-5. U.S. producers' prices for Product 3 declined in 2016 and 2017, but increased in interim 2018, particularly in the third quarter of 2018. CR/PR at Table V-5.

[142] CR/PR at Table V-12.

[143] CR/PR at Tables V-2, V-4; Conference Tr. at 54-55 (Allen); Hearing Tr. at 89-90 (Hughes).

We find that the decline in the domestic industry's prices during the POI was attributable to the significant volume of cumulated subject imports that significantly undersold the domestic like product. By contrast, the trends in U.S. demand for glycine and the domestic industry's COGS during the POI do not explain the decline in the domestic industry's prices during the POI, particularly the price decline in 2017.[144] While apparent U.S. consumption declined by *** percent between 2015 and 2017, it increased by *** percent between 2016 and 2017.[145] The domestic industry's unit COGS was unchanged between 2015 and 2017, and was higher in 2017 than in 2016.[146] Thus, the *** decline in the domestic industry's prices for Product 2 in 2017 occurred during a year when U.S. demand for glycine was increasing and the industry's unit costs were increasing, factors which should not have led to a decline in glycine prices.

Furthermore, subject imports from Thailand likewise cannot explain the decline in the domestic industry's prices in 2016 and 2017. Although subject imports from Thailand mostly undersold imports from other subject sources,[147] the volume and pricing product quantity of those imports were much smaller than those of cumulated subject imports in 2016 and 2017 when annual contracts were being negotiated for 2017 and 2018, respectively.[148] The most significant declines in U.S. producers' prices occurred at the start of 2017 and 2018.[149]

Thus, based on the record, we find that there was significant underselling by cumulated subject imports and that cumulated subject imports depressed prices of the domestic like product to a significant degree. We consequently conclude that the cumulated subject imports had significant price effects.

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[144] The domestic industry's average quarterly prices for Product 2 in 2016 ranged between $*** and $*** per pound, while its average quarterly prices for Product 2 in 2017 ranged between $*** and $*** per pound. CR/PR at Table V-4. Additionally, the domestic industry's prices for Product 3 in 2017 were below those of the comparable quarter in 2016 for three of the four quarters. CR/PR at Table IV-5.

[145] CR/PR at Table C-1. When calculated on the basis of net U.S. shipments of imports, adjusted apparent U.S. consumption increased by *** percent from 2015 to 2017, and increased by *** percent from 2016 to 2017. Derived from CR/PR at Table IV-14.

[146] CR/PR at Table VI-1.

[147] *See* CR/PR at Table V-4.

[148] The ratio of the volume of subject imports from Thailand to the volume of cumulated subject imports was 43.1 percent in 2015, 14.4 percent in 2016, and 27.4 percent in 2017; it was 30.0 percent in interim 2017 and 112.9 percent in interim 2018. Derived from CR/PR at Table IV-2. For pricing Product 2, U.S. shipments of subject imports from Thailand in 2016 and 2017 were smaller than those of cumulated subject imports. CR/PR at Table V-4.

[149] The domestic industry's average quarterly price for Product 2 declined from $*** per pound in the fourth quarter of 2016 to $*** per pound in the first quarter of 2017, and from $*** per pound in the fourth quarter of 2017 to $*** per pound in the first quarter of 2018. CR/PR at Table V-4.

E. Impact of the Subject Imports[150]

Section 771(7)(C)(iii) of the Tariff Act provides that examining the impact of subject imports, the Commission "shall evaluate all relevant economic factors which have a bearing on the state of the industry."[151] These factors include output, sales, inventories, capacity utilization, market share, employment, wages, productivity, gross profits, net profits, operating profits, cash flow, return on investment, return on capital, ability to raise capital, ability to service debts, research and development, and factors affecting domestic prices. No single factor is dispositive and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[152]

While a number of the domestic industry's performance indicators improved between 2015 and 2016, most of its indicators sharply declined in 2017 to well below 2015 levels. Thus, the industry experienced substantial declines between 2015 and 2017 in production, capacity utilization, net sales quantity, U.S. shipments, productivity, revenues, gross profits, operating income, and net income, while its ratio of COGS to net sales increased.[153] While the domestic industry's production and sales quantity indicators (production, capacity utilization, net sales quantity, U.S. shipments, and market share) were higher in interim 2018 than in interim 2017, its revenues were lower, its ratio of COGS to net sales was higher, and its financial performance in interim 2018 was accordingly worse than in interim 2017.[154]

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[150] The statute instructs the Commission to consider the "magnitude of the dumping margin" in an antidumping proceeding as part of its consideration of the impact of imports. 19 U.S.C. § 1677(7)(C)(iii)(V). In its final determination of sales at less value with respect to glycine from India, Commerce found dumping margins of 7.75 percent for Kumar Industries, India, 10.86 percent for Paras Intermediates Private Limited, and 9.31 percent for all other Indian producers and exporters. *Glycine from India: Final Determination of Sales at Less Than Fair Value*, 84 Fed. Reg. 18487, 18488 (May 1, 2019). In its final determination with respect to glycine from Japan, Commerce found dumping margins of 53.66 percent for Yuki Gosei Kogyo., Ltd., 86.22 percent for Showa Deno K.K., and 53.66 percent for all other Japanese producers and exporters. *Glycine from Japan: Final Determination of Sales at Less Than Fair Value*, 84 Fed. Reg. 18484, 18485 (May 1, 2019). We take into account in our analysis the fact that Commerce has made final findings that all subject producers in India and Japan are selling subject imports in the United States at less than fair value. In addition to this consideration, our impact analysis has considered other factors affecting domestic prices. Our analysis of the significant price effects of cumulated subject imports, described in both the price effects discussion and below, is particularly probative to an assessment of the impact of the cumulated subject imports.

[151] 19 U.S.C. § 1677(7)(C)(iii); *see also* SAA at 851 and 885 ("In material injury determinations, 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 also may demonstrate that an industry is facing difficulties from a variety of sources and is vulnerable to dumped or subsidized imports.").

[152] 19 U.S.C. § 1677(7)(C)(iii). This provision was amended by the Trade Preferences Extension Act of 2015, Pub. L. 114-27.

[153] CR/PR at Table C-1.

[154] CR/PR at Table C-1.

The domestic industry's capacity rose by *** percent between 2015 and 2017, increasing from *** pounds in 2015 to *** pounds in 2016 and 2017; it was *** pounds in interim 2017 and interim 2018.[155] Production declined by *** percent from 2015 to 2017, increasing from *** pounds in 2015 to *** pounds in 2016, and then declining to *** pounds in 2017; it was *** pounds in interim 2017 and higher, at *** pounds, in interim 2018.[156] Capacity utilization declined from *** percent in 2015 to *** percent in 2016 and *** percent in 2017; it was *** percent in interim 2017 and higher, at *** percent, in interim 2018.[157]

Net sales quantity declined by *** percent from 2015 to 2017, increasing from *** pounds in 2015 to *** pounds in 2016, and then falling to *** pounds in 2017; it was *** pounds in interim 2017 and higher, at *** pounds, in interim 2018.[158] U.S. shipments declined by *** percent from 2015 to 2017, falling from *** pounds in 2015 and 2016 to *** pounds in 2017; they were *** pounds in interim 2017 and higher, at *** pounds, in interim 2018.[159] The domestic industry's share of apparent U.S. consumption increased from *** percent in 2015 to *** percent in 2016, and then fell to *** percent in 2017; it was *** percent in interim 2017 and higher, at *** percent, in interim 2018.[160] Ending inventories declined by *** percent from 2015 to 2017, increasing from *** pounds in 2015 to *** pounds in 2016, and then falling to *** pounds in 2017; they were *** pounds in interim 2017 and lower, at *** pounds, in interim 2018.[161]

Trends in the industry's employment indicators were mixed over the POI. The number of production-related workers (PRWs) increased from *** PRWs in 2015 to *** PRWs in 2016, and then fell back to *** PRWs in 2017; there were *** PRWs in interim 2017 and interim 2018.[162] Hours worked fell by *** percent from 2015 to 2017, declining from *** hours in 2015 to *** hours in 2016 and 2017; there were *** hours worked in interim 2017 and more, at *** hours, in interim 2018.[163] Wages paid rose by *** percent from 2015 to 2017, increasing from $*** in 2015 and 2016 to $*** in 2017; they were $*** in interim 2017 and interim 2018.[164] Productivity declined by *** percent from 2015 to 2017, increasing (in pounds per hour) from *** in 2015 to *** in 2016, and then falling to *** in 2017; it was *** pounds per hour in interim 2017 and higher, at *** pounds per hour, in interim 2018.[165]

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[155] CR/PR at Tables III-5, C-1.

[156] CR/PR at Tables III-5, C-1.

[157] CR/PR at Tables III-5, C-1.

[158] CR/PR at Tables VI-1, C-1.

[159] CR/PR at Tables III-6, C-1.

[160] CR/PR at Tables IV-11, C-1. When calculated on the basis of net U.S. shipments of imports, the domestic industry's adjusted market share increased from *** percent in 2015 to *** percent in 2016, and then fell to *** percent in 2017; it was *** percent in interim 2017 and higher, at *** percent, in interim 2018. CR/PR at Table IV-14.

[161] CR/PR at Tables III-7, C-1.

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

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

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

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

The industry's financial performance worsened substantially over the POI. Revenues declined by *** percent from 2015 to 2017, increasing from $*** in 2015 to $*** in 2016, and then falling to $*** in 2017; they were $*** in interim 2017 and lower, at $***, in interim 2018.[166] Total COGS declined by *** percent from 2015 to 2017, declining from $*** in 2015 to $*** in 2016 and $*** in 2017; it was $*** in interim 2017 and higher, at $***, in interim 2018.[167] The industry's ratio of COGS to net sales fell from *** percent in 2015 to *** percent in 2016, and then increased to *** percent in 2017; it was *** percent in interim 2017 and higher, at *** percent, in interim 2018.[168] Gross profit declined by *** percent from 2015 to 2017, increasing from $*** in 2015 to $*** in 2016, and then falling to $*** in 2017; it was $*** in interim 2017 and lower, at $***, in interim 2018.[169]

Operating income declined by *** percent from 2015 to 2017, increasing from $*** in 2015 to $*** in 2016, and then falling to $*** in 2017; it was $*** in interim 2017 and a $*** in interim 2018.[170] The industry's operating income margin increased from *** percent in 2015 to *** percent in 2016, and then fell to *** percent in 2017; it was *** percent in interim 2017 and *** percent in interim 2018.[171] Net income fell from $*** in 2015 and 2016 to a $*** in 2017; it was a $*** in interim 2017 and a $*** in interim 2018.[172] Capital expenditures rose by *** percent between 2015 and 2017, increasing from $*** in 2015 to $*** in 2016 and $*** in 2017; they were $*** in interim 2017 and higher, at $***, in interim 2018.[173]

As described above, the volume of cumulated subject imports was significant in absolute terms, and relative to production and consumption in the United States. The cumulated subject imports significantly undersold the domestic like product and depressed prices for the domestic like product to a significant degree. This resulted in the domestic industry achieving lower revenues than it would have otherwise, particularly in 2017, when revenues declined in light of falling prices for USP-grade glycine, the predominant grade of domestically produced glycine.[174] The domestic industry's revenues declined by more than its COGS between 2015 and 2017, leading to a decline in its financial performance in 2017, and its lower revenues in conjunction with higher COGS in interim 2018 as compared to interim 2017 led to a further deterioration in the industry's financial performance in interim 2018.[175] Consequently, we find that cumulated subject imports had a significant impact on the domestic industry.

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[166] CR/PR at Tables VI-1, C-1.

[167] CR/PR at Tables VI-1, C-1.

[168] CR/PR at Tables VI-1, C-1. The industry's cash flow declined from $*** in 2015 and 2016 to $*** in 2017. It was $*** in interim 2017 and $*** in interim 2018. CR/PR at Table VI-1.

[169] CR/PR at Tables VI-1, C-1.

[170] CR/PR at Tables VI-1, C-1.

[171] CR/PR at Tables VI-1, C-1.

[172] CR/PR at Tables VI-1, C-1.

[173] CR/PR at Tables VI-5, C-1. The domestic industry incurred research and development ("R&D") expenses of *** throughout the POI. CR/PR at Table VI-5.

[174] CR/PR at Tables V-4, VI-1, C-1.

[175] CR/PR at Tables VI-1, C-1; CR at VI-8; PR at VI-5.

We have also considered whether there are other factors that may have had an adverse impact on the domestic industry during the period of investigation to ensure that we are not attributing injury from such other factors to the subject imports. We initially examine those imports that we have not cumulated. The volume of subject imports from Thailand declined by 30.2 percent between 2015 and 2017 and was much smaller than the volume of cumulated subject imports during this period, and accordingly cannot explain the decline in the domestic industry's prices and revenues between 2015 and 2017.[176] Nonsubject imports had a small and declining presence in the U.S. market during the POI, [177] and also cannot explain the decline in the domestic industry's prices and revenues.

We have also considered Japanese Respondents' argument that any harm to the domestic industry was due to supply constraints limiting its ability to supply U.S. glycine purchasers during the POI.[178] To the contrary, we have found above that the main adverse effects experienced by the domestic industry stem from declining domestic prices. Falling prices cannot be explained by – and are generally inconsistent with – supply constraints. In any event, the record suggests that the magnitude of any such constraints was limited inasmuch as the domestic industry's capacity utilization rate declined by *** percentage points between 2015 and 2017, indicating at least some idle U.S. capacity.[179] Japanese Respondents also assert that the decline in the domestic industry's financial performance was in large part a result of an increase in its selling, general, and administrative (SG&A) costs, in particular its legal expenses, and not related to subject imports.[180] However, the record indicates that the domestic industry's gross profit, which is calculated before SG&A expenses are subtracted to determine operating income, declined by *** percent between 2015 and 2017. [181] Thus, the decline in the domestic industry's prices and revenues as a result of low-priced cumulated subject imports led to a substantial decline in the industry's gross profits, irrespective of Japanese Respondents' claims regarding the industry's trends In SG&A expenses.

Accordingly, we conclude that cumulated subject imports had a significant impact on the domestic industry.

[176] Derived from CR/PR at Table IV-2.

[177] The market share of nonsubject imports declined from *** percent in 2015 to *** percent in 2016 and *** percent in 2017; it was *** percent in interim 2017 and lower, at *** percent, in interim 2018. CR/PR at Tables IV-11, C-1. When calculated on the basis of net U.S. shipments of imports, the adjusted market share of nonsubject imports declined from *** percent in 2015 to *** percent in 2016 and *** percent in 2017; it was *** percent in interim 2017 and lower, at *** percent, in interim 2018. CR/PR at Table IV-14.

[178] Japanese Respondents' Prehearing Brief at 14-21, 62-63.

[179] CR/PR at Tables III-4, C-1.

[180] Japanese Respondents' Prehearing Brief at 57-62.

[181] CR/PR at Tables VI-1, C-1.

VI. Conclusion

For the reasons stated above, we determine that an industry in the United States is materially injured by reason of subject imports of glycine from India and Japan that are sold in the United States at less than fair value and imports of the subject merchandise that are subsidized by the governments of China and India.

PART I: INTRODUCTION

BACKGROUND

These investigations result from petitions filed with the U.S. Department of Commerce ("Commerce") and the U.S. International Trade Commission ("USITC" or "Commission") by GEO Specialty Chemicals, Inc., ("GEO"), Lafayette, Indiana, and Chattem Chemicals Inc. ("Chattem"), Chattanooga, Tennessee on March 28, 2018, alleging that an industry in the United States is materially injured and threatened with material injury by reason of subsidized imports of glycine[1] from China, India, and Thailand, and imports of glycine at less-than-fair-value ("LTFV") from India, Japan, and Thailand. The following tabulation provides information relating to the background of these investigations.[2] [3]

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

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

[3] Appendix B of this report presents the witnesses appearing at the Commission's hearing.

Effective date	Action
March 28, 2018	Petition filed with Commerce and the Commission; institution of Commission investigations (83 FR 14291, April 3, 2018)
April 17, 2018	Commerce's notice of initiation (CVD investigations, China, India, and Thailand, 83 FR 18002, April 25, 2018; and AD investigations, India, Japan, and Thailand, 83 FR 17995, April 25, 2018)
May 14, 2018	Commission's preliminary determinations (83 FR 23300, May 18, 2018)
September 4, 2018	Commerce's preliminary CVD determinations for China (83 FR 44863, September 4, 2018), India (83 FR 44859, September 4, 2018), and Thailand (83 FR 44861, September, 4, 2018) and alignment of final determinations with final antidumping duty determinations
October 31, 2018	Commerce's preliminary AD determinations for India (83 FR 54713, October 31, 2018), Japan (83 FR 54718, October 31, 2018), and Thailand (83 FR 54717, October 31, 2018)
October 31, 2018	Scheduling of final phase of Commission investigations (83 FR 62345, December 3, 2018)
February 6, 2019	Revised schedule of final phase of Commission investigations (84 FR 3486, February 12, 2019)
April 30, 2019	Commission's hearing
May 1, 2019	Commerce's final affirmative CVD determinations for India (84 FR 18482, May 1, 2019) and China (84 FR 18489, May 1, 2019).
May 1, 2019	Commerce's final affirmative AD determinations for India (84 FR 18487, May 1, 2019) and Japan (84 FR 18484, May 1, 2019).
May 29, 2019	Commission's vote (China, India, and Japan)
June 14, 2019	Commission's views (China, India, and Japan)
TBD	Commerce has postponed its final AD and CVD determinations for Thailand until further notice. The final determinations in these investigations were previously scheduled for April 24, 2019. (*Memorandum for the Postponement of the Final Determinations in the Less-Than-Fair Value and Countervailing Duty Investigations of Glycine from Thailand,* Case A-549-837 and C-549-838, April 24, 2019).

STATUTORY CRITERIA AND ORGANIZATION OF THE REPORT

Statutory criteria

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

> *shall consider (I) the volume of imports of the subject merchandise, (II) the effect of imports of that merchandise on prices in the United States for domestic like products, and (III) the impact of imports of such merchandise on domestic producers of domestic like products, but only in the context of production operations within the United States; and. . . may consider such other economic factors as are relevant to the determination regarding whether there is material injury by reason of imports.*

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

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

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

effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the domestic like product, and (V) in {an antidumping investigation}, the magnitude of the margin of dumping.

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

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

Organization of report

Part I of this report presents information on the subject merchandise, subsidy/dumping margins, and domestic like product. *Part II* of this report presents information on conditions of competition and other relevant economic factors. *Part III* presents information on the condition of the U.S. industry, including data on capacity, production, shipments, inventories, and employment. *Parts IV* and *V* present the volume of subject imports and pricing of domestic and imported products, respectively. *Part VI* presents information on the financial experience of U.S. producers. *Part VII* presents the statutory requirements and information obtained for use in the Commission's consideration of the question of threat of material injury as well as information regarding nonsubject countries.

MARKET SUMMARY

Glycine, also known as aminoacetic acid, is an organic chemical with the formula NH_2CH_2COOH. Glycine is a nonessential amino acid that is produced naturally by humans and other organisms as a building block for proteins. Commercial production of glycine uses traditional chemical synthesis. Glycine is most commonly sold in its dry form as a white, free-flowing powder. Glycine is odorless and sweet to the taste.

There are two known U.S. producers of glycine: GEO and Chattem. GEO is the larger U.S. producer. Leading producers of glycine outside the United States include Hebei Donghua Yiheng Chemical Co., Ltd., Paras Intermediates Pvt Ltd., Showa Denko K.K., and Newtrend Food Ingredient (Thailand) Co. Ltd. The leading U.S. importers of glycine include ***, ***, ***, ***, and ***.

U.S. purchasers of glycine are distributors and end users that manufacture food products, personal care products, pet care products, semiconductors, and pharmaceutical products. Leading purchasers include ***.

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

Apparent U.S. consumption of glycine totaled approximately *** pounds ($***) in 2017. U.S. producers' U.S. shipments of glycine totaled *** pounds ($***) in 2017, and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value. U.S. imports from China, India, and Japan combined totaled 9.9 million pounds ($18.6 million) in 2017 and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value. U.S. imports from Thailand totaled 2.7 million pounds ($4.6 million), and accounted for *** percent of apparent consumption by quantity and *** percent by value. U.S. imports from all other sources totaled 174,000 pounds ($480,000) in 2017 and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value. With respect to U.S. imports from China and Thailand, petitioners contend that all subject glycine imports from Thailand should be reclassified by the Commission as subject imports from China, at least from September 24, 2017 forward, the period covered by CBP's enforcement measures.[6] In support of this contention, Petitioners point to CBP's Interim Measures decision, ***, and bills of lading of Newtrend U.S.A.'s purchases from Newtrend Thailand during these investigations.[7]

SUMMARY DATA AND DATA SOURCES

A summary of data collected in these investigations is presented in appendix C, table C-1. Except as noted, U.S. industry data are based on questionnaire responses of two firms that accounted for 100 percent of U.S. production of glycine during 2017.

Twenty-five U.S. importers submitted questionnaires, representing *** percent of imports from China;[8] *** percent of imports from India; *** percent of imports from Japan; and *** percent of imports from Thailand. In light of this coverage, U.S. imports are based on official import statistics.

Producers in the subject countries submitted six questionnaires accounting for *** percent of imports into the United States from China, *** percent from India, *** percent from Japan, and *** percent from Thailand.

PREVIOUS AND RELATED INVESTIGATIONS

Glycine has been the subject of prior antidumping duty investigations in the United States. In 1968, Chattem Drug and Chemical Co., the forerunner of today's Chattem, filed an antidumping petition against imports of glycine from Japan, France, the Federal Republic of Germany, and the Netherlands. The Department of Treasury found no sales at LTFV from the

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[6] U.S. Customs and Border Protection's Notice of Initiation and Interim Measures (EAPA Case No. 7270), February 28, 2019.

[7] Petitioners' posthearing brief, pp. 16-17.

[8] For the purposes of these investigations, staff allocated the import quantities from ***. See also U.S. Customs and Border Protection's Notice of Final Determination on July 2, 2018 (EAPA Case No. 7208) and U.S. Customs and Border Protection's Notice of Initiation and Interim Measures, (EAPA Case No. 7208), December 4, 2017.

Federal Republic of Germany or the Netherlands and issued a negative determination concerning Japan on the basis of the Japanese exporter's agreement to discontinue LTFV sales. Antidumping duties were imposed on imports of glycine from France following an affirmative injury determination by the Commission. That finding was revoked in 1979.[9]

In 1994, Hampshire Chemical Corp., a predecessor company of GEO, and Chattem filed an antidumping petition on imports of glycine from China. Following affirmative determinations by Commerce and the Commission, an antidumping duty order on imports of glycine from China was issued in March 1995.[10] The scope of the March 1995 AD determination on glycine from China stated that the "product covered by this proceeding is glycine which is a free flowing crystalline material, like salt or sugar. Glycine is produced at varying levels of purity and is used as a sweetener/taste enhancer, a buffering agent, reabsorbable amino acid, chemical intermediate, and a metal complexing agent. Glycine is currently classified under subheading 2922.49.4020 of the *Harmonized Tariff Schedule of the United States* (HTSUS). This proceeding includes glycine of all purity levels."[11] In a 2002 scope ruling, the Department of Commerce ("Commerce") determined that all glycine further processed or "purified" from Chinese-origin technical grade, or "crude," glycine in a third country and exported to the United States is subject to the antidumping duty order on glycine from China. In reaching its determination, Commerce stated that "glycine of Chinese origin that was refined and re-exported from South Korea which was then imported by Watson, was within the scope of the antidumping duty order; May 3, 2002."[12] There have been four five-year reviews of that order. In each, the Commission determined that revocation of the order would be likely to lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time[13] and, accordingly, Commerce published notices of continuation of the order.[14]

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[9] *Aminoacetic Acid (Glycine) from France, Inv. No. AA1921-61*, USITC Publication 313, February 1970, 34 FR 18559 (1969); 35 FR 4676 (1970); 35 FR 5009 (1970); 44 FR 12417 (1979).

[10] *Antidumping Duty Order: Glycine From the People's Republic of China*, 60 FR 16116, March 29, 1995.

[11] Ibid.

[12] *Notice of Scope Rulings and Anticircumvention Inquiries*, 68 FR 7773, February 18, 2003.

[13] *Glycine from China, Inv. No. 731-TA-718 (Review),* USITC Publication 3315, June 2000; *Glycine from China*, *Inv. No. 731-TA-718 (Second Review)*, USITC Publication 3810, October 2005; *Glycine from China*, *Inv. No. 731-TA-718 (Third Review),* USITC Publication 4255, August 2011; *Glycine from China, Inv. No. 731-TA-718 (Fourth Review),* USITC Publication 4667, February 2017.

[14] *Continuation of Antidumping Duty Order: Glycine from the People's Republic of China,* 65 FR 45752, July 25, 2000; *Glycine from the People's Republic of China; Continuation of Antidumping Duty Order*, 70 FR 69316, November 15, 2005; *Glycine From the People's Republic of China: Continuation of Antidumping Duty Order*, 76 FR 57951, September 19, 2011; and *Glycine From the People's Republic of China: Continuation of Antidumping Duty Order*, 82 FR 10745, February 15, 2017.

