

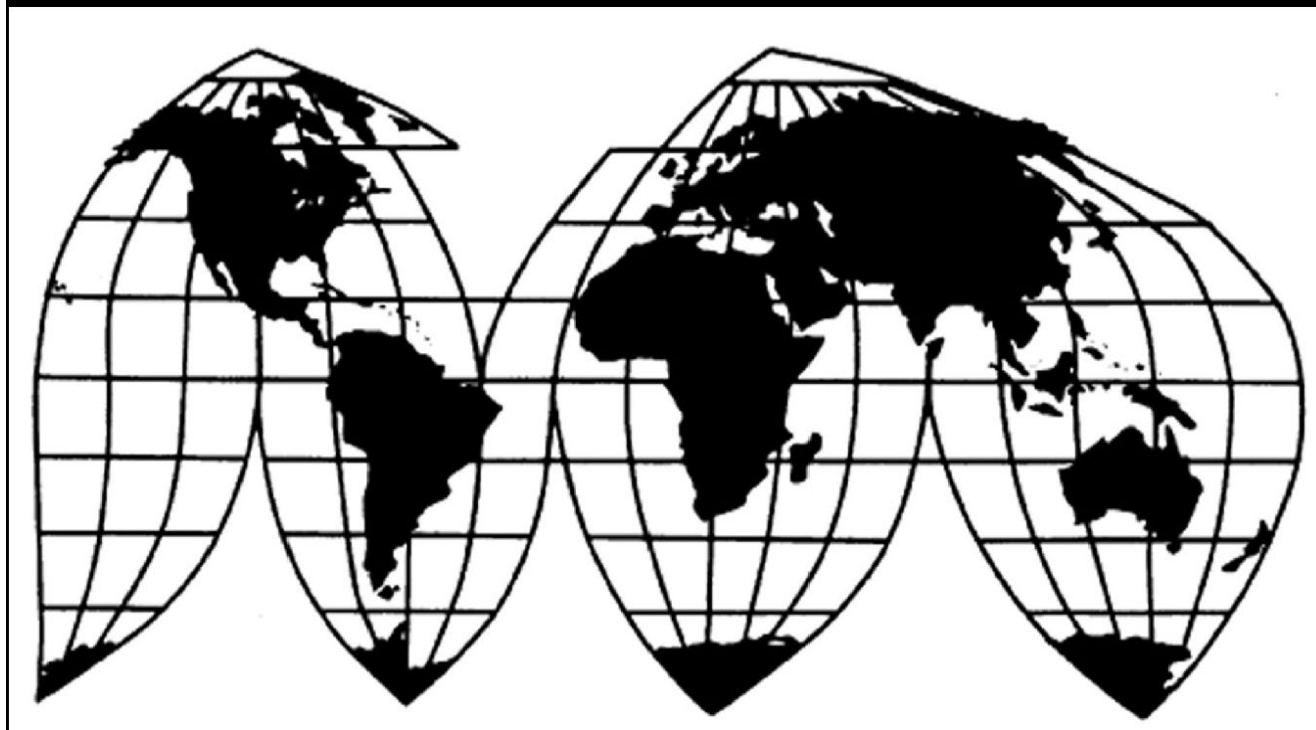
# **L-lysine from China**

Investigation Nos. 701-TA-767 and 731-TA-1750 (Preliminary)

**Publication 5650**

**July 2025**

**U.S. International Trade Commission**



Washington, DC 20436

# U.S. International Trade Commission

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Note.—Information that would reveal confidential operations of individual firms may not be published. Such information is identified by brackets ([ ]) in confidential reports and is deleted and replaced with asterisks (\*\*\*) in public reports. Zeroes, null values, and undefined calculations are suppressed and shown as em dashes (—) in tables. If using a screen reader, we recommend increasing the verbosity setting.

## UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation Nos. 701-TA-767 and 731-TA-1750 (Preliminary)

L-lysine from China

### DETERMINATIONS

On the basis of the record<sup>1</sup> developed in the subject investigations, the United States International Trade Commission (“Commission”) determines, pursuant to the Tariff Act of 1930 (“the Act”), that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of L-lysine (“lysine”) from China, provided for in subheading 2922.41.00 of the Harmonized Tariff Schedule of the United States, that are alleged to be sold in the United States at less than fair value (“LTFV”) and subsidized by the government of China.<sup>2</sup>

### COMMENCEMENT OF FINAL PHASE INVESTIGATIONS

Pursuant to section 207.18 of the Commission’s rules, the Commission also gives notice of the commencement of the final phase of its investigations. The Commission will issue a final phase notice of scheduling, which will be published in the *Federal Register* as provided in § 207.21 of the Commission’s rules, upon notice from the U.S. Department of Commerce (“Commerce”) of affirmative preliminary determinations in the investigations under §§ 703(b) or 733(b) of the Act, or, if the preliminary determinations are negative, upon notice of affirmative final determinations in those investigations under §§ 705(a) or 735(a) of the Act. Parties that filed entries of appearance in the preliminary phase of the investigations need not enter a separate appearance for the final phase of the investigations. Any other party may file an entry of appearance for the final phase of the investigations after publication of the final phase notice of scheduling. Industrial users, and, if the merchandise under investigation is sold at the retail level, representative consumer organizations, have the right to appear as parties in Commission antidumping and countervailing duty investigations. The Secretary will prepare a public service list containing the names and addresses of all persons, or their representatives,

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<sup>1</sup> The record is defined in § 207.2(f) of the Commission’s Rules of Practice and Procedure (19 CFR 207.2(f)).

<sup>2</sup> 90 FR 26799 and 90 FR 26782 (June 24, 2025).

who are parties to the investigations. As provided in section 207.20 of the Commission's rules, the Director of the Office of Investigations will circulate draft questionnaires for the final phase of the investigations to parties to the investigations, placing copies on the Commission's Electronic Document Information System (EDIS, <https://edis.usitc.gov>), for comment.

## **BACKGROUND**

On May 28, 2025, Archer Daniels Midland Company, Chicago, Illinois, CJ Bio America, Inc. an Iowa corporation, and Evonik Corporation, Piscataway, New Jersey filed petitions with the Commission and Commerce, alleging that an industry in the United States is materially injured or threatened with material injury by reason of subsidized and LTFV imports of L-lysine from China. Accordingly, effective May 28, 2025, the Commission instituted countervailing duty investigation No. 701-TA- 767 and antidumping duty investigation No. 731-TA- 1750 (Preliminary).

Notice of the institution of the Commission's investigations and of a public conference to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the *Federal Register* of June 3, 2025 (90 FR 23565). The Commission conducted its conference on June 18, 2025. All persons who requested the opportunity were permitted to participate.

## **Views of the Commission**

Based on the record in the preliminary phase of these investigations, we determine that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of L-lysine (“lysine”) from China that are allegedly sold in the United States at less than fair value (“LTFV”) and subsidized by the government of China.

### **I. The Legal Standard for Preliminary Determinations**

The legal standard for preliminary antidumping and countervailing duty determinations requires the Commission to determine, based upon the information available at the time of the preliminary determinations, whether there is a reasonable indication that a domestic industry is materially injured or threatened with material injury, or that the establishment of an industry is materially retarded, by reason of the allegedly unfairly traded imports.<sup>1</sup> In applying this standard, the Commission weighs the evidence before it and determines whether “(1) the record as a whole contains clear and convincing evidence that there is no material injury or threat of such injury; and (2) no likelihood exists that contrary evidence will arise in a final investigation.”<sup>2</sup>

### **II. Background**

The petitions in these investigations were filed on May 28, 2025, by Archer Daniels Midland Company (“ADM”), CJ Bio America, Inc. (“CJ Bio”), and Evonik Corporation (“Evonik”)

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<sup>1</sup> 19 U.S.C. §§ 1671b(a), 1673b(a) (2000); *see also American Lamb Co. v. United States*, 785 F.2d 994, 1001-04 (Fed. Cir. 1986); *Aristech Chem. Corp. v. United States*, 20 CIT 353, 354-55 (1996). No party argues that the establishment of an industry in the United States is materially retarded by the allegedly unfairly traded imports.