On March 30, 2007, GEO Specialty Chemicals, Inc. ("GEO") of Lafayette, Indiana, filed antidumping duty petitions alleging that an industry in the United States was materially injured and threatened with material injury by reason of LTFV imports of glycine from India, Japan, and Korea.[15] The Commission issued final negative determinations on imports from Japan, Korea,[16] and India.[17]

The antidumping duty order on glycine from China (A-570-836) has been the subject of circumvention inquiries and determinations by Commerce, the Commission, the Office of the U.S. Trade Representative, and U.S. Customs and Border Protection. On December 10, 2012, Commerce determined that two Indian companies – AICO Laboratories India Ltd. and Salvi Chemical Industries Limited -- engaged in circumvention of the order.[18] In its 2016 review of possible modifications to the Generalized System of Preferences, the Commission's report highlighted issues and comments regarding production and shipments of glycine, and as determined by U.S. Customs and Border Protection (CBP), transshipments.[19] On June 29, 2017, the Office of the U.S. Trade Representative announced that the President had removed glycine from eligibility for duty-free treatment for beneficiary developing countries under the Generalized System of Preferences.[20] On July 2, 2018, CBP determined under the Enforce and Protect Act that Ceka Nutrition Inc. "entered merchandise covered by antidumping duty order A-570-836 into the customs territory of the United States through evasion."[21]

On February 28, 2019, CBP issued a letter to parties regarding the initiation of a formal investigation of Newtrend USA Co., Ltd. under the Enforce and Protect Act to determine "whether Newtrend USA has evaded antidumping duty order A-570-836 by entering into the United States Chinese-origin glycine . . . that was transshipped through Thailand, without declaring the merchandise as subject to the Order" and issued an interim measures decision, determining that "evidence establishes a reasonable suspicion that Newtrend USA has entered

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[15] *Glycine from India, Japan, and The Republic of Korea: Initiation of Antidumping Duty Investigations*, 72 FR 20816, April 26, 2007.

[16] *Glycine from Japan and Korea, Determination*, 73 FR 3484, January 18, 2008.

[17] *Glycine from India, Determination*, 73 FR 26413, May 9, 2008.

[18] *Glycine From the People's Republic of China: Final Partial Affirmative Determination of Circumvention of the Antidumping Duty Order,* 77 FR 734426 (Department of Commerce), December 10, 2012.

[19] *Generalized System of Preferences: Possible Modifications, Inv. No. 332-560 (2016 Review),* USITC Publication 4692, June 2017, pp. 65-66. As also noted in the GSP review, a witness for GEO questioned production of glycine in Thailand, while a witness for Novus confirmed such production.

[20] *Results of the 2016/2017 Annual Generalized System of Preferences Review and Initiation of a Country Practice Review of Bolivia*, 82 FR 31793, 31794, July 10, 2016; *see also* Presidential Proclamation 9625, June 29, 2017.

[21] *See* Letter from Carrie L. Owens, U.S. Customs and Border Protection, *EAPA Case Number 7208,* Director of Enforcement Operations, Trade Remedy & Law Enforcement Directorate, Office of Trade to Charles Duan, President, Ceka Nutrition Inc., July 2, 2018.

covered merchandise into the United States through evasion . . ."[22] Since CBP acknowledged receipt of the properly filed allegation on September 24, 2018, CBP noted that entries covered by the allegation are those entered for consumption, or withdrawn from warehouse for consumption, from September 24, 2017, through the pendency of the investigations.[23] CBP is expected to issue its final determination by September 25, 2019, of whether "substantial evidence" exists that covered merchandise was entered into the United States through evasion.

NATURE AND EXTENT OF SUBSIDIES AND SALES AT LTFV

Subsidies

On May 1, 2019, Commerce published a notice in the *Federal Register* of its final determination of countervailable subsidies for producers and exporters of glycine from China.[24] Commerce's preliminary determination regarding countervailable subsidies for producers and exporters of glycine from China was published on September 4, 2018.[25] Table I-1 presents Commerce's findings of subsidization of glycine in China.

Table I-1
Glycine: Commerce's subsidy determination with respect to imports from China

Entity	Preliminary countervailable subsidy rate (percent)	Final countervailable subsidy rate (percent)
JC Chemicals Limited	144.01	144.01
Sigmachem Corp.	144.01	144.01
All others	144.01	144.01

Source: 83 FR 44863, September 4, 2018 and 84 FR 18489, May 1, 2019.

[22] *See* Letter from Marisa A. Hill, U.S. Customs and Border Protection, *EAPA Case Number 7270*, Acting Director, Enforcement Operations Division, Trade Remedy & Law Enforcement Directorate, Office of Trade to Hao Wang, Newtrend USA Co., Ltd., February 28, 2019.

[23] Ibid.

[24] *Glycine From the People's Republic of China: Final Affirmative Countervailing Duty Determination*, 84 FR 18489, May 1, 2019.

[25] *Glycine From the People's Republic of China: Preliminary Affirmative Countervailing Duty Determination*, 83 FR 44863, September 4, 2018.

Commerce determined all of the government programs identified below to be countervailable for imports from China:[26]

Program Name

1. Policy Loans to the Glycine Industry
2. Preferential Loans for State-Owned Enterprises (SOEs)
3. Export Loans from Chinese State-Owned Banks
4. Treasury Bond Loans
5. Preferential Lending to Glycine Producers and Exporters Classified as "Honorable Enterprises"
6. Loan or Interest Forgiveness for SOEs
7. Shandong Province Policy Loans
8. Jiangxi Province Preferential Lending
9. Income Tax Reduction for High or New Technology Enterprises (HNTEs)
10. Income Tax Deductions for Research and Development Expenses Under the Enterprise Income Tax Law
11. Income Tax Credits for Domestically-Owned Companies Purchasing Domestically-Produced Equipment
12. Reduction in or Exemption from Fixed Assets Investment Orientation Regulatory Tax
13. Reduced Income Tax Rate for HNTEs
14. Income Tax Benefits for Domestically-Owned Enterprises Engaging in R&D
15. Jiangxi Province Reduced Income Tax Rate for HNTEs
16. Import Tariff and VAT Exemptions for Foreign Invested Enterprises (FIEs) and Certain Domestic Enterprises Using Imported Equipment in Encouraged Industries
17. Provision of Land in Industrial Zones for Less Than Adequate Remuneration (LTAR)
18. Provision of Electricity for LTAR
19. Government of China and Sub-Central Government Subsidies for the Development of Famous Brands and China World Top Brands
20. Export Assistance Grants from Local Governments
21. Jiangxi Province Strategic Fund for Developing Strategic Emerging Industries

On May 1, 2019, Commerce published a notice in the Federal Register of its final determination of countervailable subsidies for producers and exporters of glycine from India.[27] Commerce published its Federal Register notice of preliminary determination of countervailable subsidies for producers and exporters of glycine from India on September 4, 2018.[28] Table I-2 presents Commerce's findings of subsidization of glycine in India.

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[26] *Glycine From the People's Republic of China: Final Affirmative Countervailing Duty Determination*, 84 FR 18489, May 1, 2019.

[27] *Countervailing Duty Investigation of Glycine From India: Affirmative Final Determination*, 84 FR 18482, May 1, 2019.

[28] *Glycine From India: Preliminary Affirmative Countervailing Duty Determination and Alignment of Final Determination With Final Antidumping Duty Determination*, 83 FR 44859, September 4, 2018.

Table I-2
Glycine: Commerce's subsidy determination with respect to imports from India

Entity	Preliminary countervailable subsidy rate (percent)	Final countervailable subsidy rate (percent)
Kumar Industries, India	26.07	6.99
Paras Intermediates Private Limited	3.03	3.03
All others	14.55	5.01

Source: 83 FR 44859, September 4, 2018 and 84 FR 18482, May 1, 2019.

Commerce determined all of the government programs identified below to be countervailable for India:[29]

Program Name

1. Export Promotion Capital Goods Scheme (EPCG)
2. Status Holder Incentive Scrip (SHIS)
3. Merchandise Export from India Scheme (MEIS)
4. Duty Drawback (DDB) Program
5. State Government of Gujarat (SGOG) Water Supply Program

Commerce preliminarily determined that producers and exporters in Thailand did not apply for or receive countervailable subsidies.[30] Commerce has postponed its final determinations on imports of glycine from Thailand.[31]

Sales at LTFV

On May 1, 2019, Commerce published notices in the *Federal Register* of its final determinations of sales at LTFV with respect to imports from India[32] and Japan.[33] Commerce published its preliminary determination *Federal Register* notice of sales at LTFV with respect to

[29] *Decision Memorandum for the Final Determination of the Countervailing Duty Investigation of Glycine from India*, Case C-533-884, April 24, 2019.

[30] *Glycine From Thailand: Preliminary Negative Countervailing Duty Determination, Preliminary Negative Critical Circumstances Determination, and Alignment of Final Determination With Final Antidumping Duty Determination*, 83 FR 44861, September 4, 2018. See also *Decision Memorandum for the Preliminary Negative Determination: Countervailing Duty Investigation of Glycine from Thailand*, Case C-549-838, August 27, 2018.

[31] See *Memorandum of Postponement of the Final Determinations in the Less-Than-Fair-Value and Countervailing Duty Investigations of Glycine from Thailand*, Cases A-549-837 and C-549-838, April 24, 2019.

[32] *Glycine From India: Final Determination of Sales at Less Than Fair Value,* 84 FR 18487, May 1, 2019.

[33] *Glycine From Japan: Final Determination of Sales at Less Than Fair Value*, 84 FR 18484, May 1, 2019.

imports from India[34] and Japan[35] on October 31, 2018. Commerce also preliminarily determined that imports of glycine from Thailand are not being or are not likely to be sold in the United States at LTFV, on October 31, 2018.[36] Commerce has postponed its final determinations on imports of glycine from Thailand.[37]

Tables I-3, I-4, and I-5 present Commerce's dumping margins with respect to imports of product from India, Japan, and Thailand.

Table I-3
Glycine: Commerce's weighted-average LTFV margins with respect to imports from India

Entity	Preliminary dumping margin (percent)	Cash deposit rate	Final dumping margin (percent)
Kumar Industries, India	80.49	77.87	7.75
Paras Intermediates Private Limited	10.86	8.24	10.86
All others	10.86	8.24	9.31

Source: 83 FR 54713, October 31, 2018 and 84 FR 18487, May 1, 2019.

Table I-4
Glycine: Commerce's weighted-average LTFV margins with respect to imports from Japan

Entity	Preliminary dumping margin (percent)	Final dumping margin (percent)
Yuki Gosei Kogyo Co., Ltd.	53.66	53.66
Showa Denko K.K.	86.22	86.22
All others	53.66	53.66

Source: 83 FR 54718, October 31, 2018 and 84 FR 18484, May 1, 2019.

Table I-5
Glycine: Commerce's weighted-average LTFV margin with respect to imports from Thailand

Entity	Preliminary dumping margin (percent)	Final dumping margin (percent)
Newtrend Food Ingredient (Thailand) Co. Ltd.	0.00	Pending

Source: 83 FR 54717, October 31, 2018.

[34] *Glycine From India: Preliminary Affirmative Determination of Sales at Less Than Fair Value, Postponement of Final Determination, and Extension of Provisional Measures*, 83 FR 54713, October 31, 2018.

[35] *Glycine From Japan: Preliminary Determination of Sales at Less Than Fair Value and Postponement of Final Determination*, 83 FR 54718, October 31, 2018.

[36] *Glycine From Thailand: Preliminary Determination of Sales at Not Less Than Fair Value, Preliminary Negative Determination of Critical Circumstances, Postponement of Final Determination*, 83 FR 54717, October 31, 2018.

[37] See *Memorandum of Postponement of the Final Determinations in the Less-Than-Fair-Value and Countervailing Duty Investigations of Glycine from Thailand*, Cases A-549-837 and C-549-838, April 24, 2019.

THE SUBJECT MERCHANDISE

Commerce's scope[38]

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

> *The merchandise covered by this investigation is glycine at any purity level or grade. This includes glycine of all purity levels, which covers all forms of crude or technical glycine including, but not limited to, sodium glycinate, glycine slurry and any other forms of amino acetic acid or glycine. Subject merchandise also includes glycine and precursors of dried crystalline glycine that are processed in a third country, including, but not limited to, refining or any other processing that would not otherwise remove the merchandise from the scope of this investigation if performed in the country of manufacture of the in-scope glycine or precursors of dried crystalline glycine. Glycine has the Chemical Abstracts Service (CAS) registry number of 56-40-6. Glycine and glycine slurry are classified under Harmonized Tariff Schedule of the United States (HTSUS) subheading 2922.49.43.00. Sodium glycinate is classified in the HTSUS under 2922.49.80.00. While the HTSUS subheadings and CAS registry number are provided for convenience and customs purposes, the written description of the scope of this investigation is dispositive.*

Tariff treatment

Based upon the scope set forth by the Department of Commerce, information available to the Commission indicates that the merchandise subject to these investigations—glycine at any purity level or grade, including glycine slurry—is provided for in subheading 2922.49.4300 of the Harmonized Tariff Schedule of the United States ("HTS").[39] The 2018 general rate of duty is 4.2 percent ad valorem. U.S. imports of glycine from China classified in HTS subheading 2922.49.4300 are subject to additional duties of 10 percent ad valorem under Section 301 of the Trade Act of 1974, effective September 24, 2018.[40] Glycine has the Chemical Abstracts

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[38] *Glycine From Japan: Final Determination of Sales at Less Than Fair Value,* 84 FR 18484, May 1, 2019; *Countervailing Duty Investigation of Glycine From India: Affirmative Final Determination,* 84 FR 18482, May 1, 2019; *Glycine From the People's Republic of China: Final Affirmative Countervailing Duty* Determination, 84 FR 18489, May 1, 2019.

[39] The import classification for glycine changed from HTS subheading 2922.49.4020 to HTS subheading 2922.49.4300 as of July 1, 2017, as a result of Presidential Proclamation 9625.

[40] As noted in Chapter 99 of the 2019 Basic Edition of the HTS, "For the purposes of heading 9903.88.03, products of China, as provided for in this note, shall be subject to an additional 10 percent ad valorem rate of duty. The products of China that are subject to an additional 10 percent ad valorem

(*continued*...)

Service (CAS) registry number of 56-40-6. Decisions on the tariff classification and treatment of imported goods are within the authority of U.S. Customs and Border Protection.

Commerce's scope also refers to precursors of dried crystalline glycine that are processed in a third country, including, but not limited to, refining or any other processing that would not otherwise remove the merchandise from the scope of the investigations if performed in the country of manufacture of the in-scope glycine or precursors of dried crystalline glycine. Sodium glycinate is classified under HTS subheading 2922.49.8000. Precursors of dried crystalline glycine, other than sodium glycinate, could be classified in various HTS subheadings depending on their chemical structure and essential character. While the HTSUS subheadings and CAS registry number are provided for convenience and customs purposes, the written description of the scope of these investigations is dispositive.

THE PRODUCT

Description and applications[41]

Glycine, also known as aminoacetic acid, is an organic chemical with the formula NH_2CH_2COOH. Glycine is a nonessential amino acid that is produced naturally by humans and other organisms as a building block for proteins.[42] Commercial production of glycine uses traditional chemical synthesis. Glycine is most commonly sold in its dry form as a white, free flowing powder. Glycine is odorless and sweet to the taste.

Glycine is typically sold as United States Pharmacopeial Convention ("USP") grade or technical grade.[43] As discussed more below, USP-grade glycine is typically used for pharmaceutical and food applications, while technical-grade glycine is used for industrial applications. Some customers' requirements for glycine purity exceed those of the USP

(…*continued*)
rate of duty under heading 9903.88.03 are products of China that are classified in the subheadings enumerated in U.S. note 20(f) to subchapter III. All products of China that are classified in the subheadings enumerated in U.S. note 20(f) to subchapter III are subject to the additional 10 percent ad valorem rate of duty imposed by heading 9903.88.03. Notwithstanding U.S. note 1 to this subchapter, all products of China that are subject to the additional 10 percent ad valorem rate of duty imposed by heading 9903.88.03 shall also be subject to the general rates of duty imposed on products of China classified in the subheadings enumerated in U.S. note 20(f) to subchapter III."

[41] Unless otherwise noted, this information is based on *Glycine from China, Inv. No. 731-TA-718 (Fourth Review)*, USITC Publication 4667, February 2017, pp. I-3 through I-4.

[42] Despite their name, nonessential amino acids are necessary for cell function. Nonessential amino acids are synthesized by the body, while essential amino acids must be furnished through the diet.

[43] The USP sets standards for medicines, food ingredients, and dietary supplements. Its standards are used in more than 140 countries, with its drug standards enforceable in the United States by the Food and Drug Administration. See http://www.usp.org/about/quality-policy-iso-accreditation, http://www.usp.org/about/legal-recognition, and http://www.usp.org/frequently-asked-questions/usp-and-its-standards (accessed April 16, 2018). Monographs for glycine have been published by both the USP and the European Pharmacopoeia.

standard. These higher purity products are used in certain specific applications (e.g., as an active pharmaceutical ingredient (API) in intravenous (IV) solutions—sometimes called pharmaceutical grade--and also in semiconductor manufacturing).[44]

Although technical, USP, and higher purity glycine are chemically identical, the grades differ by the kinds and amounts of impurities in the product. Whereas the USP-grade standard, for example, sets maximum allowable concentrations for impurities such as arsenic, heavy metals, and chlorides, standards for technical-grade glycine are either less strict or not specified. The purity standards for higher purity glycine used in semiconductor manufacturing are said to be set by individual customers, not by government or industry organizations; purity standards for glycine used as an API are set by the U.S. Food and Drug Administration (FDA) in the United States and the European Directorate for the Quality of Medicines & HealthCare (EDQM) in Europe.[45]

Glycine is used in various applications. Technical-grade glycine is used as a buffer in the production of foam rubber sponges, and as a starting material for producing other organic chemicals. Technical-grade glycine is also used in metal finishing to brighten metal surfaces or to enhance the adhesion of rubber to a surface.

USP-grade glycine is required for products made for human or animal consumption. It can be used as a sweetener and flavor enhancer in food, beverages, and pharmaceuticals (e.g., it is used to sweeten soft drinks, juice concentrates, and other beverages). Glycine also enhances the flavor of animal feeds for household pets and for livestock. Manufacturers of personal care products, such as mouthwash and toothpaste, use glycine to mask the bitter taste of some active ingredients.

USP-grade glycine can also be used as a buffering agent in certain products and manufacturing processes to maintain a stable pH. For example, when used in in antacids and analgesics, it helps reduce the acidity of the digestive tract; when used in personal care products (such as antiperspirants and cosmetics), it reduces the acidity of the other ingredients. USP-grade glycine is also typically used in the production of other amino acids and pharmaceuticals. Pharmaceutical manufacturers use USP-grade glycine to promote the gastric absorption of certain drugs such as aspirin and to treat diarrhea in humans and animals. For example, USP-grade glycine USP can be used as an inactive ingredient in pharmaceutical formulations (e.g., it can be used as an excipient in vaccines).[46] The FDA maintains a list of

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[44] Glycine is sold in various grades under various names but there does not seem to be an industry-wide consensus on the names of the grades. Many agree on the terms "technical" (e.g., glycine used in industrial applications) and "USP-grade" (e.g., glycine used as a sweetener or flavor enhancer in foods and pharmaceuticals). There is also a higher-purity grade ("ultra-pure") used as either an API (sometimes called "pharmaceutical grade"; "USP-NF pharmaceutical grade"; or "IV-grade") or in the manufacture of semiconductors. Hearing transcript, pp. 22-23 and 64-65 (Petitioners); and hearing transcript, p. 140 (Respondents)).

[45] Respondent Yuki's prehearing brief, pp. 11 and 27; ***.

[46] An active ingredient in any formulated drug is the product that produces the desired medical effect while an inactive ingredient is a product that is used as an excipient (e.g., a binder used in creating tablets would be an inactive ingredient, as would a preservative or stabilizer). The U.S. Centers for

(*continued*...)

inactive ingredients to be used in approved drug products; numerous formulations of glycine are shown on the list, including injection solutions of various concentrations.[47]

Glycine can also be used as the active pharmaceutical ingredient (API) in certain products intended to be administered intravenously. A 1.5% Glycine Irrigation, USP, solution is used for urologic irrigation during certain surgical procedures; the drug information mentions that the solution is not intended for injection via the "usual parenteral routes."[48] Chattem and GEO both have active Drug Master Files (DMFs) with the FDA for API-grade glycine; GEO also has an EDQM certification.[49] A European Pharmacopoeia monograph on glycine (monograph no. 614) found on the EDQM "Knowledge Database" indicates that four companies, including GEO Specialty Chemicals, hold a certificate of suitability for glycine, indicating that their glycine meets the standards presented in Monograph 614 for glycine.[50] Petitioner states that "Chattem has been manufacturing and selling in the U.S. market IV-grade and semiconductor-grade (CMP slurry) glycine for a decade."[51] Respondent notes that Ajinomoto Health and Nutrition North America, Inc. uses Chattem's pharmaceutical grade "for U.S. amino acid solutions employed in U.S. IV solutions for use in U.S. patients . . ." but adds that Chattem's product cannot be used for IV solutions used overseas in markets subject to EDQM specifications.[52] Respondent also states that GEO's glycine contains too much aluminum to be used in IV solutions.[53] Respondent notes that ***.[54]

Very high purity glycine is also used in semiconductor manufacturing. Chemical mechanical polishing (CMP) is a polishing process that extends and enhances lines on

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(…*continued*)
Disease Control and Prevention (CDC) and the FDA note that glycine is added to some vaccines as a stabilizer. CDC, "Vaccines & Immunizations: Ingredients of Vaccines - Fact Sheet," July 12, 2018 https://www.cdc.gov/vaccines/vac-gen/additives.htm; FDA, "Common Ingredients in U.S. Licensed Vaccines," April 30, 2018, https://www.fda.gov/vaccines-blood-biologics/safety-availability-biologics/common-ingredients-us-licensed-vaccines.

[47] U.S. Food and Drug Administration (FDA), "Inactive Ingredient Search for Approved Drug Products," database Last Updated January 16, 2019. https://www.accessdata.fda.gov/scripts/cder/iig/index.cfm?event=browseByLetter.page&Letter=G

[48] Drugs.com, "Glycine," October 2004 https://www.drugs.com/pro/glycine.html. The term "parenteral" means a pharmaceutical that is administered by a route other than oral or rectal (i.e., administration bypasses the intestine).

[49] Petitioners' posthearing brief, p. 95.

[50] EDQM, "Knowledge Database," https://extranet.edqm.eu/4DLink1/4DCGI/Web_View/mono/614. The monograph notes that GEO Specialty Chemicals was granted the certificate of suitability on March 20, 2018. As indicated in the monograph, GEO is the only U.S. company granted a certificate of suitability. The other three certified manufacturers are Evonik Rexim (Nanning), AMINO GmbH DE, and Yuki Gosei Kogyo Co., Ltd.

[51] Petitioners' posthearing brief, p. 108.

[52] Respondent Yuki's prehearing brief, p. 2.

[53] Respondent Yuki's prehearing brief, p. 5.

[54] Respondent Yuki's prehearing brief, p. 27.

semiconductors. Glycine is an ingredient in CMP slurries.[55] Respondent states that Chattem's "technical grade low-impurity glycine" is similar to the product used in CMP slurries.[56]

Glycine is typically packaged and sold in plastic bags weighing 50 to 200 pounds or in super sacks weighing up to 2,000 pounds. These bags and super sacks are placed on pallets and shipped by truck. Each package of glycine is accompanied by a certificate of analysis that states the levels of moisture and impurities in the product.

Manufacturing processes

There are two known processes for the commercial production of glycine: the hydrogen cyanide ("HCN") process and the monochloroacetic acid ("MCA") process. Both of these processes can be used to produce both technical and USP grades of glycine. Among U.S. producers, GEO uses the HCN process and Chattem Chemicals, Inc. ("Chattem") uses the MCA process. Most glycine producers in the subject countries use the MCA process.

The HCN process uses hydrogen cyanide and formaldehyde (CH_2O) as the primary starting materials. These chemicals are mixed with aqueous ammonia (NH_4OH) in the first reaction step of the process. The reaction product from this first step is then reacted with caustic soda (NaOH) to produce sodium glycinate. Glycine is produced when an acid, such as sulfuric acid, is mixed with sodium glycinate. The glycine solution then goes through one or more crystallization and filtration steps to produce a pure white glycine powder.

For the MCA process, the primary feedstocks are monochloroacetic acid ($ClCH_2COOH$) and ammonia. These feedstocks are mixed together in the presence of a catalyst to produce glycine. The MCA process is typically characterized by higher operating costs due to higher raw material and energy costs.

DOMESTIC LIKE PRODUCT ISSUES

In the preliminary phase of these investigations, petitioners argued that the Commission should find a single domestic like product coextensive with Commerce's scope, asserting that the Commission generally does not find differing grades of a product to constitute more than one like product.[57] Respondents did not object to petitioners' proposal.

In the preliminary phase of these investigations, the Commission concluded, under its traditional six-factor analysis, that because all grades of glycine have common physical characteristics and end uses, share common channels of distribution, and generally share common production processes, facilities, and employees, all grades of glycine are encompassed in a single domestic like product.[58] It also found that, under the five-factor semifinished product

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[55] Hearing transcript, p. 133 (Matsui).

[56] Respondent Yuki's prehearing brief, p. 2. Petitioner states that Chattem has been manufacturing and selling in the U.S. market ***. Petitioners' posthearing brief, p. 108.

[57] Petition, p. 8.

[58] *Glycine from China, India, Japan, and Thailand, Inv. Nos. 701-TA-603-605 and 731-TA-1413-1415 (Preliminary),* USITC Publication 4786, May 2018, pp. 4-9.

analysis, sodium glycinate and glycine slurry are not distinct domestic like products from glycine, given their dedication to production of glycine, the absence of a separate market for those upstream products, and the relatively small cost of converting sodium glycinate and slurry into glycine.[59] Accordingly, the Commission defined a single domestic like product coextensive with the scope.

No party requested that the Commission collect additional information regarding other proposed domestic like products in their comments on draft questionnaires in the final phase of these investigations. However, in pre-and posthearing briefs, respondents argued that dual-certified glycine (by the "FDA"and the "EDQM") for use in intravenous (IV) therapy solutions and glycine for use in semiconductors should be treated as separate domestic like products.[60] Respondents argue that there is no domestic product that is completely "like" imported dual-certified glycine for use in IV solutions because no U.S. producer manufactures the product. According to the respondents, the most similar domestic product is Chattem's FDA-certified glycine, which they state is similar in terms of characteristics but lacks EDQM certification and therefore cannot be used in IV solutions for sale in markets adhering to EDQM standards.[61] Regarding glycine for use in semiconductor applications, respondents also argued that high quality, ultra-pure form of glycine that is uniquely suited for use in semiconductors has distinct characteristics, uses, channels of distribution, manufacturing processes, customers and pricing. Respondents argue that the domestic product most similar to imported glycine for use in semiconductor applications is technical grade, low impurity glycine produced by Chattem.[62]

Petitioners contend that the domestic like product is "glycine at any purity level or grade," as defined by Commerce's scope[63] and because no clear dividing line exists between each grade of glycine, the Commission should continue to define "a single domestic like product coextensive with the scope" in the final phase. Petitioners add that under the traditional six factors, all glycine, regardless of grade, has the same chemical structure, each of the producers use the same production process, facilities and employees for all grades of glycine, and the channels of distribution are similar for all domestically produced glycine.[64] Petitioners also contended that respondents' arguments are largely premised on the basis that the domestic industry does not produce either the dual certified IV-grade glycine or the glycine slurry used in semiconductor applications, which the petitioners contend they demonstrated to the contrary.[65] According to the petitioners, "glycine is glycine is glycine."[66]

[59] Ibid.
[60] Respondent Yuki's prehearing brief, pp. 4-13 and respondents' posthearing brief, p. 2.
[61] Respondent Yuki's posthearing brief, pp. 1-2.
[62] Respondent Yuki's posthearing brief, p. 2.
[63] Petitioners' prehearing brief, pp. 9-10.
[64] Petitioners' posthearing brief, exh. 1, pp. 1-11.
[65] Petitioners' posthearing brief, p. 11.
[66] Petitioners' prehearing brief, pp. 10-11.

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

U.S. MARKET CHARACTERISTICS

Glycine is typically an odorless, white material that is sweet to the taste, with the appearance of salt or sugar and is normally sold in its dried form.[1] Glycine is largely used as an input in downstream products, such as pharmaceuticals, dietary supplements, sweeteners or flavor enhancers, reabsorbable amino acid, chemical intermediaries, or as a metal complexing, buffering, or finishing agent.[2]

Most glycine sold in the United States is USP grade, with smaller shares sold of the technical grade and to a lesser extent pharmaceutical grade, and limited precursor sales.[3] The glycine grades are chemically identical, but have varying purity levels, with pharmaceutical-grade glycine having the highest purity levels and technical-grade glycine having the lowest purity levels.[4] A higher grade of glycine can be used in a lower-grade application. While downselling pharmaceutical-grade glycine is not economically feasible, due to the costs of testing and certifications, it is often feasible for USP-grade glycine to be sold for technical-grade applications.[5] [6]

Apparent U.S. consumption of glycine fluctuated during January 2015-September 2018. Overall, apparent U.S. consumption in 2017 was *** percent lower than in 2015, and *** percent lower in January-September 2018 than in January-September 2017.

U.S. PURCHASERS

Purchasers of glycine are primarily in the food and personal care products industries, pharmaceutical industry, and in the general manufacturing sector. According to petitioners, the glycine market is dominated by a handful of large customers with a large degree of purchasing power over suppliers.[7] [8]

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[1] Petition, p. 7.

[2] Petition, pp. 12-14.

[3] For additional information, see Parts III and IV.

[4] Petition, pp. 9-10, 11.

[5] Petitioners' postconference brief, Answers to Staff Questions, pp. 12-13, 22.

[6] Both U.S. producers and one U.S. importer (***) reported U.S. shipments of pharmaceutical-grade glycine. U.S. producer *** reported that ***. U.S. importer *** reported that its pharmaceutical-grade glycine was used for *** in the pharmaceutical industry. Another importer (***) reported use of pharmaceutical-grade product for ***, but reported no import shipments of pharmaceutical-grade during January 2015-September 2018. U.S. producers reported packaging their pharmaceutical-grade glycine in fiber and cardboard drums, and plastic sacks.

[7] Conference transcript, p. 21 (Hughes).

[8] The largest responding purchasers of glycine were ***, in order of size of reported imports and purchases.

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The Commission received 39 usable questionnaire responses from firms that had purchased glycine since January 2015.[9] Fifteen responding purchasers are distributors, 10 are end users producing food products (either for humans or animals), 6 are end users producing personal hygiene products, 5 are end users producing industrial products, 5 are end users producing pharmaceutical products, and 3 describe themselves as "other" end users (e.g., manufacturers of mixtures and slurries used by the semiconductor industry, and one other manufacturer).[10] In general, responding U.S. purchasers were located in the Midwest, the Pacific Coast, and the Northeast regions. The responding purchasers represented firms in a variety of domestic industries, including food and personal care products, pet care, pharmaceuticals, and in general, the manufacturing sector.

CHANNELS OF DISTRIBUTION

U.S. producers and importers of product from Japan sold mainly to end users while importers of product from China and Thailand sold mainly to distributors (table II-1). A majority of imports from India were to end users in 2015 and to distributors in 2016 and 2017.

Table II-1
Glycine: U.S. producers' and importers' U.S. shipments, by sources and channels of distribution, 2015-17, January to September 2017, and January to September 2018

* * * * * * *

GEOGRAPHIC DISTRIBUTION

U.S. producers reported selling glycine to all regions in the United States, *** (table II-2). Imports from India, Japan, and Thailand were reported to be sold to each U.S. region; however, only six of 21 importers reported selling to all regions. For U.S. producers, *** percent of sales were within 100 miles of their production facility, *** percent were between 101 and 1,000 miles, and *** percent were over 1,000 miles. Importers sold 14 percent within 100 miles of their U.S. point of shipment, 56 percent between 101 and 1,000 miles, and 30 percent over 1,000 miles.

[9] Of the 39 responding purchasers, 27 purchased domestic glycine, 7 purchased imports from China, 18 purchased imports from India, 10 purchased imports from Japan, 21 purchased imports from Thailand, and 4 purchased imports from other sources. These numbers include firms that imported glycine directly and/or purchased glycine from an importer.

[10] Some responding purchasers operate as both distributors and end users of glycine.

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Table II-2
Glycine: Geographic market areas in the United States served by U.S. producers and importers

Region	U.S. producers	U.S. importers			
		China	India	Japan	Thailand
Northeast	***	***	7	4	2
Midwest	***	***	5	8	1
Southeast	***	***	4	4	1
Central Southwest	***	***	3	4	1
Mountains	***	***	3	7	1
Pacific Coast	***	***	4	4	1
Other[1]	***	***	---	2	---
All regions (except Other)	***	***	2	3	1
Reporting firms	2	1	9	9	2

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

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

SUPPLY AND DEMAND CONSIDERATIONS

U.S. supply

Table II-3 provides a summary of the supply factors regarding glycine from U.S. producers and from India, Japan, and Thailand. No data were reported by producers in China. Reported capacity remained constant during 2015-17 in Japan and Thailand, and increased slightly in the United States and India. Capacity utilization declined from 2015 to 2017 in the United States and India, as well as in Japan to a lesser extent; and increased in Thailand. The majority of shipments in the United States and Japan were for their respective home markets.[11] India and Thailand exported the majority of their glycine, and the United States was the largest export market for both countries.

Table II-3
Glycine: Supply factors that affect the ability to increase shipments to the U.S. market

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Domestic production

Based on available information, U.S. producers of glycine have the ability to respond to changes in demand with large changes in the quantity of shipments of U.S.-produced glycine to the U.S. market. The main contributing factor to this degree of responsiveness of supply is the

[11] A not insubstantial volume of Japanese industry shipments is ultimately exported ***.

availability of unused capacity. Factors mitigating responsiveness of supply include limited ability to shift shipments from alternate markets, and an inability to shift production to or from alternate products. U.S. producers reported that they cannot produce other products on the same equipment as glycine.

Glycine imports from China

The Commission received no questionnaire responses from Chinese producers.

Glycine imports from India

Based on available information, responding producers of glycine from India have the ability to respond to changes in demand with large changes in the quantity of shipments of glycine to the U.S. market. The main contributing factor to this degree of responsiveness of supply is the availability of unused capacity. Factors mitigating responsiveness of supply include limited ability to shift shipments from alternate markets, limited inventories, and an inability by most responding Indian producers to shift production to or from alternate products.

Glycine imports from Japan

Based on available information, responding producers of glycine from Japan have the ability to respond to changes in demand with moderate changes in the quantity of shipments of glycine to the U.S. market. The main contributing factors to this degree of responsiveness of supply are the large overall capacity, the availability of inventories, and some ability to shift shipments from alternate markets. Factors mitigating responsiveness of supply include high capacity utilization and inability to shift production to or from alternate products.

Glycine imports from Thailand

Based on available information, producers of glycine from Thailand have the ability to respond to changes in demand with large changes in the quantity of shipments of glycine to the U.S. market. The main contributing factors to this degree of responsiveness of supply are the availability of unused capacity and an ability to shift shipments from alternate markets.

Imports from all other sources

Imports from countries other than China, India, Japan and Thailand accounted for 1.4 percent of total U.S. imports in 2017. The largest source of such imports was Germany, which accounted for 1.1 percent of imports from all other sources in 2017.

Supply constraints

*** reported no supply constraints since January 1, 2015. U.S. producer *** stated that it was able to supply all “contracted customers.” GEO stated that spot market customers are

now turning to the domestic market to fill orders that suppliers of "transshipped material" can no longer fulfill after the imposition of AD/CVD orders.[12] Five of 24 importers reported experiencing supply shortages. Two importers mentioned domestic producers not being able to meet demand while one noted issues with consistent supply from abroad due to lack of production capacity. U.S. producer Chattem stated that it has at least one million pounds of unused capacity.[13]

Twenty-six of 39 purchasers reported that a domestic or import supplier had refused, denied, or been unable to supply glycine since January 1, 2015, with six purchasers noting supply constraints faced by U.S. producer ***. GEO acknowledged the need for imports as U.S. production cannot currently meet domestic demand.[14] Four purchasers noted *** had been unable to fulfill orders while one noted an order was delayed. One purchaser noted a shortage of material sourced from Thailand, another noted the "Japanese were no longer interested in supplying the U.S. market as of 2019", and one simply noted supply constraints from India. Purchaser *** reported that ***.

New suppliers

Nine of 38 purchasers indicated that new suppliers entered the U.S. market since January 1, 2015. Purchasers cited Newtrend as a new entrant.[15]

U.S. demand

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

End uses and cost share

U.S. demand for glycine depends on the demand for U.S.-produced downstream products. Reported end uses include electronic/metal cleaners, industrial mixtures and slurries, nutritional supplements, personal care products, pet food/livestock feed, and pharmaceutical products (e.g., intravenous solutions). [16] [17]

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[12] Hearing transcript, p. 44 (Hughes).

[13] Hearing transcript, p. 45 (Allen); p. 52 (Allen).

[14] Hearing transcript, p. 61 (Ghazey).

[15] According to its website, Newtrend Group was founded in Shenzhen City, China in 2001. Its primary products include sucralose, glycine, sodium sulfite, and calcium chloride. Newtrend, "About Us," http://www.newtrend-group.com/en/about.aspx?C=0101, retrieved April 2, 2019. Newtrend Food Ingredient (Thailand) Co., Ltd.is a subsidiary of Newtrend Group. According to its website, its glycine facility in Thailand has been operating since 2014. Newtrend Food ingredient, "About Us," http://newtrend-th.com/about-us/, retrieved April 2, 2019.

[16] Two purchasers, *** and ***, reported purchases of injectable-grade glycine.

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Glycine accounts for a small share of the cost of the end-use products in which it is used. Reported cost shares for some end uses were as follows:

- Agricultural products (4 percent);
- Animal feed (30 percent);
- Cell culture media (1 percent);
- Electronics polishing slurry (10-20 percent);
- Electroplating (4-20 percent);
- Industrial mixtures and slurries (4-20 percent);
- Intravenous solutions (10 percent);
- Nutritional supplements (0-66 percent); and
- Pet food (0-1 percent).

Business cycles

Most responding firms (both U.S. producers, 18 of 21 importers, and 34 of 38 purchasers) reported that the glycine market was not subject to business cycles or distinct conditions of competition. U.S. producer *** reported that the agricultural sector experiences seasonality but that the remainder of the market does not.

Demand trends

Firms' responses regarding demand trends since 2015 were mixed (table II-4). U.S. producer *** reported *** U.S. demand citing ***, and U.S. producer *** reported *** demand citing ***. Most importers and purchasers reported no change in U.S. demand for glycine and pluralities of importers and purchasers reported no change in demand for glycine outside the United States, since January 1, 2015, although eight purchasers reported an increase in U.S. demand (table II-4).

(…*continued*)

[17] Petition, pp. 12-14; Conference transcript, p. 19 (Lang), p. 21 (Hughes).

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Table II-4
Glycine: Firms' responses regarding U.S. demand and demand outside the United States

Item	Number of firms reporting			
	Increase	No change	Decrease	Fluctuate
Demand in the United States				
U.S. producers	***	***	***	***
Importers	1	9	1	4
Purchasers	8	14	3	2
Demand outside the United States				
U.S. producers	***	***	***	***
Importers	1	4	1	2
Purchasers	6	10	2	2

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

Substitute products

Both U.S. producers, all 24 responding importers, and the vast majority of purchasers (35 of 37) reported that there were no substitutes for glycine.

SUBSTITUTABILITY ISSUES

The degree of substitution between domestic and imported glycine depends upon such factors as relative prices, quality (e.g., grade standards, defect rates, etc.), and conditions of sale (e.g., price discounts/rebates, lead times between order and delivery dates, reliability of supply, product services, etc.). Based on available data, staff believes that there is a high degree of substitutability between domestically produced glycine and glycine imported from China, India, Japan, and Thailand.[18]

Lead times

Glycine is primarily sold from inventories. U.S. producers reported that *** percent of their commercial shipments were shipped from inventories, with lead times averaging *** days. The remaining *** percent of their commercial shipments were produced-to-order, with lead times averaging *** days. U.S. importers reported that 37 percent were produced-to-order and 37 percent of their commercial shipments were shipped from U.S. inventories, with lead times averaging 54 days and 8 days, respectively. The remaining 26 percent of U.S. importers' commercial shipments were shipped from foreign inventories, with lead times averaging 51 days.

[18] Even with respect to certification, the majority of purchasers reported that glycine produced domestically and glycine imported from China, India, Japan, and Thailand were comparable with regards to having FDA and EDQM certification.

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Petitioners stated that some customers can accept long lead times, while others require shipment as soon as possible. They stated that depending on contractual commitments and inventories, they may only be able to offer lead times of four to six weeks for spot orders.[19]

Knowledge of country sources

Thirty-three purchasers indicated they had marketing/pricing knowledge of domestic product, 9 of Chinese glycine, 18 of Indian product, 15 of Japanese product, 17 of product from Thailand, and one of product from other sources.

As shown in table II-5, purchasers are more likely to make purchasing decisions based on the producer than country-of-origin. Twenty-one of 39 purchasers reported that they "always" or "usually" make purchasing decisions for glycine based on the producer, whereas the majority reported they "sometimes" or "never" make purchasing decisions based on the country-of-origin. The majority of purchasers reported that their customers "sometimes" or "never" make purchasing decisions based on the producer or country-of-origin.

Table II-5
Glycine: Purchasing decisions based on producer and country-of-origin

Decision	Always	Usually	Sometimes	Never
Purchases based on producer:				
Purchaser's decision	14	7	7	11
Purchaser's customer's decision	8	2	3	13
Purchases based on country-of-origin:				
Purchaser's decision	10	7	6	16
Purchaser's customer's decision	6	2	4	13

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

Factors affecting purchasing decisions

The most often cited top three factors firms consider in their purchasing decisions for glycine were price (34 firms), quality (33 firms), and availability/supply (28 firms), as shown in table II-6. Quality was the most frequently cited first-most important factor (cited by 26 firms), availability/supply was the most frequently reported second-most important factors (17 firms); and price/cost was the most frequently reported third-most important factor (16 firms).

[19] Petitioners' postconference brief, Answers to Staff Questions, p. 5.

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Table II-6
Glycine: Ranking of factors used in purchasing decisions as reported by U.S. purchasers, by factor

Item	1st	2nd	3rd	Total
	Number of firms (number)			
Quality	26	5	2	33
Availability / Supply	2	17	9	28
Price / Cost	8	11	16	34
All other factors[1]	3	4	7	NA

[1] Other factors include reliability, country-of-origin, and delivery time.

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

The majority of purchasers (26 of 39) reported that they either sometimes or never purchase the lowest-priced product. Seventeen purchasers reported that they sometimes purchase the lowest-priced product and nine reported that they never purchase the lowest-priced product. Five purchasers reported that they always purchase the lowest-priced product and eight reported that they usually purchase the lowest priced product.

Importance of specified purchase factors

Purchasers were asked to rate the importance of 20 factors in their purchasing decisions (table II-7). The factors rated as very important by more than half of responding purchasers were availability (37), product consistency (36), reliability of supply (35), purity (34), price (27), delivery time and qualification as USP grade (23 each), certification (FDA) (22), and prior antidumping duty orders (19).

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Table II-7
Glycine: Importance of purchase factors, as reported by U.S. purchasers, by factor

Factor	Number of firms reporting		
	Very important	Somewhat important	Not important
Antidumping duty orders (prior)	19	11	7
Availability	37	1	---
Certification (FDA)	22	3	12
Certification (EQDM)	9	7	16
Delivery terms	16	22	---
Delivery time	23	15	---
Discounts offered	8	18	12
Extension of credit	8	21	9
Injectability	3	2	32
Minimum quantity requirements	7	20	11
Packaging	11	21	6
Price	27	10	---
Product consistency	36	2	---
Product range	4	16	16
Purity	34	4	---
Qualification as USP grade	23	7	7
Qualification(s) beyond USP grade	9	6	21
Reliability of supply	35	2	---
Technical support/service	15	18	4
U.S. transportation costs	12	23	4

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

Supplier certification

The majority of purchasers (35 of 39) require their suppliers to become certified or qualified to sell glycine to their firm. Ten purchasers reported that it took 30 days or less to qualify a new supplier, seven reported that it took 31 days to 90 days, ten reported it took 91 to 180 days, five reported that it took 181 days to 365 days, and one purchaser reported that the time to qualify ranged from 366 days to 730 days. Some of the largest purchasers such as *** reported qualification times of 180 days or longer and require product testing to make sure specifications and purity level requirements of their own or of their customers are met. The majority (35 of 39) of purchasers reported that no domestic or foreign suppliers had failed in its attempt to qualify glycine, or had lost its approved status since 2015. Of the five that reported failures to certify suppliers, *** reported that it did not qualify a distributor (***) because it could not meet quality specifications. Purchaser *** discontinued use of an Indian supplier due to *** and failed to certify *** because ***.

Petitioners stated that *** and both meet customer requirements. Both U.S. producers adhere to the FDA standards, hold certifications from the U.S. and European Pharmacopeia,

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and are Kosher and Halal certified.[20] Glycine for pharmaceutical use in the EU requires a Certificate of Suitability ("CEP"), which is important for customers that want to export their end-use products; U.S. producer GEO has this certification.[21] Respondents stated that U.S. producers failed to produce glycine that met customers' purity requirements for use in semiconductor applications or IV pharmaceutical applications.[22]

Changes in purchasing patterns

Purchasers were asked about changes in their purchasing patterns from different sources since 2015 (table II-8); reasons reported for changes in sourcing included price, quality, availability, and securing an alternative source of supply. Twenty of 39 responding purchasers reported that they had changed suppliers since January 1, 2015. Specifically, a plurality of firms dropped or reduced purchases from China and India, with price, availability, and quality being the most reported reasons for shifting purchases. Firms added or increased purchases from Japan and Thailand because of price, quality, availability, and stricter product requirements/qualifications.[23] An equal number of firms reported increasing or decreasing their purchases of glycine produced in the United States.

Table II-8
Glycine: Changes in purchase patterns from U.S., China, India, Japan, Thailand, and all other sources

Source of purchases	Did not purchase	Decreased	Increased	Constant	Fluctuated
United States	9	10	10	4	4
China	24	5	---	1	1
India	13	8	6	---	5
Japan	21	1	4	3	2
Thailand	11	3	10	---	7
All other sources	23	---	---	1	1
Sources unknown	21	---	---	---	1

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

Importance of purchasing domestic product

Thirty-three of 38 purchasers (accounting for 94 percent of total reported purchases) reported that most or all of their purchases did not require purchasing U.S.-produced product.

[20] Petitioners' postconference brief, Answers to Staff Questions, p. 1.

[21] Respondents' postconference brief, Exhibit 1, p. 3; Petitioners' postconference brief, Answers to Staff Questions, p. 1.

[22] Hearing transcript, p.149 (Maruyama).

[23] Purchaser and importer Ajinomoto stated that neither of the domestic producers satisfied its four quality and product requirements: FDA certification, EDQM certification, customer qualification, and "extremely low" trace minerals, especially aluminum. Hearing transcript, p. 162 (Lish).

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No purchasers reported that domestic product was required by law, seven reported it was required by their customers (accounting for 2.7 percent of total reported purchases), and four reported other preferences for domestic product (e.g. qualified sources).

Comparisons of domestic products, imports from China, India, Japan, Thailand, and all other imports

Purchasers were asked a number of questions comparing glycine produced in the United States, China, India, Japan, and Thailand, and all other countries. First, purchasers were asked for a country-by-country comparison on the same 20 factors (table II-9) for which they were asked to rate the importance.

Most purchasers reported for most factors that glycine is comparable across each country. At least half of responding purchasers reported that domestic product and glycine from China were comparable on all factors except for: antidumping duty orders (prior), availability, delivery time, discounts offered, injectability, price, and reliability of supply; most purchasers rated the U.S. product as inferior on availability and discounts offered. The domestic product was rated comparable to Indian glycine by at least half of responding purchasers for all factors except for injectability and price; most purchasers rated the domestic product superior on injectability and more rated it inferior for price. Most purchasers reported that domestic product and glycine from Japan were comparable on all factors except for price, for which most purchasers rated the domestic product inferior. At least half of purchasers reported that domestic product and glycine from Thailand were comparable on all factors except for antidumping duty orders (prior), availability, delivery time, discounts offered, injectability, price, and reliability of supply (yet comparable was reported more than superior or inferior alone); most purchasers rated the U.S. product as inferior on availability, discounts offered, price, and reliability of supply. There was no factor for which the U.S. product was rated inferior relative to China, Japan, and Thailand.

At least half of responding purchasers reported that U.S. glycine and glycine from all other sources are comparable on all factors except for injectability.

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Table II-9
Glycine: Purchasers' comparisons between U.S.-produced and imported product

Factor	Number of firms reporting								
	United States vs. China			United States vs. India			United States vs. Japan		
	S	C	I	S	C	I	S	C	I
Antidumping duty orders (prior)	2	2	1	---	9	1	---	8	---
Availability	1	1	4	1	9	3	1	9	3
Certification (FDA)	2	3	1	2	7	2	1	10	1
Certification (EQDM)	---	2	1	---	4	1	---	6	1
Delivery terms	1	2	1	2	7	2	1	10	---
Delivery time	2	2	1	2	8	2	3	8	1
Discounts offered	---	1	3	1	5	4	---	5	4
Extension of credit	---	2	1	1	5	2	---	9	---
Injectability	1	1	1	2	---	1	---	3	1
Minimum quantity requirements	1	2	1	2	6	2	1	8	1
Packaging	---	3	1	1	9	1	---	10	1
Price[1]	2	1	3	3	5	5	1	5	7
Product consistency	---	4	1	2	10	2	1	10	2
Product range	---	2	1	2	7	1	---	8	---
Purity	1	3	1	1	11	3	---	10	3
Qualification as USP grade	1	4	2	2	9	2	1	12	---
Qualification(s) beyond USP grade	---	1	1	1	3	1	1	4	1
Reliability of supply	1	2	3	3	7	3	2	10	2
Technical support/service	1	3	1	2	9	1	2	10	---
U.S. transportation costs[1]	2	3	1	3	8	2	2	8	2

Table continued on next page.

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Table II-9--Continued
Glycine: Purchasers' comparisons between U.S.-produced and imported product

Factor	Number of firms reporting					
	United States vs. Thailand			United States vs. All other sources		
	S	C	I	S	C	I
Antidumping duty orders (prior)	2	2	1	---	9	1
Availability	1	1	4	1	9	3
Certification (FDA)	2	3	1	2	7	2
Certification (EQDM)	---	2	1	---	4	1
Delivery terms	1	2	1	2	7	2
Delivery time	2	2	1	2	8	2
Discounts offered	---	1	3	1	5	4
Extension of credit	---	2	1	1	5	2
Injectability	1	1	1	2	---	1
Minimum quantity requirements	1	2	1	2	6	2
Packaging	---	3	1	1	9	1
Price[1]	2	1	3	3	5	5
Product consistency	---	4	1	2	10	2
Product range	---	2	1	2	7	1
Purity	1	3	1	1	11	3
Qualification as USP grade	1	4	2	2	9	2
Qualification(s) beyond USP grade	---	1	1	1	3	1
Reliability of supply	1	2	3	3	7	3
Technical support/service	1	3	1	2	9	1
U.S. transportation costs[1]	2	3	1	3	8	2

[1] 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.

Note.--S=first listed country's product is superior; C=both countries' products are comparable; I=first list country's product is inferior.