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

(collectively, “petitioners”), which are domestic producers of lysine.<sup>3</sup> Petitioners appeared at the staff conference accompanied by counsel and submitted a postconference brief.<sup>4</sup> No respondents participated in the preliminary phase of these investigations.

U.S. industry data are based on questionnaire responses of four firms that accounted for all U.S. production of lysine in 2024.<sup>5</sup> U.S. imports are based on official U.S. import statistics of the U.S. Department of Commerce Census Bureau, which staff adjusted to include additional Harmonized Tariff Schedule (“HTS”) statistical reporting numbers under which responding importers reported importing subject merchandise.<sup>6</sup> The Commission received responses to its questionnaire from five producers/exporters in China, accounting for approximately \*\*\* percent of production of subject merchandise in China in 2024.<sup>7</sup> The period of investigation in the preliminary phase of these investigations is January 2022 through March 2025.

### III. Domestic Like Product

In determining whether there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury by reason of imports of the subject merchandise, the Commission first defines the “domestic like product” and the “industry.”<sup>8</sup> Section 771(4)(A) of the Tariff Act of 1930, as amended (“the Tariff Act”), defines

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<sup>3</sup> Pet. Vol. 1, EDIS Doc. 852161 (May 28, 2025).

<sup>4</sup> Pet. Postconf. Br., EDIS Doc. 854826 (June 24, 2025).

<sup>5</sup> Confidential Report (“CR”), INV-XX-090 (July 7, 2025) (“CR”); Public Report, *L-Lysine from China*, Inv. Nos. 701-TA-767 and 731-TA-1750 (Preliminary), USITC Pub. 5650 (July 2025) (“PR”) at 1.4.

<sup>6</sup> CR/PR at 1.4. Lysine is primarily imported under Harmonized Tariff Schedule of the United States (“HTSUS”) statistical reporting number 2922.41.0090, though it can also be reported under HTSUS statistical reporting numbers 2922.41.0010, 2922.49.4950, and 2309.90.9500. *Id.* The Commission received usable questionnaire responses from 28 companies, representing \*\*\* percent of U.S. imports from China and \*\*\* percent of imports from nonsubject sources in 2024 under HTS statistical reporting number 2922.41.0090, a basket category. *Id.* at 4.1.

<sup>7</sup> CR/PR at 7.3, Table 7.1.

<sup>8</sup> 19 U.S.C. § 1677(4)(A).

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.”<sup>9</sup> 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.”<sup>10</sup>

By statute, the Commission’s “domestic like product” analysis begins with the “article subject to an investigation,” *i.e.*, the subject merchandise as determined by Commerce.<sup>11</sup> Therefore, Commerce’s determination as to the scope of the imported merchandise that is subsidized and/or sold at less than fair value is “necessarily the starting point of the Commission’s like product analysis.”<sup>12</sup> The Commission then defines the domestic like product in light of the imported articles Commerce has identified.<sup>13</sup> The decision regarding the appropriate domestic like product(s) in an investigation is a factual determination, and the Commission has applied the statutory standard of “like” or “most similar in characteristics and

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<sup>9</sup> 19 U.S.C. § 1677(4)(A).

<sup>10</sup> 19 U.S.C. § 1677(10).