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

Comparison of U.S.-produced and imported glycine

In order to determine whether U.S.-produced glycine can generally be used in the same applications as imports from China, India, Japan and Thailand, U.S. producers, importers, and purchasers were asked whether the products can always, frequently, sometimes, or never be used interchangeably. As shown in table II-10, *** U.S. producers reported that U.S.-produced glycine is frequently interchangeable with glycine produced in all four countries. A majority of importers reported product to be always or frequently interchangeable between all sources. The majority of U.S. purchasers reported product to be always or frequently interchangeable between the United States and India, Japan, and Thailand. Six of 11 responding purchasers reported domestic glycine and that imported from China to be sometimes or never interchangeable, with factors such as regulatory requirements, different production processes, and customer specific needs reported to limit interchangeability.

Table II-10
Glycine: Interchangeability between glycine produced in the United States and in other countries, by country pair

Country pair	U.S. producers				U.S. importers				U.S. purchasers			
	A	F	S	N	A	F	S	N	A	F	S	N
United States vs. China	---	2	---	---	2	1	1	---	2	3	2	4
United States vs. India	---	2	---	---	3	3	---	1	9	4	2	3
United States vs. Japan	---	2	---	---	4	3	2	2	7	5	2	3
United States vs. Thailand	---	2	---	---	3	1	---	---	7	7	2	4
China vs. India	---	---	---	---	2	1	---	---	---	3	2	2
China vs. Japan	---	---	---	---	3	1	1	1	---	1	2	1
China vs. Thailand	---	---	---	---	2	1	---	---	---	4	2	1
India vs. Japan	---	---	---	---	3	1	---	1	2	1	---	2
India vs. Thailand	---	---	---	---	2	1	---	---	6	4	1	1
Japan vs. Thailand	---	---	---	---	2	1	---	---	3	1	1	2
United States vs. Other	---	1	---	---	2	3	---	---	---	1	---	1
China vs. Other	---	---	---	---	2	1	---	---	---	2	---	1
India vs. Other	---	---	---	---	2	1	---	---	---	2	---	1
Japan vs. Other	---	---	---	---	2	1	---	---	---	1	---	1
Thailand vs. Other	---	---	---	---	2	1	---	---	---	2	---	1

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

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

As can be seen from table II-11, the majority of responding purchasers reported that glycine from the United States, India, Japan, and Thailand always met minimum quality specifications.[24] Half of responding purchasers (4 of 8) reported that Chinese glycine always met minimum quality specifications.

[24] *** reported that U.S. producers did not meet their quality requirements. Respondents posthearing brief, p. 8.

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Table II-11
Glycine: Ability to meet minimum quality specifications, by source[1]

Source of purchases	Always	Usually	Sometimes	Rarely or never
United States	20	5	2	2
China	4	2	2	---
India	13	1	2	1
Japan	10	5	---	1
Thailand	16	4	2	1
Other sources	---	2	---	---

[1] Purchasers were asked how often domestically produced or imported glycine meets minimum quality specifications for their own or their customers' uses.

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

In addition, producers, importers, and purchasers were asked to assess how often differences other than price were significant in sales of glycine from the United States, China, India, Japan, Thailand, or all other countries. As seen in table II-12, U.S. producers reported that differences other than price were either sometimes or never significant in their sales of glycine. A majority of importers reported that such differences between domestic product and imports were sometimes or never a factor in their firm's sales with respect to imports from India and Thailand, always or frequently a factor with respect to imports from Japan, and one firm each reported always and never with respect to imports from China. A majority of purchasers reported that differences other than price were always or frequently a factor in their decision to purchase domestic product versus imports from China. Purchasers had mixed responses with respect to India, Japan, and Thailand. A majority of purchasers reported that such differences were sometimes or never significant with respect to India. Responses for Japan and Thailand were fairly evenly spilt, with slightly more purchasers reporting differences other than price were sometimes or never a factor, as opposed to always or frequently being a factor.

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Table II-12
Glycine: Significance of differences other than price between glycine produced in the United States and in other countries, by country pair

Country pair	U.S. producers				U.S. importers				U.S. purchasers			
	A	F	S	N	A	F	S	N	A	F	S	N
United States vs. China	---	---	1	1	1	1	---	1	5	2	2	1
United States vs. India	---	---	1	1	2	1	4	3	5	2	7	4
United States vs. Japan	---	---	1	1	4	2	2	2	5	2	5	3
United States vs. Thailand	---	---	1	1	---	1	2	1	6	3	7	4
China vs. India	---	---	---	---	---	1	---	1	3	1	---	1
China vs. Japan	---	---	---	---	1	3	---	1	2	---	---	1
China vs. Thailand	---	---	---	---	---	1	1	1	3	---	1	1
India vs. Japan	---	---	---	---	1	2	---	1	2	---	1	1
India vs. Thailand	---	---	---	---	---	1	1	1	3	---	3	3
Japan vs. Thailand	---	---	---	---	---	1	1	1	2	---	1	1
United States vs. Other	---	---	---	1	---	1	---	3	1	---	---	---
China vs. Other	---	---	---	---	---	1	---	1	1	---	---	---
India vs. Other	---	---	---	---	---	1	---	1	1	---	---	---
Japan vs. Other	---	---	---	---	---	1	---	1	1	---	---	---
Thailand vs. Other	---	---	---	---	1	---	---	1	1	---	---	---

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

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

ELASTICITY ESTIMATES

This section discusses elasticity estimates. Petitioners commented in their prehearing brief that the elasticity of substitution estimate should be on the high end of the range of 3 to 6.[25] Respondents did not comment on the elasticity estimates.

U.S. supply elasticity

The domestic supply elasticity[26] for glycine measures the sensitivity of the quantity supplied by U.S. producers to changes in the U.S. market price of glycine. 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 glycine. Analysis of these factors above indicates that the U.S. industry has the ability to significantly increase or decrease shipments to the U.S. market; an estimate in the range of 3 to 7 is suggested.

[25] Petitioners' prehearing brief, p. 35.
[26] A supply function is not defined in the case of a non-competitive market.

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U.S. demand elasticity

The U.S. demand elasticity for glycine measures the sensitivity of the overall quantity demanded to a change in the U.S. market price of glycine. 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 glycine in the production of any downstream products. Based on the available information, the aggregate demand for glycine is likely to be inelastic; a range of -0.5 to -0.8 is suggested.

Substitution elasticity

The elasticity of substitution depends upon the extent of product differentiation between the domestic and imported products.[27] 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 glycine and imported glycine is likely to be in the range of 4 to 6.

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

PART III: U.S. PRODUCERS' PRODUCTION, SHIPMENTS, AND EMPLOYMENT

The Commission analyzes a number of factors in making injury determinations (see 19 U.S.C. §§ 1677(7)(B) and 1677(7)(C)). Information on the subsidies and dumping margins was presented in *Part I* of this report and information on the volume and pricing of imports of the subject merchandise is presented in *Part IV* and *Part V*. Information on the other factors specified is presented in this section and/or *Part VI* and (except as noted) is based on the questionnaire responses of two firms that accounted for all U.S. production of glycine during 2017.

U.S. PRODUCERS

The Commission issued a U.S. producer questionnaire to Chattem and GEO based on information contained in the petition. Both firms provided usable data on their productive operations. Staff believes that these responses represent all known U.S. production of glycine.

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

Table III-1
Glycine: U.S. producers, their positions on the petition, production locations, and shares of reported production, 2017

Firm	Position on petition	Production location(s)	Share of production (percent)
Chattem	Petitioner	Chattanooga, TN	***
GEO	Petitioner	Deer Park, TX	***
Total			100.0

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

Table III-2 presents information on U.S. producers' ownership, as well as related and/or affiliated firms of glycine. As indicated in table III-2, no U.S. producer is related to a foreign producer or U.S. importer of the subject merchandise. However, *** is a subsidiary of ***, an Indian firm that does not produce, export, or import subject merchandise.

Table III-2
Glycine: U.S. producers' ownership, related and/or affiliated firms

* * * * * * *

Table III-3 presents U.S. producers' reported changes in operations since January 1, 2015.

Table III-3
Glycine: U.S. producers' reported changes in operations, since January 1, 2015

* * * * * * *

U.S. PRODUCTION, CAPACITY, AND CAPACITY UTILIZATION

Table III-4 and figure III-1 present U.S. producers' production, capacity, and capacity utilization. From 2015 to 2017, U.S producers' capacity increased, reflecting a *** percent increase in production capacity by ***. Total capacity remained unchanged between January-September 2017 and January-September 2018. Total U.S. production decreased from 2015 to 2017 by *** percent but both production and capacity utilization were higher in January-September 2018 compared to January-September 2017. *** reported a *** percent decline in production from 2015 to 2016; however, production increased by *** percent from 2016 to 2017. From 2015 to 2016, *** reported a *** percent increase in production; however, the firm experienced a *** percent decline in production from 2016 to 2017. *** U.S. producers reported overall net declines in production and capacity utilization from 2015 to 2017. *** reported average capacity utilization levels near or below *** percent during 2015-17, while *** reported average capacity utilization rate during the same period was consistently above *** percent. At the Commission's hearing on April 30, 2019, a Chattem representative testified that the Chattem brand is the oldest brand of glycine in the United States. The company asserted that although it has been operating at low capacity rates, it has plenty of capacity to produce large volumes of high quality glycine in all grades, especially in the technical and USP grades.[1] A representative of GEO also testified that it sells all grades and faces competition from the subject imports for all grades. According to GEO, in order to be the most cost-effective glycine producer, the company needs to operate as close as possible to its capacity and optimal capacity utilization rate, which also requires advance production notice, and delivery planning, so the company knows to produce and deliver glycine throughout the year.[2]

Table III-4
Glycine: U.S. producers' production, capacity, and capacity utilization, 2015-17, January to September 2017, and January to September 2018

* * * * * * *

[1] Hearing transcript, pp. 25-27 (Allen) and petitioners' posthearing brief, p. 64.
[2] Hearing transcript, pp. 22-23 (Lang) and petitioners' posthearing brief, p. 86.

Figure III-1
Glycine: U.S. producers' production, capacity, and capacity utilization, 2015-17, January to September 2017, and January to September 2018

* * * * * * *

Alternative products

Table III-5 presents data on U.S. producers' capacity[3] and production of alternative products using the same equipment and machinery used to produce glycine. Table III-5 shows *** production of alternative products on the same equipment used to produce glycine. *** accounts for most of the available capacity of glycine with a reported nameplate capacity of *** pounds and actual production of glycine of *** pounds in 2017. *** reported nameplate capacity of glycine at *** pounds and actual production of glycine of *** pounds in 2017.

Table III-5
Glycine: U.S. producers' overall plant capacity and production on the same equipment as subject production, 2015-17, January to September 2017, and January to September 2018

Item	Calendar year			January to September	
	2015	2016	2017	2017	2018
	Quantity (1,000 pounds)				
Nameplate capacity[1]	***	***	***	***	***
Overall capacity[2]	***	***	***	***	***
Production:					
Glycine	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Ratios and shares (percent)				
Nameplate capacity utilization	***	***	***	***	***
Overall capacity utilization	***	***	***	***	***
Share of production:					
Glycine	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***

[1] Nameplate capacity assumes the maximum level of production that an establishment could have obtained during the specified periods assuming maximum operating parameters and conditions, operating 24 hours seven days a week, 365 days of the year with no downtime.
[2] Overall production capacity assumes the level of production that an establishment could reasonably have expected to attain during specific periods, assuming normal operating conditions, including downtime. With respect to ***, downtime is ***. ***.

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

[3] GEO reported its capacity based on *** weeks per year operating parameters. Chattem reported its capacity based on *** and *** weeks per year operating parameters.

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

Table III-6 presents U.S. producers' U.S. shipments, export shipments, and total shipments. From 2015 to 2017, U.S. shipments by quantity and value declined by *** percent and *** percent respectively. U.S. export shipments fluctuated by quantity and value, while increasing in 2017 compared to 2015 levels. The quantity of U.S. shipments of glycine in January-September 2018 was higher than in January-September 2017 by *** percent. The average unit value of U.S. shipments declined from a high of *** per pound in 2015 to *** per pound in 2017, reflecting a net decline in unit value of *** percent from 2015 to 2017. Unit values of U.S. shipments were lower in January-September 2018 than in January-September 2017, falling with a differential of *** per pound. The unit value of export shipments, in contrast, increased between 2015 and 2017. Total shipments of glycine by U.S. producers decreased *** percent in terms of quantity, *** percent by value, and *** percent by unit value between 2015 and 2017; quantity was higher in January-September 2018 than in January-September 2017, but value and average unit value were lower.

Table III-6
Glycine: U.S. producers' U.S. shipments, exports shipments, and total shipments, 2015-17, January to September 2017, and January to September 2018

* * * * * * *

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**.** GEO's and Chattem's combined inventory of glycine increased *** in absolute terms between 2015 and 2016, but decreased *** between 2016 and 2017, and was lower in January-September 2018 than in January-September 2017. Glycine inventory relative to production, U.S. shipments, and total shipments followed the same trend, and by all measures inventory levels were at their lowest levels at year-end 2017.[4]

Table III-7
Glycine: U.S. producers' inventories, 2015-17, January to September 2017, and January to September 2018

* * * * * * *

[4] These trends are consistent with other changes in operations discussed in this chapter. In 2016, a year characterized by increased capacity and employment ***, production increased more rapidly than total shipments. In 2017, however, lower production levels *** contributed to an inventory drawdown. In January-September 2018, *** reported lower inventory than in January-September 2017, but the reduction was more pronounced ***, consistent with ***.

U.S. PRODUCERS' IMPORTS AND PURCHASES

Neither U.S. producer reported importing or purchasing glycine from 2015 to 2017 or the interim period in 2018.

U.S. EMPLOYMENT, WAGES, AND PRODUCTIVITY

Table III-8 presents U.S. producers' employment-related data. The number of production and related workers ("PRWs") employed in the production of glycine by GEO and Chattem remained relatively stable during the period for which data were collected, with the exception of a temporary increase in employment levels in 2016.[5] PRW hours worked remained similarly stable during this period, while hours worked per PRW generally fluctuated around an annual level of 2,080 (52 x 40). Hourly wages consistently exceeded *** dollars per hour, increased in 2016 and 2017, and were higher in January-September 2018 than in January-September 2017. Total wages paid similarly reflected higher levels in 2016, 2017, and January-September 2018 relative to the comparable prior annual or interim period. Productivity levels, in contrast, peaked in 2016. Consistent with higher wages and lower productivity after 2016, unit labor costs were higher in 2017 than in 2015 and 2016.

Table III-8
Glycine: Average number of production and related workers, hours worked, wages paid to such employees, hourly wages, productivity, and unit labor costs, 2015-17, January to September 2017, and January to September 2018

* * * * * * *

[5] ***.

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

U.S. IMPORTERS

The Commission issued importer questionnaires to 64 firms[1] believed to import glycine, as well as to all U.S. producers of glycine.[2] Usable questionnaire responses were received from 25 companies, representing *** percent of U.S. imports from China, *** percent of U.S. imports from India, *** percent of U.S. imports from Japan, *** percent of U.S. imports from Thailand in 2017, and *** percent of U.S. imports from all other sources under HTSUS statistical reporting numbers 2922.49.43.00 and 2922.49.4020.[3] [4] Overall, the 25 questionnaire responses represented 95.2 percent of U.S. imports from all sources in 2017. Table IV-1 lists all responding U.S. importers of glycine from China, India, Japan, and Thailand, their locations, and their shares of U.S. imports in 2017.

[1] The following firms reported no U.S. imports of glycine since January 1, 2015: ***. Two additional firms, *** provided incomplete and unusable importer questionnaire responses to the Commission.

[2] The Commission issued questionnaires to those firms identified in the petitions, along with firms that, based on a review of data provided by U.S. Customs and Border Protection ("Customs"), may have accounted for more than one percent of total imports under HTS statistical reporting numbers 2922.49.4300 and 2922.49.4020.

[3] Glycine and glycine slurry are classified, since July 1, 2017, under subheading 2922.49.4300 of the Harmonized Tariff Schedule of the United States ("HTSUS"); before that date, they were classified under HTS statistical reporting number 2922.49.4020 of the HTSUS.

[4] The scope of this proceeding also covers precursors of dried crystalline glycine, including, but not limited to, glycine slurry (i.e. glycine in a non-crystallized form), sodium glycinate and a non-reacted ammonia-monochloroacetic or chloroacetic acid mix. Glycine slurry is classified under the same HTSUS as crystallized glycine (2922.49.4300 as of July 1, 2017, and 2922.49.4020 before that date), sodium glycinate is classified under HTSUS 2922.49.8000, and the non-reacted ammonia-monochloroacetic or chloroacetic acid mix has been classified under a number of HTSUS 2922.49 subheadings.

Table IV-1
Glycine: U.S. importers, their headquarters, and share of total imports by source, 2017

Firm	Headquarters	Share of imports by source (percent)					
		China	India	Japan	Subtotal	Thailand	All import sources
Aceto	Port Washington, NY	***	***	***	***	***	***
Ajinomoto	Itasca, IL	***	***	***	***	***	***
Atotech	Rock Hill, SC	***	***	***	***	***	***
Brio	Miami, FL	***	***	***	***	***	***
Ceka[1]	Chino Hills, CA	***	***	***	***	***	***
Charkit	South Norwalk, CT	***	***	***	***	***	***
Crossroad	Fairfield, NJ	***	***	***	***	***	***
Fujimi	Tualatin, OR	***	***	***	***	***	***
Glanbia	Fitchburg, WI	***	***	***	***	***	***
Innospec	High Point, NC	***	***	***	***	***	***
Kumar	Ahmedabad, GJ (India)	***	***	***	***	***	***
Kyowa Hakko	New York, NY	***	***	***	***	***	***
Marubeni	White Plains, NY	***	***	***	***	***	***
Maypro	Purchase, NY	***	***	***	***	***	***
Mulji Mehta	Mumbai, MH	***	***	***	***	***	***
Nagase	New York, NY	***	***	***	***	***	***
Newtrend	City of Industry, CA	***	***	***	***	***	***
NutriScience	Trumbull, CT	***	***	***	***	***	***
Prinova	Carol Stream, IL	***	***	***	***	***	***
SAM HPRP	Eden Prairie, MN	***	***	***	***	***	***
Saminchem[1]	Mira Loma, CA	***	***	***	***	***	***
SEM	Quincy, IL	***	***	***	***	***	***
Showa Denko	New York, NY	***	***	***	***	***	***
Soyventis	Fairfield, NJ	***	***	***	***	***	***
TRinternational	Seattle, WA	***	***	***	***	***	***
Total		***	***	***	***	***	***

[1] Staff reclassified imports from Cambodia as imports from China in this report. The vast majority of such imports (*** percent during the period for which data were collected) were by ***, which has provided conflicting information regarding its import sources. The remainder ***, which maintains that its imports are ***. *** identified ***, as the foreign producer of glycine in their U.S. importer questionnaire responses. On July 2, 2018, the U.S. Customs and Border Protection issued a final determination that Ceka's 2017 imports were of Chinese origin and that it found no evidence of glycine manufacturing at the Cambodian exporter's facility. See CBP's Notice of Final Determination, EAPA Case No. 7208, July 2, 2018.

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

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

U.S. IMPORTS

Table IV-2 and figure IV-1 present data for U.S. imports of glycine from China, India, Japan, and Thailand and all other sources combined. U.S imports of glycine from China, India, and Japan combined increased by approximately 10.0 percent by quantity from 2015 to 2017. The quantity of U.S. imports of glycine from Thailand decreased by 30.2 percent for the same period, but was more than twice as high in January-September 2018 compared to January-September 2017. In contrast, the quantity of imports from China, India, and Japan combined was lower in January-September 2018 compared to January-September 2017. The quantity of glycine imports from all import sources fell by 19.8 percent from 2015 to 2016 and then increased by 16.0 percent in 2017. The value of glycine imports from China, India, and Japan increased by 0.8 percent from 2015 to 2016, but then decreased 1.1 percent from 2016 to 2017. The value of glycine imports from Thailand decreased by 47.0 percent during 2015-17.

As a share of total imports, combined imports from China, India, and Japan increased from 65.5 percent in 2015 to 85.1 percent in 2016, and then decreased to 77.5 percent in 2017. As a share of total imports, U.S. imports from Thailand decreased from 28.2 percent in 2016 to 21.2 percent in 2017. The total average unit values of combined glycine imports from China, India, and Japan decreased from 2015 to 2017 ($2.06 to $1.87 per pound) and were higher than those reported for all other sources, except in 2017, when total average unit values for these countries were $1.87 per pound, as compared to $2.75 per pound for all other sources. Average unit values of glycine imports from Thailand also decreased during 2015-17.

The ratio of total import volume to U.S. production decreased from *** percent in 2015 to *** percent in 2016, but then increased to *** in 2017. From 2015 to 2017, the ratio of total combined imports from China, India, and Japan to U.S. production increased by *** percentage points, while the ratio of total imports to U.S production increased by only *** percentage points for the same period, reflecting lower levels of imports from Thailand and from all other sources. This pattern largely reversed in January-September 2018.

Table IV-2
Glycine: U.S. imports by source, 2015-17, January to September 2017, and January to September 2018

Item	Calendar year			January to September	
	2015	2016	2017	2017	2018
	Quantity (1,000 pounds)				
U.S. imports from.--					
China	104	526	734	608	132
India	2,926	4,260	3,903	2,950	897
Japan	6,011	4,629	5,305	3,841	3,170
Subtotal	9,041	9,415	9,941	7,399	4,199
Thailand	3,895	1,356	2,720	2,222	4,740
Subtotal	12,936	10,771	12,661	9,621	8,939
All other sources	859	292	174	131	40
All import sources	13,795	11,063	12,835	9,752	8,979
	Value (1,000 dollars)				
U.S. imports from.--					
China	177	835	1,339	1,201	183
India	6,008	8,146	7,030	5,296	1,443
Japan	12,450	9,807	10,206	7,355	6,267
Subtotal	18,635	18,788	18,575	13,852	7,893
Thailand	8,665	3,014	4,592	3,735	7,415
Subtotal	27,300	21,802	23,168	17,587	15,308
All other sources	1,386	526	480	352	123
All import sources	28,685	22,328	23,647	17,939	15,431
	Unit value (dollars per pound)				
U.S. imports from.--					
China	1.71	1.59	1.83	1.97	1.38
India	2.05	1.91	1.80	1.80	1.61
Japan	2.07	2.12	1.92	1.91	1.98
Subtotal	2.06	2.00	1.87	1.87	1.88
Thailand	2.22	2.22	1.69	1.68	1.56
Subtotal	2.11	2.02	1.83	1.83	1.71
All other sources	1.61	1.80	2.75	2.69	3.04
All import sources	2.08	2.02	1.84	1.84	1.72

Table continued on the next page.

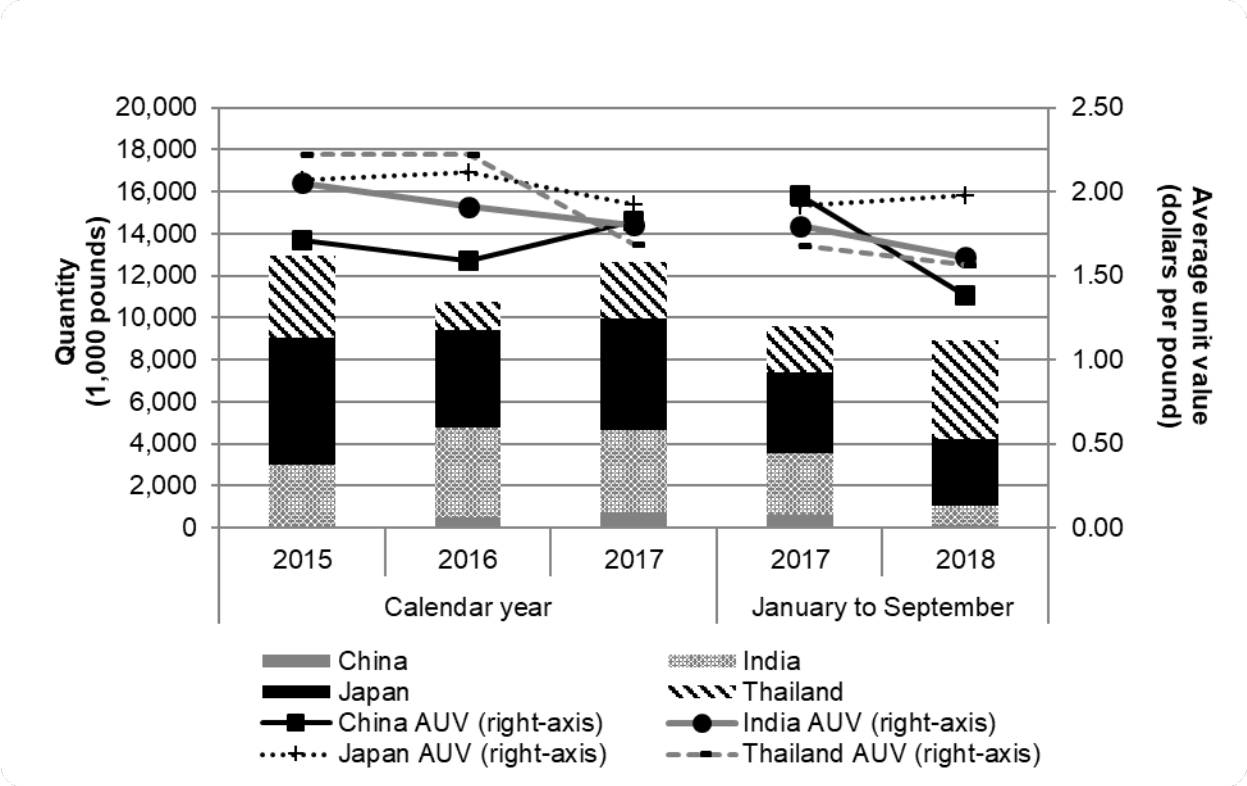
Table IV-2--Continued
Glycine: U.S. imports by source, 2015-17, January to September 2017, and January to September 2018

Item	Calendar year			January to September	
	2015	2016	2017	2017	2018
	Share of quantity (percent)				
U.S. imports from.--					
China	0.8	4.8	5.7	6.2	1.5
India	21.2	38.5	30.4	30.3	10.0
Japan	43.6	41.8	41.3	39.4	35.3
Subtotal	65.5	85.1	77.5	75.9	46.8
Thailand	28.2	12.3	21.2	22.8	52.8
Subtotal	93.8	97.4	98.6	98.7	99.6
All other sources	6.2	2.6	1.4	1.3	0.4
All import sources	100.0	100.0	100.0	100.0	100.0
	Share of value (percent)				
U.S. imports from.--					
China	0.6	3.7	5.7	6.7	1.2
India	20.9	36.5	29.7	29.5	9.4
Japan	43.4	43.9	43.2	41.0	40.6
Subtotal	65.0	84.1	78.6	77.2	51.2
Thailand	30.2	13.5	19.4	20.8	48.1
Subtotal	95.2	97.6	98.0	98.0	99.2
All other sources	4.8	2.4	2.0	2.0	0.8
All import sources	100.0	100.0	100.0	100.0	100.0
	Ratio to U.S. production				
U.S. imports from.--					
China	***	***	***	***	***
India	***	***	***	***	***
Japan	***	***	***	***	***
Subtotal	***	***	***	***	***
Thailand	***	***	***	***	***
Subtotal	***	***	***	***	***
All other sources	***	***	***	***	***
All import sources	***	***	***	***	***

Note.--Data for China is calculated by adding imports from China and Cambodia. Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

Source: Compiled from official U.S. import statistics for HTS statistical reporting numbers 2922.49.4020 and 2922.49.4300, accessed March 19, 2019.

Figure IV-1
Glycine: Select U.S. import quantities and average unit values, 2015-17, January to September 2017, and January to September 2018



Note.--Data for China is calculated by adding imports from China and Cambodia. Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

Source: Compiled from official U.S. import statistics for HTS statistical reporting numbers 2922.49.4020 and 2922.49.4300, accessed March 19, 2019.

Subject imports from China (Cambodia)

In the petitions, the petitioners contended that imports of glycine from Cambodia were actually of Chinese origin.[5] The petitioners also cited to a separate U.S. Customs and Border Protection ("CBP") Enforcement and Protection Act duty evasion proceeding, in which CBP issued interim measures on December 4, 2017. The interim measures were based on the finding that all glycine from Cambodia shipped to the United States since August 2016 was of Chinese origin and subject to the antidumping duty order on glycine from China. On July 2, 2018, CBP issued a final determination that Ceka imported glycine from China that was

[5] Petition, p. 19 and *Generalized System of Preferences (GSP): Possible Modifications, 2016/2017 Review*, *Inv. No. 332-560*, USITC Publication 4694, June 2017, Chapter 7, at 64.

transshipped through Cambodia to the United States and did not declare that the merchandise was subject to an antidumping duty order. CBP further stated that it found no evidence of glycine manufacturing at the Cambodian exporter's facility.[6]

Based on its response to the Commission's questionnaire in the preliminary phase, ***. The firm accounted for ***.[7] In the final phase of investigations, *** reported importing from one firm, ***. In its notice of final determination, CBP stated that the Cambodian exporter "only further processes 'technical grade' glycine imported from China and processes no other products."[8] *** responded to staff requests for clarification of their reported imports.

NEGLIGIBILITY

The statute requires that an investigation be terminated without an injury determination if imports of the subject merchandise are found to be negligible.[9] Negligible imports are generally defined in the Act, as amended, as imports from a country of merchandise corresponding to a domestic like product where such imports account for less than 3 percent of the volume of all such merchandise imported into the United States in the most recent 12-month period for which data are available that precedes the filing of the petition or the initiation of the investigation. However, if there are imports of such merchandise from a number of countries subject to investigations initiated on the same day that individually account for less than 3 percent of the total volume of the subject merchandise, and if the imports from those countries collectively account for more than 7 percent of the volume of all such merchandise imported into the United States during the applicable 12-month period, then imports from such countries are deemed not to be negligible.[10] In the case of countervailing duty investigations involving developing countries, the negligibility limits are 4 percent and 9 percent rather than 3 percent and 7 percent.[11] Although the petitions in these investigations include countervailing duty allegations on imports from three countries (China, India, and Thailand), only India and Thailand have been designated as developing countries by the U.S. Trade Representative.[12]

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[6] CBP's Notice of Final Determination, EAPA Case No. 7208, July 2, 2018.

[7] ***, U.S. importer questionnaire response in the preliminary phase, section II-5a.

[8] CBP's Notice of Final Determination, EAPA Case No. 7208, July 2, 2018. CBP's final determination also stated that a 2002 Department of Commerce scope ruling clarified that all glycine further processed or "refined" from Chinese-origin technical grade or "crude" glycine in a third country and exported to the United States is subject to the AD order A-570-836 on glycine from China, and that refining in a third country will not exclude the merchandise from the scope of the order.

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

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

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

[12] See 15 C.F.R. § 2013.

The quantity of U.S. imports in the twelve month period preceding the filing of the petitions (March 2017 through February 2018) and the share of quantity of total U.S. imports for which each country accounted are presented in tables IV-3 and IV-4. Based on official import statistics, U.S. imports from countries subject to the antidumping duty investigation (India and Japan) accounted for 28.9 percent (3.5 million pounds) and 44.8 percent (5.5 million pounds), respectively, of total imports of glycine during March 2017 to February 2018. U.S. imports from Thailand accounted for 25.0 percent (3.1 million pounds) of total imports of glycine during the same period. Based on official import statistics, U.S. imports from countries subject to the countervailing duty investigation (China and India), accounted for 5.9 percent (771 thousand pounds), and 27.2 percent (3.5 million pounds), respectively, of total imports of glycine during March 2017 to February 2018. U.S. imports from Thailand, accounted for 23.5 percent (3.1 million pounds) of total imports of glycine during the same period.

Table IV-3
Glycine: U.S. imports in the twelve month period preceding the filing of the petition, March 2017 through February 2018

Item	March 2017 through February 2018	
	Quantity (1,000 pounds)	Share of quantity (percent)
U.S. imports subject to AD duty investigation from.--		
India	3,538	28.9
Japan	5,476	44.8
Thailand	3,054	25.0
All other sources (note)	169	1.4
All import sources (note)	12,236	100.0

Note.-- Volumes from China under an existing antidumping duty order (imports from China assessed AD duties, or imports from other sources reclassified as China-origin glycine as a result of the CBP AD order evasion investigation) are excluded from the denominator in these calculations.

Source: Compiled from official U.S. import statistics for HTS statistical reporting numbers 2922.49.4020 and 2922.49.4300, accessed March 19, 2019.

Table IV-4
Glycine: U.S. imports in the twelve month period preceding the filing of the petition, March 2017 through February 2018

Item	March 2017 through February 2018	
	Quantity (1,000 pounds)	Share of quantity (percent)
U.S. imports subject to CVD duty investigation from.--		
China	771	5.9
India	3,538	27.2
Thailand	3,054	23.5
All other sources	5,644	43.4
All import sources	13,007	100.0

Source: Compiled from official U.S. import statistics for HTS statistical reporting numbers 2922.49.4020 and 2922.49.4300, accessed March 19, 2019.

CRITICAL CIRCUMSTANCES

October 31, 2018, Commerce issued its preliminary determination that alleged "critical circumstances" do not exist with regard to imports of glycine from Thailand.[13] In these investigations, if both Commerce and the Commission make affirmative final critical circumstances determinations, certain subject imports may be subject to antidumping duties retroactive by 90 days from October 31, 2018, the effective date of Commerce's preliminary affirmative LTFV determination. Table IV-5 presents U.S. imports from Thailand for the six-month periods preceding and following the filing of the petitions.

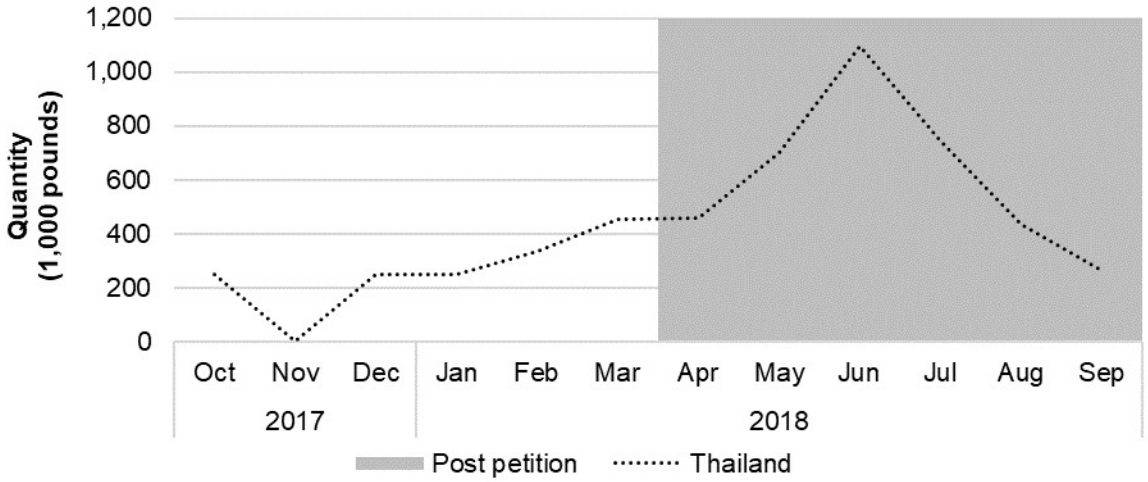
[13] *Glycine From Thailand: Preliminary Determination of Sales at Not Less Than Fair Value, Preliminary Negative Determination of Critical Circumstances, Postponement of Final Determination*, 83 FR 54717, October 31, 2018, referenced in app. A. When petitioners file timely allegations of critical circumstances, Commerce examines whether there is a reasonable basis to believe or suspect that (1) either there is a history of dumping and material injury by reason of dumped imports in the United States or elsewhere of the subject merchandise, or the person by whom, or for whose account, the merchandise was imported knew or should have known that the exporter was selling the subject merchandise at LTFV and that there was likely to be material injury by reason of such sales; and (2) there have been massive imports of the subject merchandise over a relatively short period.

Table IV-5
Glycine: U.S. imports from Thailand potentially subject to Commerce's final critical circumstance determination, October 2017 through September 2018

Period	Monthly U.S. imports (1,000 pounds)	Outwardly cumulative quantity (1,000 pounds)	Percentage change from comparable period (percent)
2017.--			
October	250	1,537	
November	0	1,287	
December	248	1,287	
2018.--			
January	249	1,039	
February	334	790	
March	456	456	
Petition file date: March 28, 2018			
April	457	457	0.2
May	701	1,158	46.6
June	1,098	2,256	117.1
July	745	3,001	133.2
August	435	3,436	167.0
September	265	3,701	140.8

Source: Compiled from official U.S. import statistics for HTS statistical reporting numbers 2922.49.4020 and 2922.49.4300, accessed March 19, 2019.

Figure IV-2
Glycine: U.S. imports from Thailand potentially subject to Commerce's final critical circumstance determination, October 2017 through September 2018



Source: Compiled from official U.S. import statistics for HTS statistical reporting numbers 2922.49.4020 and 2922.49.4300, accessed March 19, 2019.

CUMULATION CONSIDERATIONS

In assessing whether imports should be cumulated, the Commission determines whether U.S. imports from the subject countries compete with each other and with the domestic like product and has generally considered four factors: (1) fungibility, (2) presence of sales or offers to sell in the same geographical markets, (3) common or similar channels of distribution, and (4) simultaneous presence in the market. Information regarding channels of distribution, market areas, and interchangeability appear in Part II. Additional information concerning fungibility, geographical markets, and simultaneous presence in the market is presented below.

Fungibility

Table IV-6 and figure IV-3 present data for U.S. producers' and U.S. importers' U.S. shipments by product type for 2017. U.S. shipments by product type data are categorized by technical grade, USP grade glycine, pharmaceutical (not injectable) glycine, pharmaceutical (injectable) glycine, other grade precursors, and all end uses. For U.S. producers and U.S. importers from China, India, and Japan, USP grade glycine accounted for the largest share (***) percent and (***) percent respectively of shipments in 2017. U.S. imports from Thailand were *** USP grade in 2017.

U.S. producers' U.S. shipments of technical grade glycine accounted for *** percent of shipments in 2017, while U.S. importers' U.S. shipments of technical grade glycine for imports from China, India, and Japan combined accounted for *** percent of their U.S. shipments the same year. U.S. producers' U.S. shipments of pharmaceutical, not injectable glycine accounted for *** percent of shipments in 2017, pharmaceutical injectable accounted for *** percent, and precursors or other grades held the smallest share of *** percent in 2017. While no U.S. importer reported U.S. shipments of pharmaceutical, not injectable glycine, Japan was the only country from which importers reported U.S. shipments of pharmaceutical, injectable glycine, and precursors or other grades of glycine, accounting for *** percent and *** percent of their U.S. shipments, respectively, in 2017.

In addition, the Commission collected supplemental data for U.S. producers' and U.S. importers' U.S. shipments of glycine slurry used for chemical mechanical planarization (CMP) applications. The only sources of such products were the United States, Japan, and India. U.S. producers' U.S. shipments of glycine slurry used for CMP applications accounted for *** percent of all U.S. producers' U.S. shipments of glycine in 2017, while U.S. shipments of imports of glycine slurry used for CMP applications from Japan accounted for *** percent of all U.S. shipments of imports of glycine from Japan, and U.S. shipments of imports of glycine slurry used for CMP applications from India accounted for *** percent of all U.S. shipments of imports of glycine from India. All or virtually all of this product was sold as ***. (See also Part II for more information).[14]

[14] ***.

Table IV-6
Glycine: U.S. producers' and U.S. importers' U.S. shipments by product type, 2017

* * * * * * *

Table IV-6--Continued
Glycine: U.S. producers' and U.S. importers' U.S. shipments by product type, 2017

* * * * * * *

Figure IV-3
Glycine: U.S. producers' and U.S. importers' U.S. shipments by Item, 2017

* * * * * * *

Table IV-7 presents data for U.S. producers' and U.S. importers' U.S. shipments by certification for 2017. *** shipments of U.S. imports from China in 2017 were reported as FDA and EDQM certified. The *** of India's U.S. importers' U.S. shipments are certified by the FDA but not EDQM. More than *** percent of U.S. importers' U.S. shipments from Japan were neither FDA nor EDQM certified, with most of the remainder FDA certified but not EDQM certified. *** U.S. importers' U.S. shipments from Thailand are FDA certified but not EDQM certified.

Table IV-7
Glycine: U.S. producers' and U.S. importers' U.S. shipments by certification, 2017

* * * * * * *

Figure IV-4
Glycine: U.S. producers' and U.S. importers' U.S. shipments by certification, 2017

* * * * * * *

Geographical markets

Table IV-8 presents data on U.S. Customs districts. The largest entry point of imports from China was the West,[15] accounting for 77.9 percent, while U.S. imports from India arrived through the North,[16] accounting for 61.7 percent and the East,[17] accounting for 35.0 percent. U.S. imports from Japan entered through the West, accounting for 51.2 percent, while the remaining imports arrived through the North, accounting for 45.9 percent. The majority of imports from Thailand came through the West, accounting for 95.6 percent, while the remainder of imports entered through the East in 2017.

[15] The "West" includes the following Customs entry districts: Columbia-Snake, Oregon; Honolulu, Hawaii; Los Angeles, California; Nogales, Arizona; San Diego, California; San Francisco, California; and Seattle, Washington.

[16] The "North" includes the following Customs entry districts: Chicago, Illinois; Cleveland, Ohio; Detroit, Michigan; Duluth, Minnesota; Great Falls, Montana; Milwaukee, Wisconsin; Minneapolis, Minnesota; and Pembina, North Dakota. The "South" includes the following Customs entry districts: Dallas-Fort Worth, Texas; El Paso, Texas; Houston-Galveston, Texas; Laredo, Texas; Miami, Florida; Mobile, Alabama; New Orleans, Louisiana; and Tampa, Florida.

[17] The "East" includes the following Customs entry districts: Baltimore, Maryland; Boston, Massachusetts; Buffalo, New York; Charleston, South Carolina; Charlotte, North Carolina; New York, New York; Norfolk, Virginia; Ogdensburg, New York; Philadelphia, Pennsylvania; Portland, Maine; San Juan, Puerto Rico; Savannah, Georgia; St. Albans, Vermont; and Washington, District of Columbia.

Table IV-8
Glycine: U.S. imports by border of entry, 2017

Item	Border of entry				
	East	North	South	West	All borders
	Quantity (1,000 pounds)				
U.S. imports from.--					
China	133	28	2	572	734
India	1,364	2,407	---	132	3,903
Japan	155	2,434	---	2,715	5,305
Subtotal	1,652	4,869	2	3,418	9,941
Thailand	119	---	---	2,601	2,720
Subtotal	1,771	4,869	2	6,019	12,661
All other sources	105	37	33	0	174
All import sources	1,876	4,905	35	6,019	12,835
	Share across (percent)				
U.S. imports from.--					
China	18.1	3.8	0.2	77.9	100.0
India	35.0	61.7	---	3.4	100.0
Japan	2.9	45.9	---	51.2	100.0
Subtotal	16.6	49.0	0.0	34.4	100.0
Thailand	4.4	---	---	95.6	100.0
Subtotal	14.0	38.5	0.0	47.5	100.0
All other sources	60.0	21.0	19.0	0.1	100.0
All import sources	14.6	38.2	0.3	46.9	100.0
	Share down (percent)				
U.S. imports from.--					
China	7.1	0.6	4.9	9.5	5.7
India	72.7	49.1	---	2.2	30.4
Japan	8.3	49.6	---	45.1	41.3
Subtotal	88.1	99.3	4.9	56.8	77.5
Thailand	6.3	---	---	43.2	21.2
Subtotal	94.4	99.3	4.9	100.0	98.6
All other sources	5.6	0.7	95.1	0.0	1.4
All import sources	100.0	100.0	100.0	100.0	100.0

Note.—Data for China are calculated by adding imports from China and Cambodia. Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

Source: Compiled from official U.S. import statistics for HTS statistical reporting numbers 2922.49.4020 and 2922.49.4300, accessed March 19, 2019.

Presence in the market

Table IV-9 presents monthly U.S. imports from January 2015 to December 2018. U.S. imports from Japan entered the U.S. market in each of the 48 months. U.S. imports of glycine from China entered the U.S. market in 29 of the 48 months. U.S imports from India entered the U.S. market in 46 of the 48 months and U.S. imports from Thailand entered the U.S. in 44 of the 48 months.

Table IV-9
Glycine: U.S. imports by month, January 2015-December 2018

Year / month	U.S. imports							
	China	India	Japan	Subtotal	Thailand	Subtotal	All other sources	All import sources
	Quantity (1,000 pounds)							
2015.--								
January	7	326	393	726	---	726	174	900
February	---	280	351	631	265	895	58	953
March	7	437	448	891	176	1,067	161	1,228
April	---	350	519	869	220	1,089	15	1,104
May	---	214	669	883	220	1,103	146	1,249
June	---	254	500	753	225	978	79	1,058
July	---	93	586	679	181	860	11	871
August	44	130	679	853	88	941	115	1,056
September	---	304	340	645	---	645	---	645
October	44	233	445	721	882	1,603	56	1,659
November	---	198	650	848	667	1,515	---	1,515
December	2	108	432	542	970	1,512	44	1,556
2016.--								
January	26	553	549	1,129	802	1,931	---	1,931
February	88	279	123	490	176	667	46	713
March	2	273	641	917	---	917	44	961
April	---	570	348	918	43	961	90	1,051
May	---	364	301	665	41	706	92	799
June	1	291	293	585	47	632	8	640
July	181	276	374	830	41	871	---	871
August	2	247	481	730	41	772	8	780
September	72	395	397	864	41	905	---	905
October	---	176	261	437	41	478	---	479
November	36	468	447	952	41	993	---	993
December	116	368	414	898	41	939	4	943

Table continued on the next page.

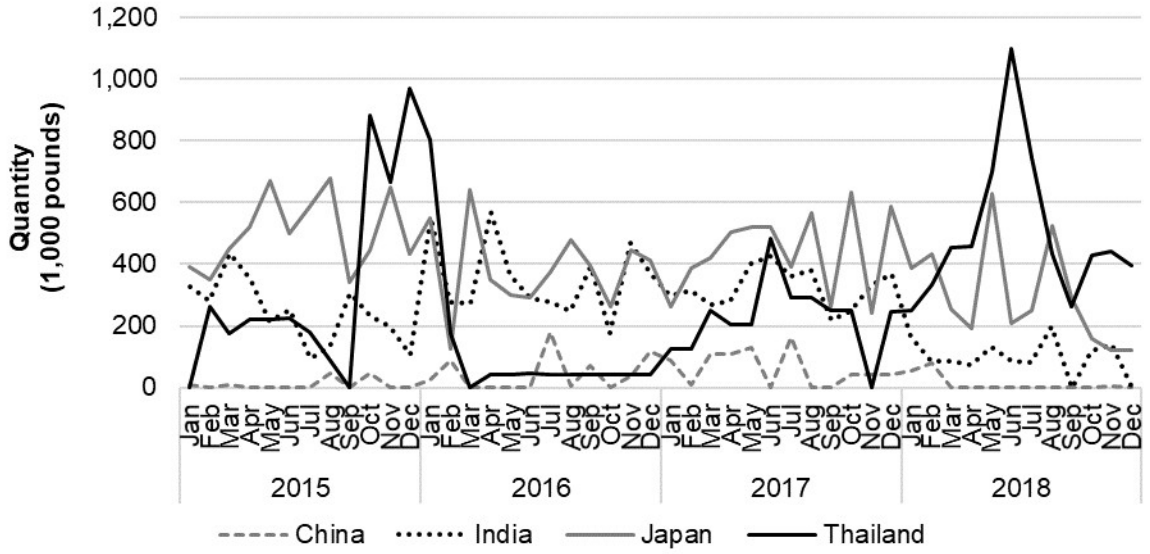
Table IV-9—Continued
Glycine: U.S. imports by month, January 2015-December 2018

Year / month	U.S. imports							
	China	India	Japan	Subtotal	Thailand	Subtotal	All other sources	All import sources
	Quantity (1,000 pounds)							
2017.--								
January	88	298	264	651	124	775	6	781
February	7	313	386	706	124	831	---	831
March	109	269	421	799	251	1,051	9	1,060
April	110	283	503	896	205	1,100	14	1,114
May	129	401	521	1,050	202	1,252	36	1,289
June	0	427	521	948	483	1,431	14	1,445
July	164	359	394	917	290	1,207	11	1,218
August	1	381	567	948	292	1,240	40	1,281
September	0	219	265	484	250	734	---	734
October	42	249	631	922	250	1,172	30	1,203
November	42	333	243	618	---	618	7	625
December	42	371	589	1,002	248	1,250	6	1,255
2018.--								
January	53	163	388	604	249	853	---	853
February	79	84	433	596	334	930	---	930
March	---	84	254	338	456	794	---	794
April	---	72	190	262	457	719	---	719
May	---	130	628	758	701	1,459	---	1,459
June	---	84	209	293	1,098	1,391	40	1,431
July	---	82	252	333	745	1,078	---	1,078
August	---	199	524	723	435	1,158	---	1,158
September	---	---	291	291	265	556	---	556
October	---	119	157	276	428	704	41	745
November	4	139	122	265	441	706	---	706
December	---	---	119	119	394	513	---	513

Note.--Data for China are calculated by adding imports from China and Cambodia. Values shown as "0" represent values greater than zero, but less than "0.5" percent.

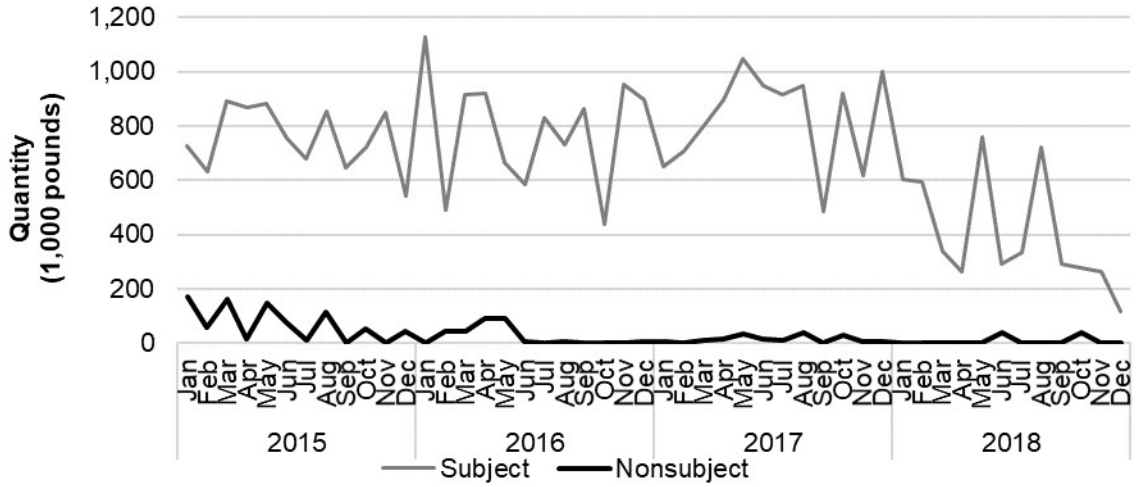
Source: Compiled from official U.S. import statistics for HTS statistical reporting numbers 2922.49.4020 and 2922.49.4300, accessed March 19, 2019.