<sup>11</sup> 19 U.S.C. § 1677(10). The Commission must accept Commerce’s determination as to the scope of the imported merchandise that is subsidized and/or sold at less than fair value. *See, e.g., USEC, Inc. v. United States*, 34 Fed. App’x 725, 730 (Fed. Cir. 2002) (“The ITC may not modify the class or kind of imported merchandise examined by Commerce.”); *Algoma Steel Corp. v. United States*, 688 F. Supp. 639, 644 (Ct. Int’l Trade 1988), *aff’d*, 865 F.3d 240 (Fed. Cir.), *cert. denied*, 492 U.S. 919 (1989).

<sup>12</sup> *Cleo Inc. v. United States*, 501 F.3d 1291, 1298 (Fed. Cir. 2007); *see also Hitachi Metals, Ltd. v. United States*, Case No. 19-1289, slip op. at 8-9 (Fed. Circ. Feb. 7, 2020) (the statute requires the Commission to start with Commerce’s subject merchandise in reaching its own like product determination).

<sup>13</sup> *Cleo*, 501 F.3d at 1298 n.1 (“Commerce’s {scope} finding does not control the Commission’s {like product} determination.”); *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); *Torrington Co. v. United States*, 747 F. Supp. 744, 748–52 (Ct. Int’l Trade 1990), *aff’d*, 938 F.2d 1278 (Fed. Cir. 1991) (affirming the Commission’s determination defining six like products in investigations where Commerce found five classes or kinds).

uses” on a case-by-case basis.<sup>14</sup> No single factor is dispositive, and the Commission may consider other factors it deems relevant based on the facts of a particular investigation.<sup>15</sup> The Commission looks for clear dividing lines among possible like products and disregards minor variations.<sup>16</sup> The Commission may, where appropriate, include domestic articles in the domestic like product in addition to those described in the scope.<sup>17</sup>

#### **A. Scope**

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

The scope of this investigation covers animal feed grade L-lysine (lysine). Lysine is an essential amino acid added to animal feed that is used in the biosynthesis of proteins. The scope covers lysine regardless of form, including lysine monohydrochloride, also referred to as lysine HCL, lysine sulfate, and liquid lysine. The scope includes lysine that has been coated or encapsulated for use with ruminants to ensure bioavailability.

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<sup>14</sup> 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).

<sup>15</sup> See, e.g., S. Rep. No. 96-249 at 90-91 (1979).

<sup>16</sup> See, e.g., *Nippon*, 19 CIT at 455; *Torrington*, 747 F. Supp. at 748-49; see also S. Rep. No. 96-249 at 90-91 (Congress has indicated that the like product standard should not be interpreted in “such a narrow fashion as to permit minor differences in physical characteristics or uses to lead to the conclusion that the product and article are not ‘like’ each other, nor should the definition of ‘like product’ be interpreted in such a fashion as to prevent consideration of an industry adversely affected by the imports under consideration.”).

<sup>17</sup> See, e.g., *Pure Magnesium from China and Israel*, Inv. Nos. 701-TA-403 and 731-TA-895-96 (Final), USITC Pub. 3467 at 8 n.34 (Nov. 2001); *Torrington*, 747 F. Supp. at 748-49 (holding that the Commission is not legally required to limit the domestic like product to the product advocated by the petitioner, co-extensive with the scope).

Lysine HCL in the dry form has the molecular formula  $C_6H_{14}N_2O_2HCl$ . The Chemical Abstracts Service (CAS) registry number for lysine HCL is 657–27–2. Lysine HCL contains a minimum of 78 percent lysine by weight, as well as additional amino acids, carbohydrates, mineral salts, and organic acids. Lysine sulfate is the sulfate salt of lysine, and in the dry form it has the molecular formula  $C_6H_{16}N_2O_6S$ . The CAS registry number for lysine sulfate is 60343–69–3. Lysine sulfate typically contains approximately 40–70 percent lysine by weight, as well as additional amino acids, carbohydrates, mineral salts, and organic acids. Liquid lysine is a concentrated form of lysine in an aqueous solution with the molecular formula  $C_6H_{14}N_2O_2$ . The CAS registry number for liquid lysine is 56–87–1. Liquid lysine normally contains at least 50 percent lysine by weight, as well as additional amino acids, carbohydrates, mineral salts, and organic acids.