Figure IV-5
Glycine: U.S. imports from individual petition countries by month, 2015-18



Source: Compiled from official U.S. import statistics for HTS statistical reporting numbers 2922.49.4020 and 2922.49.4300, accessed March 19, 2019.

Figure IV-6
Glycine: U.S. imports from aggregated subject and nonsubject countries by month, 2015-18



Source: Compiled from official U.S. import statistics for HTS statistical reporting numbers 2922.49.4020 and 2922.49.4300, accessed March 19, 2019.

APPARENT U.S. CONSUMPTION

Table IV-10 and figure IV-7 present data on apparent U.S. consumption.

Table IV-10
Glycine: Apparent U.S. consumption, 2015-17, January to September 2017, and January to September 2018

Item	Calendar year			January to September	
	2015	2016	2017	2017	2018
	Quantity (1,000 pounds)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. imports from.--					
China	104	526	734	608	132
India	2,926	4,260	3,903	2,950	897
Japan	6,011	4,629	5,305	3,841	3,170
Subtotal	9,041	9,415	9,941	7,399	4,199
Thailand	3,895	1,356	2,720	2,222	4,740
Subtotal	12,936	10,771	12,661	9,621	8,939
All other sources	859	292	174	131	40
All import sources	13,795	11,063	12,835	9,752	8,979
Apparent U.S. consumption	***	***	***	***	***
	Value (1,000 dollars)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. imports from.--					
China	177	835	1,339	1,201	183
India	6,008	8,146	7,030	5,296	1,443
Japan	12,450	9,807	10,206	7,355	6,267
Subtotal	18,635	18,788	18,575	13,852	7,893
Thailand	8,665	3,014	4,592	3,735	7,415
Subtotal	27,300	21,802	23,168	17,587	15,308
All other sources	1,386	526	480	352	123
All import sources	28,685	22,328	23,647	17,939	15,431
Apparent U.S. consumption	***	***	***	***	***

Note.--Data for China is calculated by adding imports from China and Cambodia. Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent.

Source: Compiled from data submitted in response to Commission questionnaires and official U.S. import statistics for HTS statistical reporting numbers 2922.49.4020 and 2922.49.4300, accessed March 19, 2019.

Figure IV-7
Glycine: Apparent U.S. consumption, 2015-17, January to September 2017, and January to September 2018

* * * * * * *

U.S. MARKET SHARES

U.S. market share data are presented in table IV-11. These data show the U.S. producers' market share based on quantity increased by *** percentage points from 2015 to 2017. U.S. producers' market share based on value increased by *** percentage points from 2015 to 2017.

Table IV-11
Glycine: Market shares, 2015-17, January to September 2017, and January to September 2018

* * * * * * *

Table IV-12 presents U.S. importers' inventory changes and table IV-13 presents U.S. importers' re-export shipments during 2015-17, January-September 2017, and January-September 2018. Table IV-14 presents net U.S. shipments and import quantities and shares adjusted for U.S. importers' inventory changes and re-exports, 2015-17, January-September 2017, and January-September 2018.

Table IV-12
Glycine: U.S. importers' inventory changes, 2015-17, January to September 2017, and January to September 2018

* * * * * * *

Table IV-13
Glycine: U.S. importers' re-export shipments, 2015-17, January to September 2017, and January to September 2018

* * * * * * *

Table IV-14
Glycine: Net U.S. shipment and import quantities and shares, adjusted for U.S. importers' inventory changes and re-exports, 2015-17, January to September 2017, and January to September 2018

Item	Calendar year			January to September	
	2015	2016	2017	2017	2018
	Quantity (1,000 pounds)				
U.S. producers' U.S. shipments	***	***	***	***	***
Adjusted U.S. imports from.--					
China	***	***	***	***	***
India	***	***	***	***	***
Japan	***	***	***	***	***
Subtotal	***	***	***	***	***
Thailand	***	***	***	***	***
Subtotal	***	***	***	***	***
All other sources	***	***	***	***	***
All import sources	***	***	***	***	***
Apparent U.S. consumption	***	***	***	***	***
	Share of quantity (percent)				
U.S. producers' U.S. shipments	***	***	***	***	***
Adjusted U.S. imports from.--					
China	***	***	***	***	***
India	***	***	***	***	***
Japan	***	***	***	***	***
Subtotal	***	***	***	***	***
Thailand	***	***	***	***	***
Subtotal	***	***	***	***	***
All other sources	***	***	***	***	***
All import sources	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires and official U.S. import statistics for HTS statistical reporting numbers 2922.49.4020 and 2922.49.4300, accessed March 19, 2019.

PART V: PRICING DATA

FACTORS AFFECTING PRICES

Raw material costs

Glycine can be produced by using two different production methods. [1] U.S. producer GEO uses the hydrogen cyanide ("HCN") process, using the hazardous chemical HCN as its primary feedstock.[2] U.S. producer Chattem uses the monochloroacetic acid ("MCAA") process, using monochloroacetic acid and liquid ammonia.

Overall, U.S. producers reported that raw materials accounted for *** percent of the total cost of goods sold in 2017, down from *** percent in 2015. However, the different production methods employ different raw material inputs, and U.S. producers ***.[3] Chattem stated that raw material input pricing ***.[4]

There is no list price available in the United States for HCN.[5] ***.[6] ***.[7]

Ammonia prices and MCAA prices generally decreased through 2016, and increased in early 2017 (figure V-1). Overall, ammonia prices decreased by *** percent and MCAA prices increased by less than *** percent between Spring 2015 and Spring 2017.

Figure V-1
Raw materials: *, 2015-17**

* * * * * * *

U.S. inland transportation costs

*** U.S. producers and 15 of 22 importers reported that they typically arrange transportation to their customers. U.S. producers reported that their U.S. inland transportation costs ranged from *** while most importers reported costs of one to five percent.[8]

---

[1] Petition, p. 14; conference transcript, p. 35 (Hughes). Some end users prefer one process over the other due to differences in impurities. Conference transcript, p. 35 (Hughes).

[2] The HCN process requires that GEO maintain high operational standards to ensure that all U.S. government environmental, safety, and FDA regulations are satisfied, and its facility faces regular inspections. Conference transcript, pp. 16-17 (Lang).

[3] U.S. producer GEO reported that *** percent of its inputs was attributable to HCN, *** in 2017. GEO reported *** unit raw material costs during January 2015-December 2017. For additional information, see Part VI.

[4] Petitioners' postconference brief, Answers to Staff Questions, p. 17.

[5] Petitioners' postconference brief, Answers to Staff Questions, p. 19.

[6] ***.

[7] ***.

[8] Importer *** reported that U.S. inland transportation costs were 10 percent.

PRICING PRACTICES

Pricing methods

U.S. producers and importers reported selling glycine using transaction-by-transaction negotiations and contracts (table V-1).

Table V-1
Glycine: U.S. producers' and importers' reported price setting methods, by number of responding firms[1]

Method	U.S. producers	Importers
Transaction-by-transaction	***	14
Contract	***	10
Set price list	***	1
Other	***	4
Responding firms	***	22

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

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

*** U.S. producer, ***, reported selling ***, while U.S. producer *** reported selling ***. GEO stated that contracts allow it to run at the highest possible utilization rate and that major customers prefer contracts.[9] Importers reported selling most (*** percent) of their product under annual contracts, and most of the remainder was sold though spot sales (table V-2).

Table V-2
Glycine: U.S. producers' and importers' shares of U.S. commercial shipments by type of sale, 2017

* * * * * * *

U.S. producer *** reported that its contracts generally ***. During January 2015-December 2017, GEO ***.[10] Most responding importers reported that their annual and short-term contracts do not allow for price negotiations and fix both price and quantity.

Three purchasers reported that they purchase product weekly, 15 purchase monthly, and six purchase annually. Twenty-four of 39 responding purchasers reported that their purchasing frequency had not changed since 2015. Most (35 of 39) purchasers contact one to four suppliers before making a purchase.

[9] Hearing transcript, pp. 44-45 (Ghazey).
[10] Petitioners' postconference brief, Answers to Staff Questions, p. 20.

Sales terms and discounts

U.S. producers and importers quote prices on both f.o.b. and delivered bases. U.S. producer *** reported that it quotes prices on *** basis and *** reported that it quotes prices on ***. Ten of 22 importers reported quoting prices on a delivered basis, and 12 reported quoting prices on an f.o.b. basis.[11]

Both U.S. producers and most importers reported that they have no discount policy. Both U.S. producers and most importers reported sales terms of net 30 days.

Packaging

Petitioners stated that packaging can impact the pricing of pharmaceutical-grade glycine because the glycine producer will package the material to satisfy the customer's specific requirements and charge more for the unique packaging.[12]

Price leadership

Sixteen of 39 purchasers listed one or more price leaders. The firms most frequently reported to be price leaders were GEO (listed by 11 purchasers) and Newtrend, a foreign producer operating in Thailand with a related U.S. importer (listed by 4 purchasers).

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 glycine products shipped to unrelated U.S. customers during January 2015-September 2018.

Product 1.--**Pharmaceutical-grade glycine** -- a white, odorless, crystalline powder with a sweet taste, having an assay (glycine content) of 98.5 percent to 101.5 percent (dry basis), and ≤ 7ppm chloride, ≤ 65 ppm sulfate, and ≤1 ppm heavy metals.

Product 2.--**USP-grade glycine** -- a white, odorless, crystalline powder with a sweet taste, having an assay (glycine content) of 98.5 percent to 101.5 percent (dry basis) and ≤ 70 ppm chloride, ≤ 65 ppm sulfate, ≤ 20 ppm heavy metals, and not otherwise qualifying as pharmaceutical-grade glycine.

[11] Some of these firms reported using both f.o.b. and delivered quotes.

[12] Petition, p. 10.

Product 3.--**Technical-grade glycine** -- a white, off-white, or slightly yellow crystalline powder, having an assay (glycine content) of 98.5 percent to 101.5 percent (dry basis), with maximum chlorides of 0.4 percent, and not otherwise qualifying as USP-grade glycine.

Both U.S. producers and 17 of 23 importers provided usable pricing data for sales of the requested products, although not all firms reported pricing for all products for all quarters.[13] Pricing data reported by these firms accounted for approximately *** percent of U.S. producers' commercial shipments of glycine and *** percent of U.S. commercial shipments of imports from India, *** percent of U.S. commercial shipments of imports from Japan, and *** percent of U.S. commercial shipments of imports from Thailand in 2017. Pricing data accounted for *** percent of U.S commercial shipments of imports from China during 2015. No pricing data were reported for China in 2016, 2017, or 2018, although importer *** reported shipment data for 2017.[14]

Price data for products 1-3 are presented in tables V-3 to V-5 and figures V-2 to V-4.[15]

Table V-3
Glycine: Weighted-average f.o.b. prices and quantities of domestic and imported product 1 and margins of underselling/(overselling), by quarters, January 2015-September 2018

* * * * * * *

Table V-4
Glycine: Weighted-average f.o.b. prices and quantities of domestic and imported product 2 and margins of underselling/(overselling), by quarters, January 2015-September 2018

* * * * * * *

Table V-5
Glycine: Weighted-average f.o.b. prices and quantities of domestic and imported product 3 and margins of underselling/(overselling), by quarters, January 2015-September 2018

* * * * * * *

[13] 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.

[14] Staff contacted importer *** to provide pricing data but did not receive a response.

[15] ***.

Figure V-2
Glycine: Weighted-average prices and quantities of domestic and imported product 1, by quarters, January 2015-September 2018

* * * * * * *

Figure V-3
Glycine: Weighted-average prices and quantities of domestic and imported product 2, by quarters, January 2015-September 2018

* * * * * * *

Figure V-4
Glycine: Weighted-average prices and quantities of domestic and imported product 3, by quarters, January 2015-September 2018

* * * * * * *

Price trends

In general, prices for product 2, USP-grade glycine (the most-represented product) decreased during January 2015-September 2018, with most of the decline occurring from fourth quarter 2016 to first quarter 2018 with respect to U.S. producer prices and imports from Japan and Thailand. Prices for pharmaceutical and technical grades (products 1 and 3, respectively) fluctuated during January 2015-September 2018. Table V-6 summarizes the price trends, by country and by product. As shown in the table, U.S. producers' prices for USP-grade glycine decreased by *** percent, but U.S. producers' prices for pharmaceutical-grade and technical-grade glycine prices increased by *** percent and *** percent, respectively, during January 2015-September 2018.

Table V-6
Glycine: Number of quarters containing observations low price, high price, and change in price over period, by product and source, January 2015 through September 2018

* * * * * * *

Price comparisons

As shown in table V-7a, which excludes Thailand, prices for product imported from China, India, and Japan were below those for U.S.-produced product in 46 of 69 instances (*** pounds); margins of underselling ranged from *** to *** percent. In the remaining 23 instances (*** pounds), prices for product from China, India, and Japan were between *** percent above prices for the domestic product. Prices for product 2 and 3 were below those for U.S.-produced

product in *** instances, whereas prices for product 1 were above those for U.S.-produced product in *** instances (*** pounds).[16]

Table V-7a
Glycine: Instances of underselling/overselling and the range and average of margins, by product and by country, excluding Thailand, January 2015-September 2018

Source	Underselling				
	Number of quarters	Quantity (1,000 pounds)[1]	Average margin (percent)	Margin Range (percent)	
				Min	Max
Product 1	***	***	***	***	***
Product 2	***	***	***	***	***
Product 3	***	***	***	***	***
Total, underselling, excluding Thailand	46	***	***	***	***
China	***	***	***	***	***
India	***	***	***	***	***
Japan	***	***	***	***	***
Total, underselling, excluding Thailand	46	***	***	***	***
Source	(Overselling)				
	Number of quarters	Quantity (1,000 pounds)[1]	Average margin (percent)	Margin Range (percent)	
				Min	Max
Product 1	***	***	***	***	***
Product 2	***	***	***	***	***
Product 3	***	***	***	***	***
Total, overselling, excluding Thailand	23	***	***	***	***
China	***	***	***	***	***
India	***	***	***	***	***
Japan	***	***	***	***	***
Total, overselling, excluding Thailand	23	***	***	***	***

[1] These data include only quarters in which there is a comparison between the U.S. and subject product.

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

As shown in table V-7b, prices for product imported from China, India, Japan, and Thailand were below those for U.S.-produced product in 61 of 84 instances (*** pounds); margins of underselling ranged from *** to *** percent. In the remaining 23 instances (*** pounds), prices for product from China, India, Japan, and Thailand were between *** percent above prices for the domestic product. Prices for product 2 and 3 were below those for U.S.-produced product in *** and *** instances respectively, whereas prices for product 1 were above those for U.S.-produced product in *** instances (*** pounds).

[16] Petitioners state that overselling on product 1 is because product 1 includes both injectable and non-injectable pharmaceutical-grade glycine, and that the domestic industry sold more of the latter while import shipments of product 1 were exclusively injectable-grade, which is typically more expensive than the non-injectable grade of product 1. Petitioners' posthearing brief, p. 67.

Table V-7b
Glycine: Instances of underselling/overselling and the range and average of margins, by product and by country, including Thailand, January 2015 through September 2018

Source	Underselling				
	Number of quarters	Quantity (1,000 pounds)[1]	Average margin (percent)	Margin Range (percent)	
				Min	Max
Product 1	***	***	***	***	***
Product 2	***	***	***	***	***
Product 3	***	***	***	***	***
Total, underselling, including Thailand	61	***	***	***	***
China	***	***	***	***	***
India	***	***	***	***	***
Japan	***	***	***	***	***
Thailand	***	***	***	***	***
Total, underselling, including Thailand	61	***	***	***	***
Source	(Overselling)				
	Number of quarters	Quantity (1,000 pounds)[1]	Average margin (percent)	Margin Range (percent)	
				Min	Max
Product 1	***	***	***	***	***
Product 2	***	***	***	***	***
Product 3	***	***	***	***	***
Total, overselling, including Thailand	23	***	***	***	***
China	***	***	***	***	***
India	***	***	***	***	***
Japan	***	***	***	***	***
Thailand	***	***	***	***	***
Total, overselling, including Thailand	23	***	***	***	***

[1] These data include only quarters in which there is a comparison between the U.S. and subject product.

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

LOST SALES AND LOST REVENUE

In the preliminary phase of the investigations, the Commission requested that U.S. producers of glycine report purchasers where they experienced instances of lost sales or revenue due to competition from imports of glycine from China, India, Japan, and Thailand during 2015- 2017. *** submitted lost sales and lost revenue allegations and identified 16 firms where they lost sales or revenue (8 consisting of lost sales allegations and 8 consisting of lost revenue allegations). Twelve allegations were for lost sales and lost revenues for USP grade glycine and four allegations were for technical grade glycine. Most allegations were for lost sales and revenues in 2016 and 2017.

In the final phase of the investigations, *** reported that they had to reduce prices and one had to roll back announced price increases, and *** reported that they had lost sales. As noted in Part II, the Commission received purchaser questionnaire responses from 39

purchasers. Responding purchasers reported purchasing 84.3 million pounds of glycine during January 2015-September 2018 (table V-8).

Table V-8
Glycine: Purchasers' responses to purchasing patterns

* * * * * * *

Of the 39 responding purchasers, 28 reported that, since 2015, they had purchased imported glycine from China, India, Japan, and/or Thailand instead of U.S.-produced product. Twenty-two of these purchasers reported that import prices from China, India, Japan, and/or Thailand were lower than those of U.S.-produced product, and 14 of these purchasers reported that price was a primary reason for the decision to purchase imported product rather than U.S.-produced product (tables V-9 and V-10). Purchasers identified quality, supply diversification, and qualifications as non-price reasons for purchasing imported rather than U.S.-produced product. Fourteen purchasers estimated the quantity of glycine from China, India, Japan, and/or Thailand purchased instead of domestic product; quantities ranged from *** pounds to *** pounds.

Table V-9
Glycine: Purchasers' responses to purchasing subject instead of domestic, by firm

Purchaser	Imports from China, India, Japan, and Thailand purchased instead of domestic (Y/N)	Imports from China, India, Japan, and Thailand priced lower (Y/N)	If purchased imports from China, India, Japan, and Thailand instead of domestic, was price a primary reason		
			Y/N	If Yes, quantity (1,000 pounds)	If No, non-price reason
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***.
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***.
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
Total	Yes--28; No--9	Yes--22; No--4	Yes--14; No--14	8,532	***

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

Table V-10
Glycine: Purchasers' responses to purchasing subject instead of domestic, by country

Source	Count of purchasers reporting subject instead of domestic	Count of purchasers reported that imports were priced lower	Count of purchasers reporting that price was a primary reason for shift	Quantity subject purchased (1,000 pounds)
China	7	7	5	811
India	18	14	10	6,943
Japan	11	7	2	778
Thailand	21	18	12	4,320
China/India/Japan (any)	28	22	14	8,532
China/India/Japan/Thailand (any)	35	29	18	12,852

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

Of the 39 responding purchasers, four reported that U.S. producers had reduced prices in order to compete with lower-priced imports from China, India, Japan, and/or Thailand (tables V-11 and V-12; 28 reported that they did not know). The reported estimated price reduction was *** percent to compete with glycine from China and Japan and ranged from 10 to 20 percent for glycine from India. Three purchasers reported estimated price reductions of 10 to 20 percent for glycine from Thailand. In describing the price reductions, purchaser *** reported that prices decreased by *** percent, but that it did not know the impact of import competition on the price reduction. Purchaser *** reported that it ***, and purchaser *** reported that ***.

Table V-11
Glycine: Purchasers' response to U.S. producer price reductions to compete with imports from China, India, Japan, and/or Thailand, by firm

Purchaser	Producers reduced price (Y/N)	If producer reduced prices:	
		Estimated U.S. price reduction (percent)	Additional information, if available
***	***	***	***.
***	***	***	***.
***	***	***	***.
***	***	***	***.
***	***	***	***
***	***	***	***.
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
Total /average	Yes--4; No--7	16.3	---

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

Table V-12
Glycine: Purchasers' responses to U.S. producer price reductions, by country

Source	Count of purchasers reporting U.S. producers reduced prices	Simple average of estimated U.S. price reduction (percent)	Range of estimated U.S. price reductions (percent)
China	1	***	***
India	4	16.3	10.0 - 20.0
Japan	---	15.0	15.0 - 15.0
Thailand	3	15.0	10.0 - 20.0
China/India/Japan (any)	4	16.3	10.0 - 20.0
China/India/Japan/Thailand (any)	5	17.0	10.0 - 20.0

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

PART VI: FINANCIAL EXPERIENCE OF U.S. PRODUCERS

BACKGROUND

Two U.S. producers, Chattem and GEO, provided financial results on their glycine operations. The responding producers are believed to represent all U.S. production. Both U.S. producers provided their financial data on a GAAP and calendar-year basis.[1] None of the sales of glycine were either internally consumed or transferred to related companies.

Staff verified the results of *** with its corporate records. The verification resulted in adjustments to the value of *** in all periods. *** revised its questionnaire response to reflect these changes, which have been incorporated into this report.[2]

OPERATIONS ON GLYCINE

Table VI-1 presents income-and-loss data for the U.S. producers' glycine operations, while table VI-2 presents corresponding changes in average unit values. Table VI-3 presents selected company-specific financial data. Reported gross, operating, and net profitability of the U.S. industry declined overall from 2015 to 2017, and were lower in interim 2018 than in interim 2017.

Table VI-1
Glycine: Results of operations of U.S. producers, 2015-17, January-September 2017, and January-September 2018

* * * * * * *

Table VI-2
Glycine: Changes in AUVs between calendar years and interim year periods

* * * * * * *

Table VI-3
Glycine: Results of operations of U.S. producers, by firm, 2015-17, January-September 2017, and January-September 2018

* * * * * * *

[1] ***.

[2] Staff verification report, ***.

Net sales

Both the quantity and value of the industry's net sales decreased overall from 2015 to 2017.[3] The reported net sales quantity declined overall by *** percent during this time, while the aggregate net sales value declined by *** percent. The larger decrease by value reflected the decrease in the industry's average net sales unit value (from $*** per pound in 2015 to $*** per pound in 2017). When comparing the interim year periods, net sales quantity was higher in January-September 2018 than during the same period in 2017, while net sales value was lower, which was also attributable to a lower net sales unit value.[4]

***. *** reported an overall decrease in net sales, by quantity and value, from 2015 to 2017;[5] however, ***.[6] ***.[7]

Cost of goods sold and gross profit or (loss)

Raw material costs, direct labor, and other factory costs accounted for an average of ***, ***, and *** percent of total COGS, respectively, for the reporting period. Aggregate COGS declined by *** percent from 2015 to 2017, while net sales value declined by *** percent.[8] As a result of the larger decline in revenue compared to COGS, and a decrease in the volume of sales, gross profit declined from $*** in 2015 to $*** in 2017. When comparing the interim periods, aggregate COGS was *** percent higher in interim 2018 than in interim 2017, while net sales value was *** percent lower.[9] Accordingly, gross profit was lower in interim 2018 ($***) than in interim 2017 ($***).

On a per-pound basis, the industry's raw material costs declined from 2015 to 2017, while direct labor costs and other factory costs increased. Table VI-2 shows that per-pound COGS was essentially unchanged between 2015 and 2017, but the unit net sales value declined by $*** per pound.[10] The combination of lower unit net sales value with an essentially unchanged per-pound COGS resulted in the decline in gross profit per-pound from 2015 to 2017. Similarly, between the partial year periods the industry's per-pound COGS was $*** higher in interim 2018, while the unit net sales value was lower by $***, which resulted in the gross profit per pound of glycine being lower by $***. As a ratio to net sales, raw material costs

---

[3] Net sales quantity and value increased *** from 2015 to 2016, and decreased from 2016 to 2017, but decreased overall from 2015 to 2017.

[4] The industry's net sales unit value was $*** in interim 2017 and $*** in interim 2018. The lower unit value in interim 2018 was a result of ***. ***.

[5] ***.

[6] ***.

[7] See Part V of this report for more details regarding the difference in price between these three grades of glycine.

[8] The decline in aggregate COGS was ***. Emails from ***.

[9] ***. Emails from ***.

[10] The per-pound COGS decreased from 2015 to 2016, but increased in 2017 to the same value as 2015.

decreased irregularly, while direct labor and other factory costs increased from 2015 to 2017, and all three components of COGS as a ratio to net sales were higher in interim 2018 than during the same period in 2017. [11]

As mentioned previously, ***. As can be seen in table VI-3, the companies' unit COGS ***.[12] These ***.[13] [14] Table VI-4 presents the raw materials used by each company, as well as how these ***. The table shows that in 2017, GEO's raw material cost per pound of glycine was $***, while Chattem's was $*** per pound.

Table VI-4
Glycine: Raw materials by type, 2015-2017, January-September 2017, and January-September 2018

* * * * * * *

***.[15] Similarly, ***.

SG&A expenses and operating income

As seen in table VI-1, the industry's SG&A expenses increased from $*** in 2015 to $*** in 2017, and were higher in interim 2018 than in interim 2017. The expense ratio (SG&A expenses as a share of sales) increased from *** percent to *** percent from 2015 to 2017, and was higher in interim 2018 than in interim 2017. ***.[16] ***.[17] [18] Operating income followed a similar trend as gross profit, but due to the increase in SG&A expenses it decreased by *** percent from 2015 to 2017 compared to the *** percent decrease in gross profit during this time. Similarly, between the interim periods, both gross profit and operating income were lower in interim 2018, however the degree of difference between the interim periods was greater for operating income due to higher SG&A expenses in interim 2018. The operating margin was *** percent in 2015, *** percent in 2016, *** percent in 2017, *** percent in interim 2017, and *** percent in interim 2018.

[11] The ratio of raw materials to net sales decreased from 2015 to 2016 and increased from 2016 to 2017, but remained lower than the 2015 level in 2017. This ratio was at a period low in 2016, which was mainly attributable to the increase in net sales revenue during the same year.

[12] ***.

[13] See Part I for more information on the different production processes.

[14] Due to differences in cost structure and product mix between the companies, a variance analysis is not presented in this report.

[15] ***.

[16] ***. Email from ***. While ***.

[17] ***. The increase in ***. Email from ***.

[18] ***.

Other expenses and net income or (loss)

. It reported ***. ***. The industry's net income decreased from $ in 2015 to *** $*** in 2017, and was lower in interim 2018 (***) compared to interim 2017 (***).

CAPITAL EXPENDITURES AND RESEARCH AND DEVELOPMENT EXPENSES

Table VI-5 presents capital expenditures and research and development ("R&D") expenses by firm. Aggregate capital expenditure data increased from $*** in 2015 to $*** in 2017, and was *** higher in interim 2018 ($***) than in interim 2017 ($***). *** accounted for the *** of capital expenditures during the period examined. According to ***, the firm's capital expenditures in general reflect ***.[19] *** reported R&D expenses.

Table VI-5
Glycine: Capital expenditures and research and development expenses of U.S. producers, 2015-17, January-September 2017, and January-September 2018

* * * * * * *

ASSETS AND RETURN ON ASSETS

Table VI-6 presents data on the U.S. producers' total assets and their return on assets ("ROA").[20] The total assets utilized in the production, warehousing, and sale of glycine decreased from $*** in 2015 to $*** in 2017, while the operating ROA decreased irregularly from *** percent in 2015 to *** percent in 2017.

Table VI-6
Glycine: U.S. producers' total assets and return on assets, 2015-17

* * * * * * *

[19] U.S. producers' questionnaire response of ***, question III-13.

[20] The return on assets ("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 for the subject product.

CAPITAL AND INVESTMENT

The Commission requested U.S. producers of glycine to describe any actual or potential negative effects of imports of glycine from China, India, Japan, or Thailand on their firms' growth, investment, ability to raise capital, development and production efforts, or the scale of capital investments. Table VI-7 presents the number of firms reporting an impact in each category and table VI-8 provides the U.S. producers' narrative responses.

Table VI-7
Glycine: Actual and anticipated negative effects of imports on investment, growth, and development, since January 1, 2015

* * * * * * *

Table VI-8
Glycine: Narratives relating to actual and anticipated negative effects of imports on investment, growth, and development, since January 1, 2015

* * * * * * *

PART VII: THREAT CONSIDERATIONS AND INFORMATION ON NONSUBJECT COUNTRIES

Section 771(7)(F)(i) of the Act (19 U.S.C. § 1677(7)(F)(i)) provides that—

> *In determining whether an industry in the United States is threatened with material injury by reason of imports (or sales for importation) of the subject merchandise, the Commission shall consider, among other relevant economic factors*[1]*--*
>
> *(I) if a countervailable subsidy is involved, such information as may be presented to it by the administering authority as to the nature of the subsidy (particularly as to whether the countervailable subsidy is a subsidy described in Article 3 or 6.1 of the Subsidies Agreement), and whether imports of the subject merchandise are likely to increase,*
>
> *(II) any existing unused production capacity or imminent, substantial increase in production capacity in the exporting country indicating the likelihood of substantially increased imports of the subject merchandise into the United States, taking into account the availability of other export markets to absorb any additional exports,*
>
> *(III) a significant rate of increase of the volume or market penetration of imports of the subject merchandise indicating the likelihood of substantially increased imports,*
>
> *(IV) whether imports of the subject merchandise are entering at prices that are likely to have a significant depressing or suppressing effect on domestic prices, and are likely to increase demand for further imports,*
>
> *(V) inventories of the subject merchandise,*

---

[1] Section 771(7)(F)(ii) of the Act (19 U.S.C. § 1677(7)(F)(ii)) provides that "The Commission shall consider {these factors} . . . as a whole in making a determination of whether further dumped or subsidized imports are imminent and whether material injury by reason of imports would occur unless an order is issued or a suspension agreement is accepted under this title. The presence or absence of any factor which the Commission is required to consider . . . shall not necessarily give decisive guidance with respect to the determination. Such a determination may not be made on the basis of mere conjecture or supposition."

(VI) the potential for product-shifting if production facilities in the foreign country, which can be used to produce the subject merchandise, are currently being used to produce other products,

(VII) in any investigation under this title which involves imports of both a raw agricultural product (within the meaning of paragraph (4)(E)(iv)) and any product processed from such raw agricultural product, the likelihood that there will be increased imports, by reason of product shifting, if there is an affirmative determination by the Commission under section 705(b)(1) or 735(b)(1) with respect to either the raw agricultural product or the processed agricultural product (but not both),

(VIII) the actual and potential negative effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the domestic like product, and

(IX) any other demonstrable adverse trends that indicate the probability that there is likely to be material injury by reason of imports (or sale for importation) of the subject merchandise (whether or not it is actually being imported at the time).[2]

Information on the nature of the subsidies was presented earlier in this report; information on the volume and pricing of imports of the subject merchandise is presented in *Parts IV* and *V*; and information on the effects of imports of the subject merchandise on U.S. producers' existing development and production efforts is presented in *Part VI*. Information on inventories of the subject merchandise; foreign producers' operations, including the potential for "product-shifting;" any other threat indicators, if applicable; and any dumping in third-country markets, follows. Also presented in this section of the report is information obtained for consideration by the Commission on nonsubject countries.

[2] Section 771(7)(F)(iii) of the Act (19 U.S.C. § 1677(7)(F)(iii)) further provides that, in antidumping investigations, ". . . the Commission shall consider whether dumping in the markets of foreign countries (as evidenced by dumping findings or antidumping remedies in other WTO member markets against the same class or kind of merchandise manufactured or exported by the same party as under investigation) suggests a threat of material injury to the domestic industry."

THE INDUSTRY IN CHINA

The Commission issued foreign producers' or exporters' questionnaires to 14 firms believed to produce and/or export glycine from China.[3] The Commission did not receive any questionnaire response from the firms issued questionnaires, including Commerce's two mandatory respondents in its countervailing duty investigations, JC Chemicals Limited and Sigmachem Corp.[4]

China is considered to be the world's largest producer of glycine. One report indicated that there were about *** glycine producers in China in 2016, with a total production capacity of approximately *** metric tons. Many Chinese glycine producers use glycine ***; some export the product.[5] Most glycine producers in China use the MCA process.[6] Table VII-1 presents data on glycine producers in China and their reported production and share of production for 2016.

Table VII-1
Glycine: Summary data for producers in China, 2016

* * * * * * *

Exports

Table VII-2 presents GTA data for the leading export markets for amino acids and esters from China.[7] In 2017, United States, Netherlands, and Germany, respectively, were the three largest export destinations for amino acids and esters from China. During 2017, the United States was the largest export market for amino acids and esters from China, accounting for 16.1 percent, followed by Netherlands, accounting for 14.0 percent, and Germany, accounting for 9.2 percent.

[3] These firms were identified through a review of information submitted in the petition and contained in *** records.

[4] See *Glycine From the People's Republic of China: Final Affirmative Countervailing Duty Determination*, 84 FR 18489, May 1, 2019.

[5] ***.

[6] *Glycine from China, Inv. No. 731-TA-718 (Fourth Review)*, USITC Publication 4667, February 2017, p. I-5.

[7] The GTA data presented in this chapter are derived from Harmonized System heading 2922.49. This heading comprises a large number of products, including glycine.

Table VII-2
Amino acids and esters: Exports from China by destination market, 2015-17

Destination market	Calendar year		
	2015	2016	2017
	Quantity (1,000 pounds)		
Exports from China to the United States	67,299	69,967	86,604
Exports from China to other major destination markets.--			
Netherlands	48,545	60,089	75,103
Germany	40,087	45,390	49,351
Japan	35,804	40,357	47,949
India	29,056	36,936	38,055
Spain	11,787	14,987	21,990
Thailand	15,179	16,683	18,228
South Korea	15,315	16,611	18,211
Russia	11,329	12,303	16,808
Poland	8,984	12,835	15,436
All other destination markets	117,538	131,326	149,654
Total exports from China	400,924	457,484	537,390
	Value (1,000 dollars)		
Exports from China to the United States	142,679	116,747	142,863
Exports from China to other major destination markets.--			
Netherlands	52,085	58,925	73,625
Germany	68,325	66,172	68,366
Japan	65,785	73,107	81,768
India	60,128	63,438	79,280
Spain	23,148	21,518	32,679
Thailand	15,685	14,256	19,077
South Korea	32,823	32,343	31,839
Russia	16,733	16,443	23,024
Poland	11,423	13,201	15,860
All other destination markets	231,056	230,386	273,158
Total exports from China	719,870	706,537	841,541

Table continued on next page.

Table VII-2--Continued
Amino acids and esters: Exports from China by destination market, 2015-17

Destination market	Calendar year		
	2015	2016	2017
	Unit value (dollars per pound)		
Exports from China to the United States	2.12	1.67	1.65
Exports from China to other major destination markets.--			
Netherlands	1.07	0.98	0.98
Germany	1.70	1.46	1.39
Japan	1.84	1.81	1.71
India	2.07	1.72	2.08
Spain	1.96	1.44	1.49
Thailand	1.03	0.85	1.05
South Korea	2.14	1.95	1.75
Russia	1.48	1.34	1.37
Poland	1.27	1.03	1.03
All other destination markets	1.97	1.75	1.83
Total exports from China	1.80	1.54	1.57
	Share of quantity (percent)		
Exports from China to the United States	16.8	15.3	16.1
Exports from China to other major destination markets.--			
Netherlands	12.1	13.1	14.0
Germany	10.0	9.9	9.2
Japan	8.9	8.8	8.9
India	7.2	8.1	7.1
Spain	2.9	3.3	4.1
Thailand	3.8	3.6	3.4
South Korea	3.8	3.6	3.4
Russia	2.8	2.7	3.1
Poland	2.2	2.8	2.9
All other destination markets	29.3	28.7	27.8
Total exports from China	100.0	100.0	100.0

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

Source: Official exports statistics under HS subheading 2922.49 as reported by the Ministry of Commerce in the Global Trade Atlas database, accessed February 26, 2019.

THE INDUSTRY IN INDIA

The Commission issued foreign producers' or exporters' questionnaires to 14 firms believed to produce and/or export glycine from India.[8] Usable responses to the Commission's questionnaire were received from four firms: Enzyme Biosciences, Kumar, Mulji Mehta, and

[8] These firms were identified through a review of information submitted in the petition and contained in *** records.

Paras (two of which Commerce selected as mandatory respondents during its antidumping and countervailing duty investigations -- Kumar Industries and Paras Intermediates Private Limited). These firms' exports to the United States accounted for *** percent of U.S. imports of glycine from India in 2017.[9] [10] Tables VII-3 and VII-4 present information on the glycine operations of the responding producers and exporters in India.

Table VII-3
Glycine: Summary data for producers in India, 2017

* * * * * * *

Table VII-4
Glycine: Summary data on resellers in India exporting to the United States, 2017

* * * * * * *

Changes in operations

Producers in India reported no changes in the character of their operations or organization since January 1, 2015.

Operations on glycine

Table VII-5 presents information on the glycine operations of the responding producers and exporters in India. Total production of glycine in India increased from *** pounds in 2015 to *** pounds in 2016, and then decreased in 2017 to *** pounds. Compared to interim 2017, production levels in interim 2018 were lower by *** percent.[11] From 2015 to 2017, capacity increased by *** percent from *** pounds to *** pounds. Reported capacity was higher in January-September 2018 than in January-September 2017 by *** percent. Of the three responding producers from India, *** was the only company reporting changes in capacity and capacity projections for 2018 and 2019. However, the company did not provide an explanation in response to staff inquiries regarding such reported capacity increases. Capacity utilization was at *** percent in 2017, down from *** percent in 2015. Exports to the United States as a share of total shipments increased from 2015 to 2016, *** percent to *** percent and then

[9] Foreign producer respondents from India did not provide questionnaire data on estimates of firms' percentage of overall production of glycine in India.

[10] One foreign producer and importer from India, ***, which participated in the preliminary phase of investigations and also accounts for *** percent of imports, did not respond in the final phase of these investigations. In the preliminary phase of investigations, *** reported importing *** pounds from India in 2017 from ***. Other non-responsive Indian glycine manufacturers / exporter include ***.

[11] ***.

decreased to *** percent in 2017. Adjusted exports to the United States as a share of total shipments, including resellers, increased from 2015 to 2017, *** percent to *** percent, was lower in January-September 2018 than in January-September 2017 and is projected to decrease in 2019. Inventories as a share of production declined from *** percent to *** percent from 2015 to 2017.

Table VII-5
Glycine: Data on industry in India 2015-17, January to September 2017 and January to September 2018 and projection calendar years 2018 and 2019

* * * * * * *

Alternative products

As shown in table VII-6, responding Indian firms reported producing *** pounds of other products in interim 2018 on the same equipment and machinery used to produce glycine. Out-of-scope production represented *** percent of total production on the same machinery in interim 2018.

Table VII-6
Glycine: Overall capacity and production on the same equipment as in-scope production by producers in India, 2015-17, January to September 2017, and January to September 2018

* * * * * * *

Exports

According to GTA, the leading export markets for amino acids and esters from India are the United States, Vietnam, and the United Kingdom (table VII-7). In 2017, the United States was the largest export market for amino acids from India, accounting for 45.1 percent by quantity, followed by Vietnam, accounting for 6.5 percent, and the United Kingdom, accounting for 6.1 percent.

Table VII-7
Amino acids and esters: Exports from India by destination market, 2015-17

Destination market	Calendar year		
	2015	2016	2017
	Quantity (1,000 pounds)		
Exports from India to the United States	5,475	7,124	6,409
Exports from India to other major destination markets.--			
Vietnam	426	583	926
United Kingdom	496	965	861
Germany	1,788	2,552	705
Netherlands	321	648	442
Canada	79	309	431
Japan	99	110	238
China	815	1,374	344
South Korea	106	174	262
Bangladesh	166	261	259
All other destination markets	2,382	3,738	3,339
Total exports from India	12,153	17,836	14,215
	Value (1,000 dollars)		
Exports from India to the United States	39,332	53,440	48,002
Exports from India to other major destination markets.--			
Vietnam	739	870	1,564
United Kingdom	4,023	9,612	7,372
Germany	11,856	15,494	5,768
Netherlands	623	1,186	740
Canada	1,010	5,872	10,133
Japan	2,648	793	1,540
China	1,521	1,753	1,224
South Korea	569	1,316	3,940
Bangladesh	1,412	2,053	2,061
All other destination markets	30,080	41,489	56,590
Total exports from India	93,814	133,878	138,933

Table continued on the page.

Table VII-7--Continued
Amino acids and esters: Exports from India by destination market, 2015-17

Destination market	Calendar year		
	2015	2016	2017
	Unit value (dollars per pound)		
Exports from India to the United States	7.18	7.50	7.49
Exports from India to other major destination markets.--			
Vietnam	1.74	1.49	1.69
United Kingdom	8.12	9.96	8.56
Germany	6.63	6.07	8.18
Netherlands	1.94	1.83	1.68
Canada	12.77	19.00	23.54
Japan	26.64	7.23	6.48
China	1.87	1.28	3.56
South Korea	5.36	7.57	15.04
Bangladesh	8.53	7.85	7.95
All other destination markets	12.63	11.10	16.95
Total exports from India	7.72	7.51	9.77
	Share of quantity (percent)		
Exports from India to the United States	45.0	39.9	45.1
Exports from India to other major destination markets.--			
Vietnam	3.5	3.3	6.5
United Kingdom	4.1	5.4	6.1
Germany	14.7	14.3	5.0
Netherlands	2.6	3.6	3.1
Canada	0.7	1.7	3.0
Japan	0.8	0.6	1.7
China	6.7	7.7	2.4
South Korea	0.9	1.0	1.8
Bangladesh	1.4	1.5	1.8
All other destination markets	19.6	21.0	23.5
Total exports from India	100.0	100.0	100.0

Source: Official exports statistics under HS subheading 2922.49 as reported by Ministry of Commerce in the Global Trade Atlas database, accessed March 6, 2019.

THE INDUSTRY IN JAPAN

The Commission issued foreign producers' or exporters' questionnaires to 11 firms believed to produce and/or export glycine from Japan.[12] Usable responses to the Commission's questionnaire were received from three firms: Yuki Gosei, Showa Denko KK, and Ajinomoto Co., Inc. (these responses include the firms that Commerce selected as mandatory respondents in its antidumping duty investigation -- Yuki Gosei Kogyo Co., Ltd. and Showa Denko K.K.). These firms' exports to the United States accounted for *** percent of U.S. imports of glycine from Japan in 2017.[13] According to estimates requested of the responding Japan producers, the production of glycine reported in the questionnaires of these firms accounts for approximately *** percent of overall production of glycine in Japan in 2017.[14]

Table VII-8 presents information on the glycine operations of the responding producers and exporters in Japan.

Table VII-8
Glycine: Summary data for producers in Japan, 2017

* * * * * * *

Table VII-9
Glycine: Summary data on resellers in Japan exporting to the United States, 2017

* * * * * * *

Changes in operations

*** reported the following change in operations: ***.

Operations on glycine

Table VII-10 presents information on the glycine operations of the responding producers and exporters in Japan. Total production of glycine in Japan increased from *** pounds in 2015

[12] These firms were identified through a review of information submitted in the petition and contained in *** records.

[13] ***.

[14] This coverage represents the average of Yuki's and Showa's questionnaire responses combined. See Yuki's foreign producer questionnaire response, section II-5 and Showa Denko's foreign producer questionnaire response, section II-5.

to *** pounds in 2016, and then decreased in 2017 to *** pounds. Compared to interim 2017, production levels in interim 2018 were lower by *** percent. From 2015 to 2017, capacity remained unchanged at *** pounds and was expected to be at the same level in 2018 and then increase by *** percent in 2019. Capacity utilization remained above *** percent during 2015-17, but projections for 2018 and 2019 were lower at *** percent. Exports by Japanese producers to the United States as a share of total shipments increased during 2015-17, from *** percent to *** percent. Adjusted exports to the United States as a share of total shipments, including resellers, decreased from 2015 to 2017, *** percent to *** percent, was lower in January-September 2018 than in January-September 2017, but is projected to increase in 2019 to *** percent from *** percent in 2018. Inventories as a share of total shipments increased from *** percent to *** percent from 2015 to 2017.

Table VII-10
Glycine: Data on industry in Japan, 2015-17, January to September 2017, and January to September 2018 and projection calendar years 2018 and 2019

* * * * * * *

Alternative products

As shown in table VII-11, responding Japan firms produced *** on the same equipment and machinery used to produce glycine.

Table VII-11
Glycine: Overall capacity and production on the same equipment as in-scope production by producers in Japan, 2015-17, January to September 2017 and January to September 2018

* * * * * * *

Exports

Table VII-12 presents GTA data for the leading export markets for amino acids and esters from Japan. In 2017, the United States was the largest export market for amino acids and esters from Japan, accounting for 24.9 percent, followed by South Korea and the United Kingdom, accounting for 16.8 percent and 10.8 percent, respectively.

Table VII-12
Amino acids and esters: Exports from Japan by destination market, 2015-17

Destination market	Calendar year		
	2015	2016	2017
	Quantity (1,000 pounds)		
Exports from Japan to the United States	7,719	6,734	6,477
Exports from Japan to other major destination markets.--			
South Korea	4,698	4,344	4,359
United Kingdom	3,083	2,790	2,812
Germany	2,256	2,516	2,322
Taiwan	1,626	1,815	1,890
Thailand	559	714	1,843
Vietnam	1,474	1,490	1,041
China	1,229	947	868
Netherlands	666	664	677
Poland	1,058	212	600
All other destination markets	3,408	3,073	3,105
Total exports from Japan	27,775	25,299	25,996
	Value (1,000 dollars)		
Exports from Japan to the United States	27,948	27,420	23,561
Exports from Japan to other major destination markets.--			
South Korea	11,517	11,568	9,641
United Kingdom	4,788	4,252	4,658
Germany	19,521	20,395	19,392
Taiwan	3,327	3,320	3,653
Thailand	2,205	2,498	3,611
Vietnam	2,714	3,683	2,518
China	7,390	11,098	6,398
Netherlands	4,173	4,417	3,697
Poland	1,113	225	624
All other destination markets	20,212	18,328	19,947
Total exports from Japan	104,908	107,204	97,701

Table continued on next the page

Table VII-12--Continued
Amino acids and esters: Exports from Japan by destination market, 2015-17

Destination market	Calendar year		
	2015	2016	2017
	Unit value (dollars per pound)		
Exports from Japan to the United States	3.62	4.07	3.64
Exports from Japan to other major destination markets.--			
South Korea	2.45	2.66	2.21
United Kingdom	1.55	1.52	1.66
Germany	8.65	8.11	8.35
Taiwan	2.05	1.83	1.93
Thailand	3.95	3.50	1.96
Vietnam	1.84	2.47	2.42
China	6.01	11.71	7.37
Netherlands	6.27	6.65	5.46
Poland	1.05	1.06	1.04
All other destination markets	5.93	5.96	6.42
Total exports from Japan	3.78	4.24	3.76
	Share of quantity (percent)		
Exports from Japan to the United States	27.8	26.6	24.9
Exports from Japan to other major destination markets.--			
South Korea	16.9	17.2	16.8
United Kingdom	11.1	11.0	10.8
Germany	8.1	9.9	8.9
Taiwan	5.9	7.2	7.3
Thailand	2.0	2.8	7.1
Vietnam	5.3	5.9	4.0
China	4.4	3.7	3.3
Netherlands	2.4	2.6	2.6
Poland	3.8	0.8	2.3
All other destination markets	12.3	12.1	11.9
Total exports from Japan	100.0	100.0	100.0

Source: GTIS/GTA database.

THE INDUSTRY IN THAILAND

In September and October of 2018, Commerce issued preliminary negative determinations in its countervailing duty investigation and its investigation of sales at less than fair value regarding glycine from Thailand. Commerce identified one mandatory respondent for its antidumping and countervailing duty investigations, Newtrend Food Ingredient (Thailand)

Co., Ltd.[15] Final determinations for these proceedings were scheduled for April 24, 2019, but have been postponed until further notice.[16] Commerce postponed its final determinations regarding less-than-fair-value (LTFV) and countervailing duty (CVD) investigations of glycine from Thailand due to new evidence and allegations presented by U.S. Customs and Border Protection that there is "reasonable suspicion that Newtrend USA entered covered merchandise into the customs territory of the United States through evasion by means of transshipment through Thailand."[17] Staff requested certified responses from both Newtrend USA, the U.S. affiliate, and its related Thai producer, Newtrend Food Ingredient (Thailand) Co., LTD., as well as questionnaire responses from the related company in China. The Commission received certified responses from both Newtrend Food Ingredient in Thailand as well as a revised U.S. importer questionnaire response from Newtrend USA. The Commission did not receive responses from the related company in China.[18]

The Commission issued foreign producers' or exporters' questionnaires to one firm believed to produce and/or export glycine from Thailand.[19] Newtrend provided usable responses to the Commission's questionnaire. This firm's exports to the United States accounted for all U.S. imports of glycine from Thailand in 2017. According to Newtrend, its production of glycine in Thailand accounts for all glycine production in Thailand. Table VII-13 presents information on the glycine operations of Newtrend in Thailand.

Table VII-13
Glycine: Summary data on firms in Thailand, 2017

* * * * * * *

Changes in operations

Newtrend reported no changes in the character of its operations or organization since January 1, 2015.

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[15] *Glycine From Thailand: Preliminary Determination of Sales at Not Less Than Fair Value, Preliminary Negative Determination of Critical Circumstances, Postponement of Final Determination*, 83 FR 54717, October 31, 2018.

[16] See *Memorandum of Postponement of the Final Determinations in the Less-Than-Fair-Value and Countervailing Duty Investigations of Glycine from Thailand*, Cases A-549-837 and C-549-838, April 24, 2019.

[17] Ibid.

[18] Staff sent Newtrend a request for a foreign producer questionnaire response for its glycine operations in China and also additional questions regarding Newtrend's and its affiliate's purchases of Chinese-origin glycine in any form or grade since January 1, 2015. Newtrend did not provide responses to either of these requests for additional information.

[19] This firm was identified through a review of information submitted in the petition and contained in *** records.

Operations on glycine

Table VII-14 presents information on Newtrend's glycine operations in Thailand.[20] Total production of glycine in Thailand decreased from 2015 to 2016, *** pounds to *** pounds, a decline of *** percent, and then increased in 2017 to *** pounds. Compared to 2017, production levels are projected to increase in 2018 and 2019 by *** percent and *** percent, respectively. Reported capacity, which exceeded reported production levels throughout the period for which data were collected, remained the same during 2015-17 at *** pounds and is projected to remain the same in 2018-19. Capacity utilization, as calculated from reported capacity and production levels, was at *** percent in 2017 and is projected to be higher in 2018 and 2019 at *** percent and *** percent.

Table VII-14
Glycine: Data on industry in Thailand, 2015-17, January to September 2017, and January to September 2018 and projection calendar years 2018 and 2019

* * * * * * *

Reported exports to the United States as share of total shipments decreased from 2015 to 2016, falling from *** percent to *** percent, and then increased in 2017 to *** percent. Projected levels of exports to the United States as a share of total shipments for 2018 and 2019 are expected to remain at *** percent. Inventories of finished goods as a share of production declined from *** to *** percent in 2015-17 and are expected to decrease to *** percent in 2019.

Alternative products

As shown in table VII-15, *** on the same equipment and machinery used to produce glycine.

Table VII-15
Glycine: Overall capacity and production on the same equipment as in-scope production by producers in Thailand, 2015-17, January to September 2017, and January to September 2018

* * * * * * *

[20] Newtrend Food Ingredient (Thailand) Co. Ltd. is a subsidiary of the Chinese glycine producer Newtrend Group. Its facility in Thailand was established in 2013 and began operations in 2014. For more information, see the company's website at http://newtrend-th.com/home/.

Exports

According to GTA, the leading export markets for amino acids and esters from Thailand are the United States and Germany (table VII-16). In 2017, the United States was the largest export market for amino acids and esters from Thailand, accounting for 47.3 percent, followed by Germany, accounting for 34.4 percent.

Table VII-16
Amino acids and esters: Exports from Thailand by destination market, 2015-17

Destination market	Calendar year		
	2015	2016	2017
	Quantity (1,000 pounds)		
Exports from Thailand to the United States	4,859	503	2,765
Exports from Thailand to other major destination markets.--			
Germany	---	2,302	2,011
Netherlands	---	88	247
China	1	54	212
Russia	---	---	176
United Kingdom	---	---	161
Cambodia	0	4	102
Singapore	2	20	62
India	0	2	38
Philippines	0	1	22
All other destination markets	59	56	47
Total exports from Thailand	4,921	3,030	5,842
	Value (1,000 dollars)		
Exports from Thailand to the United States	10,412	968	4,477
Exports from Thailand to other major destination markets.--			
Germany	---	1,600	1,502
Netherlands	---	80	263
China	23	31	1,307
Russia	---	---	233
United Kingdom	---	---	210
Cambodia	1	5	293
Singapore	4	26	181
India	1	43	450
Philippines	0	1	74
All other destination markets	195	159	202
Total exports from Thailand	10,636	2,914	9,192

Table continued on the next page.

Table VII-16--Continued
Amino acids and esters: Exports from Thailand by destination market, 2015-17

Destination market	Calendar year		
	2015	2016	2017
	Unit value (dollars per pound)		
Exports from Thailand to the United States	2.14	1.93	1.62
Exports from Thailand to other major destination markets.--			
Germany	---	0.70	0.75
Netherlands	---	0.91	1.07
China	40.93	0.57	6.17
Russia	---	---	1.32
United Kingdom	---	---	1.30
Cambodia	126.75	1.24	2.87
Singapore	1.88	1.29	2.93
India	7.85	17.74	11.97
Philippines	1.76	1.39	3.33
All other destination markets	3.31	2.85	4.32
Total exports from Thailand	2.16	0.96	1.57
	Share of quantity (percent)		
Exports from Thailand to the United States	98.7	16.6	47.3
Exports from Thailand to other major destination markets.--			
Germany	---	76.0	34.4
Netherlands	---	2.9	4.2
China	0.0	1.8	3.6
Russia	---	---	3.0
United Kingdom	---	---	2.8
Cambodia	0.0	0.1	1.7
Singapore	0.0	0.7	1.1
India	0.0	0.1	0.6
Philippines	0.0	0.0	0.4
All other destination markets	1.2	1.8	0.8
Total exports from Thailand	100.0	100.0	100.0

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

Source: Official exports statistics under HS subheading 2922.49 as reported by Ministry of Commerce in the Global Trade Atlas database, accessed March 6, 2019.

COMBINED FOREIGN INDUSTRIES

Table VII-17 presents summary data on glycine operations of the reporting producers and exporters in India and Japan combined. The combined capacity in these two subject countries increased by *** percent from 2015 to 2017. Combined production decreased by *** percent from 2015 to 2017, and is projected to decrease below 2017 levels in 2018 and 2019.

Combined capacity utilization rates remained above *** percent for all full periods but decreased by *** percentage points from 2015 to 2017, and are expected to decrease further in 2018 and 2019, compared to 2017 levels. Combined exports to the United States increased by *** percent from 2015 to 2017 but are projected to decrease in 2018 and 2019.

Table VII-17
Glycine: Data on India and Japan, 2015-17, January to September 2017, and January to September 2018 and projection calendar years 2018 and 2019

* * * * * * *

U.S. INVENTORIES OF IMPORTED MERCHANDISE

Table VII-18 presents data on U.S. importers' reported inventories of glycine. Inventories of U.S. imports of glycine from China were present in only one reporting period (***). Inventories of U.S. imports of glycine from India and Japan decreased between 2015 and 2017, but were noticeably higher in January through September 2018 than in January through September 2017 (both in absolute terms and relative to imports and shipments). Inventories of U.S. imports of glycine from Thailand decreased markedly between 2015 and 2016, and continued to decline in 2017, resulting in a net inventory drawdown of *** pounds of glycine from Thailand. Inventories of U.S. imports of glycine from Thailand in January through September 2018 were lower than in January through September 2017, but still represented more than *** percent of all glycine inventories held by U.S. importers during the 2018 interim period.

Table VII-18
Glycine: U.S. importers' end-of-period inventories of imports by source, 2015-17, January to September 2017, and January to September 2018

* * * * * * *

U.S. IMPORTERS' OUTSTANDING ORDERS

The Commission requested importers to indicate whether they imported or arranged for the importation of glycine from China, India, Japan, and Thailand after October 2018, as presented in table VII-19.

Table VII-19
Glycine: Arranged imports, October 2018 through September 2019

* * * * * * *

ANTIDUMPING OR COUNTERVAILING DUTY ORDERS IN THIRD-COUNTRY MARKETS

There are no known antidumping, countervailing duty, or safeguard orders on investigations on glycine in any other country.

INFORMATION ON NONSUBJECT COUNTRIES

During 2016-18, nonsubject sources of U.S. imports of glycine included the following: the United Kingdom, Sweden, France, Ireland, Switzerland, Germany, Taiwan, Malaysia, Italy, Canada, Cambodia, and Belgium.[21] The Tessenderlo Group (Belgium) was identified in 2007 as the only European producer of glycine.[22] In 2010, Evonik (Germany) purchased Tessenderlo's glycine assets, stating that it would produce glycine at its plant in China and that Tessenderlo would shut down its glycine production in Belgium.[23] According to information from its website, Evonik appears to still supply glycine and notes that it is backward integrated, therefore producing many of its inputs.[24] However, despite a review of secondary source information, information is not readily available as to Evonik's glycine production. The European Chemical Agency's (ECHA) Registration Dossier for glycine lists over 30 registrants/suppliers in the EU, including Evonik Rexim S.A.S. in France.[25] GEO Specialty Chemical is also listed as a registrant/supplier in the EU (listed with a UK address).

***.

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[21] USITC DataWeb/USDOC (HTS subheadings 2922.49.4020 and 2922.49.4300; accessed March 22, 2019). The U.S. Department of Commerce has issued preliminary negative determinations in regard to imports from Thailand. See table VII-13 for information about the Thai industry.

[22] *Glycine from India, Japan, and Korea,* Inv. Nos. 731-TA-1111-1113 (Preliminary)), USITC Publication 3921, May 2007.

[23] Evonik, "Evonik Offers Tessenderlo Customers Secure Supply of Glycine," press release, July 14, 2010 (http://corporate.evonik.com/en/media/search/pages/news-details.aspx?newsid=13460); Evonik, "Evonik Expands Glycine Capacity," press release, June 20, 2011 (http://corporate.evonik.com/en/media/search/pages/news-details.aspx?newsid=29523).

[24] Evonik, "High Quality Pharmaceutical Ingredients for your Applications: API – Intermediates – Amino Acid as Nutrients – Excipients," September 2016 (http://healthcare.evonik.com/sites/lists/nc/documentshc/evonik_pharma_amino_acid_brochure.pdf).

[25] ECHA, "Registration Dossier: Glycine," September 1, 2011 (https://echa.europa.eu/registration-dossier/-/registered-dossier/14889). The dossier does not indicate if firms are producers or importers.

Table VII-20
Amino acids and esters: Global exports by exporter, 2015-17

Exporter	Calendar year		
	2015	2016	2017
	Quantity (1,000 pounds)		
United States	138,950	134,548	173,258
China	400,924	457,484	537,390
India	12,153	17,836	14,215
Japan	27,775	25,299	25,996
Thailand	4,921	3,030	5,842
All other major reporting exporters.-- Germany	282,610	313,268	288,246
Netherlands	146,652	189,977	200,394
Belgium	48,621	52,765	66,128
France	48,447	51,437	40,274
Lithuania	2,148	12,571	21,494
South Korea	11,109	14,578	17,518
United Kingdom	14,334	14,584	15,040
Sweden	14,458	10,588	12,249
Spain	5,510	8,214	7,827
Switzerland	1,613	2,976	7,623
All other exporters	65,507	45,956	45,895
Total global exports	1,225,731	1,355,111	1,479,388
	Value (1,000 dollars)		
United States	206,571	233,937	186,795
China	719,870	706,537	841,541
India	93,814	133,878	138,933
Japan	104,908	107,204	97,701
Thailand	10,636	2,914	9,192
All other major reporting exporters.-- Germany	276,979	436,562	278,868
Netherlands	177,856	185,211	197,294
Belgium	2,887,868	2,713,003	2,245,453
France	114,586	117,435	117,729
Lithuania	3,273	9,996	16,372
South Korea	36,392	44,516	63,907
United Kingdom	61,560	59,447	58,497
Sweden	9,278	7,354	7,399
Spain	33,918	38,763	44,353
Switzerland	330,229	322,494	332,429
All other exporters	3,836,573	3,431,717	3,622,269
Total global exports	8,904,310	8,550,968	8,258,730

Table continued on the next page.

Table VII-20--Continued
Amino acids and esters: Global exports by exporter, 2015-17

Exporter	Calendar year		
	2015	2016	2017
	Unit value (dollars per pound)		
United States	1.49	1.74	1.08
China	1.80	1.54	1.57
India	7.72	7.51	9.77
Japan	3.78	4.24	3.76
Thailand	2.16	0.96	1.57
All other major reporting exporters.--Germany	0.98	1.39	0.97
Netherlands	1.21	0.97	0.98
Belgium	59.40	51.42	33.96
France	2.37	2.28	2.92
Lithuania	1.52	0.80	0.76
South Korea	3.28	3.05	3.65
United Kingdom	4.29	4.08	3.89
Sweden	0.64	0.69	0.60
Spain	6.16	4.72	5.67
Switzerland	204.72	108.38	43.61
All other exporters	58.57	74.67	78.92
Total global exports	7.26	6.31	5.58
	Share of quantity (percent)		
United States	11.3	9.9	11.7
China	32.7	33.8	36.3
India	1.0	1.3	1.0
Japan	2.3	1.9	1.8
Thailand	0.4	0.2	0.4
All other major reporting exporters.--Germany	23.1	23.1	19.5
Netherlands	12.0	14.0	13.5
Belgium	4.0	3.9	4.5
France	4.0	3.8	2.7
Lithuania	0.2	0.9	1.5
South Korea	0.9	1.1	1.2
United Kingdom	1.2	1.1	1.0
Sweden	1.2	0.8	0.8
Spain	0.4	0.6	0.5
Switzerland	0.1	0.2	0.5
All other exporters	5.3	3.4	3.1
Total global exports	100.0	100.0	100.0

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

Source: Official exports statistics under HS subheading 2922.49 reported by various national statistical authorities in the Global Trade Atlas database, accessed February 26, 2019.

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
83 FR 14291 April 3, 2018	*Glycine From China, India, Japan, and Thailand; Institution of Antidumping and Countervailing Duty Investigations and Scheduling of Preliminary Phase Investigations*	https://www.gpo.gov/fdsys/pkg/FR-2018-04-03/pdf/2018-06716.pdf
83 FR 18002 April 25, 2018	*Glycine From India, the People's Republic of China, and Thailand: Initiation of Countervailing Duty Investigations*	https://www.gpo.gov/fdsys/pkg/FR-2018-04-25/pdf/2018-08665.pdf
83 FR 17995 April 25, 2018	*Glycine From India, Japan, and Thailand: Initiation of Less-Than-Fair-Value Investigations*	https://www.gpo.gov/fdsys/pkg/FR-2018-04-25/pdf/2018-08664.pdf
83 FR 23300 May 18, 2018	*Glycine From China, India, Japan, and Thailand*	https://www.govinfo.gov/content/pkg/FR-2018-05-18/pdf/2018-10598.pdf
83 FR 44859 September 4, 2018	*Glycine From India: Preliminary Affirmative Countervailing Duty Determination and Alignment of Final Determination With Final Antidumping Duty Determination*	https://www.govinfo.gov/content/pkg/FR-2018-09-04/pdf/2018-19096.pdf

Citation	Title	Link
83 FR 44861 September 4, 2018	*Glycine From Thailand: Preliminary Negative Countervailing Duty Determination, Preliminary Negative Critical Circumstances Determination, and Alignment of Final Determination With Final Antidumping Duty Determination*	https://www.govinfo.gov/content/pkg/FR-2018-09-04/pdf/2018-19098.pdf
83 FR 44863 September 4, 2018	*Glycine From the People's Republic of China: Preliminary Affirmative Countervailing Duty Determination*	https://www.govinfo.gov/content/pkg/FR-2018-09-04/pdf/2018-19097.pdf
83 FR 53448 October 23, 2018	*Glycine From the People's Republic of China: Alignment of Final Countervailing Duty Determination With Final Antidumping Duty Determinations of Glycine From India, Japan, and Thailand*	https://www.govinfo.gov/content/pkg/FR-2018-10-23/pdf/2018-23101.pdf
83 FR 54713 October 31, 2018	*Glycine From India: Preliminary Affirmative Determination of Sales at Less Than Fair Value, Postponement of Final Determination, and Extension of Provisional Measures*	https://www.gpo.gov/fdsys/pkg/FR-2018-10-31/pdf/2018-23718.pdf
83 FR 54717 October 31, 2018	*Glycine From Thailand: Preliminary Determination of Sales at Not Less Than Fair Value, Preliminary Negative Determination of Critical Circumstances, Postponement of Final Determination*	https://www.gpo.gov/fdsys/pkg/FR-2018-10-31/pdf/2018-23719.pdf

Citation	Title	Link
83 FR 54718 October 31, 2018	*Glycine From Japan: Preliminary Determination of Sales at Less Than Fair Value and Postponement of Final Determination*	https://www.gpo.gov/fdsys/pkg/FR-2018-10-31/pdf/2018-23720.pdf
83 FR 62345 December 3, 2018	*Glycine From China, India, Japan, and Thailand; Scheduling of the Final Phase of Countervailing Duty and Anti-Dumping Duty Investigations*	https://www.gpo.gov/fdsys/pkg/FR-2018-12-03/pdf/2018-26181.pdf
84 FR 3486 February 12, 2019	*Glycine From China, India, Japan, and Thailand; Revised Schedule for Final Phase of Investigations*	https://www.govinfo.gov/content/pkg/FR-2019-02-12/pdf/2019-02012.pdf
84 FR 18482 May 1, 2019	*Countervailing Duty Investigation of Glycine From India: Affirmative Final Determination*	https://www.govinfo.gov/content/pkg/FR-2019-05-01/pdf/2019-08830.pdf
84 FR 18484 May 1, 2019	*Glycine From Japan: Final Determination of Sales at Less Than Fair Value*	https://www.govinfo.gov/content/pkg/FR-2019-05-01/pdf/2019-08829.pdf
84 FR 18487 May 1, 2019	*Glycine From India: Final Determination of Sales at Less Than Fair Value*	https://www.govinfo.gov/content/pkg/FR-2019-05-01/pdf/2019-08831.pdf
84 FR 18489 May 1, 2019	*Glycine From the People's Republic of China: Final Affirmative Countervailing Duty Determination*	https://www.govinfo.gov/content/pkg/FR-2019-05-01/pdf/2019-08826.pdf

APPENDIX B

LIST OF HEARING WITNESSES

CALENDAR OF PUBLIC HEARING

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

Subject: Glycine from China, India, Japan, and Thailand

Inv. Nos.: 701-TA-603-605 and 731-TA-1413-1415 (Final)

Date and Time: April 30, 2019 - 9:30 a.m.

Sessions were held in connection with these investigations in the Main Hearing Room (Room 101), 500 E Street, S.W., Washington, DC.

OPENING REMARKS:

Petitioners (**David Schwartz**, Thompson Hine LLP)
Respondents (**Lizbeth R. Levinson**, Fox Rothschild LLP; and
Jonathan T. Stoel, Hogan Lovells US LLP)

In Support of the Imposition of
Antidumping and Countervailing Duty Orders:

Thompson Hine LLP
Washington, DC
on behalf of

GEO Specialty Chemicals, Inc.
Chattem Chemicals, Inc.

Kenneth Ghazey, President and Chief Executive Officer,
GEO Specialty Chemicals, Inc.

Scot Lang, Senior Vice President, Water Treatment Chemicals Division
GEO Specialty Chemicals, Inc.

Daniel Hughes, Glycine Business Manager, GEO Specialty Chemicals, Inc.

Jason Allen, Vice President and General Manager, Chattem Chemicals

Daniel Klett, Principal, Capital Trade Inc.

In Support of the Imposition of
Antidumping and Countervailing Duty Orders (continued):

Rebecca Woodings, Economic Consultant

David Schwartz)
Michelle Li) – OF COUNSEL
William Matthews)

In Opposition to the Imposition of
Antidumping and Countervailing Duty Orders:

Hogan Lovells US LLP
Washington, DC
on behalf of

Ajinomoto Co., Inc.
Ajinomoto Health and Nutrition North America, Inc.

Michael Lish, Senior Vice President, Ajinomoto Health and Nutrition North America, Inc.

Jonathan T. Stoel)
Warren H. Maruyama) – OF COUNSEL
Nicholas R. Sparks)

Hogan Lovells US LLP
Washington, DC
on behalf of

Nestlé Purina PetCare Company

Jonathan T. Stoel)
) – OF COUNSEL
Lauren B. Cury)

Fox Rothschild LLP
Washington, DC
on behalf of

Yuki Gosei Kogyo Co., Ltd. ("Yuki Gosei")

Masaru Matsui, President, Yuki Gosei

Masao Matsukawa, Executive Officer and General Manager, Amino Acids Division, Yuki Gosei

In Opposition to the Imposition of
Antidumping and Countervailing Duty Orders (continued):

Paul Kreiter, Purchasing Manager, Fujimi Corporation

Masahiro Ariga, Development Section, Specialty Chemicals Department, Nagase & Co., Ltd.

Lizbeth R. Levinson) – OF COUNSEL

INTERESTED PARTY IN OPPOSITION:

Balchem Corporation
New Hampton, NY

Scott Mason, Vice President Manufacturing, Supply Chain

John L. Bedell, Senior Director, Global Supply Chain

REBUTTAL/CLOSING REMARKS:

Petitioners (**David Schwartz** and **William Matthews**, Thompson Hine LLP)
Respondents (**Lizbeth R. Levinson**, Fox Rothschild LLP; and **Jonathan T. Stoel**, Hogan Lovells US LLP)

-END-

APPENDIX C

SUMMARY DATA

Table C-1
Glycine: Summary data concerning the U.S. market, 2015-17, January to September 2017, and January to September 2018
(Quantity=1,000 pounds; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per pound; Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to September		Calendar year			Jan-Sep
	2015	2016	2017	2017	2018	2015-17	2015-16	2016-17	2017-18
U.S. consumption quantity:									
Amount	***	***	***	***	***	***	***	***	***
Producers' share (fn1)	***	***	***	***	***	***	***	***	***
Importers' share (fn1):									
China	***	***	***	***	***	***	***	***	***
India	***	***	***	***	***	***	***	***	***
Japan	***	***	***	***	***	***	***	***	***
Subtotal	***	***	***	***	***	***	***	***	***
Thailand	***	***	***	***	***	***	***	***	***
Subtotal	***	***	***	***	***	***	***	***	***
All other sources	***	***	***	***	***	***	***	***	***
All import sources	***	***	***	***	***	***	***	***	***
U.S. consumption value:									
Amount	***	***	***	***	***	***	***	***	***
Producers' share (fn1)	***	***	***	***	***	***	***	***	***
Importers' share (fn1):									
China	***	***	***	***	***	***	***	***	***
India	***	***	***	***	***	***	***	***	***
Japan	***	***	***	***	***	***	***	***	***
Subtotal	***	***	***	***	***	***	***	***	***
Thailand	***	***	***	***	***	***	***	***	***
Subtotal	***	***	***	***	***	***	***	***	***
All other sources	***	***	***	***	***	***	***	***	***
All import sources	***	***	***	***	***	***	***	***	***
U.S. imports from:									
China:									
Quantity	104	526	734	608	132	608.1	407.3	39.6	(78.2)
Value	177	835	1,339	1,201	183	656.9	371.8	60.4	(84.7)
Unit value	$1.71	$1.59	$1.83	$1.97	$1.38	6.9	(7.0)	14.9	(29.9)
Ending inventory quantity	***	***	***	***	***	***	***	***	***
India:									
Quantity	2,926	4,260	3,903	2,950	897	33.4	45.6	(8.4)	(69.6)
Value	6,008	8,146	7,030	5,296	1,443	17.0	35.6	(13.7)	(72.8)
Unit value	$2.05	$1.91	$1.80	$1.80	$1.61	(12.3)	(6.9)	(5.8)	(10.4)
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Japan:									
Quantity	6,011	4,629	5,305	3,841	3,170	(11.7)	(23.0)	14.6	(17.5)
Value	12,450	9,807	10,206	7,355	6,267	(18.0)	(21.2)	4.1	(14.8)
Unit value	$2.07	$2.12	$1.92	$1.91	$1.98	(7.1)	2.3	(9.2)	3.2
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Subtotal:									
Quantity	9,041	9,415	9,941	7,399	4,199	10.0	4.1	5.6	(43.3)
Value	18,635	18,788	18,575	13,852	7,893	(0.3)	0.8	(1.1)	(43.0)
Unit value	$2.06	$2.00	$1.87	$1.87	$1.88	(9.4)	(3.2)	(6.4)	0.4
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Thailand:									
Quantity	3,895	1,356	2,720	2,222	4,740	(30.2)	(65.2)	100.5	113.3
Value	8,665	3,014	4,592	3,735	7,415	(47.0)	(65.2)	52.4	98.5
Unit value	$2.22	$2.22	$1.69	$1.68	$1.56	(24.1)	(0.1)	(24.0)	(6.9)
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Subtotal:									
Quantity	12,936	10,771	12,661	9,621	8,939	(2.1)	(16.7)	17.5	(7.1)
Value	27,300	21,802	23,168	17,587	15,308	(15.1)	(20.1)	6.3	(13.0)
Unit value	$2.11	$2.02	$1.83	$1.83	$1.71	(13.3)	(4.1)	(9.6)	(6.3)
Ending inventory quantity	***	***	***	***	***	***	***	***	***
All other sources:									
Quantity	859	292	174	131	40	(79.7)	(66.0)	(40.3)	(69.1)
Value	1,386	526	480	352	123	(65.4)	(62.0)	(8.9)	(65.1)
Unit value	$1.61	$1.80	$2.75	$2.69	$3.04	70.7	11.8	52.6	13.1
Ending inventory quantity	***	***	***	***	***	***	***	***	***
All import sources:									
Quantity	13,795	11,063	12,835	9,752	8,979	(7.0)	(19.8)	16.0	(7.9)
Value	28,685	22,328	23,647	17,939	15,431	(17.6)	(22.2)	5.9	(14.0)
Unit value	$2.08	$2.02	$1.84	$1.84	$1.72	(11.4)	(2.9)	(8.7)	(6.6)
Ending inventory quantity	***	***	***	***	***	***	***	***	***

Table C-1--Continued
Glycine: Summary data concerning the U.S. market, 2015-17, January to September 2017, and January to September 2018
(Quantity=1,000 pounds; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per pound; Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to September		Calendar year			Jan-Sep
	2015	2016	2017	2017	2018	2015-17	2015-16	2016-17	2017-18
U.S. producers':									
Average capacity quantity	***	***	***	***	***	***	***	***	***
Production quantity	***	***	***	***	***	***	***	***	***
Capacity utilization (fn1)	***	***	***	***	***	***	***	***	***
U.S. shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Export shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Inventories/total shipments (fn1)	***	***	***	***	***	***	***	***	***
Production workers	***	***	***	***	***	***	***	***	***
Hours worked (1,000s)	***	***	***	***	***	***	***	***	***
Wages paid ($1,000)	***	***	***	***	***	***	***	***	***
Hourly wages (dollars per hour)	***	***	***	***	***	***	***	***	***
Productivity (pounds per hour)	***	***	***	***	***	***	***	***	***
Unit labor costs	***	***	***	***	***	***	***	***	***
Net sales:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Cost of goods sold (COGS)	***	***	***	***	***	***	***	***	***
Gross profit or (loss)	***	***	***	***	***	***	***	***	***
SG&A expenses	***	***	***	***	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***	***	***	***	***
Net income or (loss)	***	***	***	***	***	***	***	***	***
Capital expenditures	***	***	***	***	***	***	***	***	***
Unit COGS	***	***	***	***	***	***	***	***	***
Unit SG&A expenses	***	***	***	***	***	***	***	***	***
Unit operating income or (loss)	***	***	***	***	***	***	***	***	***
Unit net income or (loss)	***	***	***	***	***	***	***	***	***
COGS/sales (fn1)	***	***	***	***	***	***	***	***	***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	***	***	***	***
Net income or (loss)/sales (fn1)	***	***	***	***	***	***	***	***	***

Notes:

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

Source: Compiled from data submitted in response to Commission questionnaires and official U.S. import statistics for HTS statistical reporting numbers 2922.49.4020 and 2922.49.4300, accessed March 19, 2019