The scope includes animal feed grade lysine that is combined with other products, including for example, by mixing, blending, compounding, or granulating (e.g., base mixes, premixes, and concentrates). For such combined products, only the lysine component is covered by the scope of this investigation. Subject merchandise also includes lysine that has been processed in a third country, including by commingling, diluting, adding or removing additives, refining, converting from liquid to dry or dry to liquid form, coating or encapsulating, or performing any processing that would not otherwise remove the merchandise from the scope of the investigation if performed in the subject country.

The merchandise covered by this investigation is properly classified under Harmonized Tariff Schedule of the United States (HTSUS) subheading 2922.41.0090. Lysine may also be classified under HTSUS subheadings 2922.41.0010, 2922.49.4950, 2309.90.7000, and 2309.90.9500. Although the HTSUS subheadings and the CAS registry numbers are provided for convenience and customs purposes, the written description of the scope of the investigation is dispositive.<sup>18</sup>

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<sup>18</sup> CR/PR at 1.6-1.7; see also *L-Lysine From the People's Republic of China: Initiation of Countervailing Duty Investigation*, 90 Fed. Reg. 26799 (June 24, 2025); *L-Lysine From the People's Republic of China: Initiation of Less-Than-Fair-Value Investigation*, 90 Fed. Reg. 26782 (June 24, 2025).

Lysine is an essential amino acid<sup>19</sup> that is added to animal feed for swine, poultry, cows, and fish to help promote protein growth.<sup>20</sup> Adding lysine to feed for animals whose diets consist mainly of grass or grain ensures that they receive sufficient amino acids, which these animals cannot produce on their own or create from other nutrients, and have difficulty absorbing.<sup>21</sup> The amount of lysine that is blended into animal feed can be adjusted based on the dietary requirements of the specific animal.<sup>22</sup> Other grades of lysine may be used as dietary supplements for humans or in human pharmaceutical applications.<sup>23</sup>

Animal feed grade lysine is typically produced in the forms of lysine sulfate, liquid (base) lysine, or lysine monohydrochloride (“lysine HCl”).<sup>24</sup> Liquid (base) lysine is sold in liquid form while lysine sulfate and lysine HCl are typically sold in solid forms (*e.g.*, powder, granules, coated, or encapsulated).<sup>25</sup> Each form of lysine has its own distinct color and characteristics.<sup>26</sup> The encapsulated or coated forms of lysine are used to feed ruminants like cattle,<sup>27</sup> as microbes in their digestive systems can degrade the amino acid.<sup>28</sup>

Lysine is produced primarily through fermentation. First, specific bacteria are combined

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<sup>19</sup> Amino acids are the building blocks of proteins and have important physiological functions that aid in the growth and development of animals. CR/PR at 1.7; Transcript of Preliminary Conference (“Conf. Tr.”) at 9 (Walley). The use of amino acids in the livestock industry decreases carbon dioxide emissions and lowers reliance on crude protein. CR/PR at 1.8.

<sup>20</sup> CR/PR at 1.8.

<sup>21</sup> CR/PR at 1.8.

<sup>22</sup> CR/PR at 1.9.

<sup>23</sup> CR/PR at 1.8 n.23.

<sup>24</sup> CR/PR at 1.8-1.9, Table 1.2.

<sup>25</sup> CR/PR at 1.8-1.9, Table 1.2.

<sup>26</sup> CR/PR at 1.8, Table 1.2.

<sup>27</sup> Ruminants are animals with multiple compartments in their stomachs, such as sheep and cows, while non-ruminants are animals with single-compartment stomachs, such as pigs and chickens. CR/PR at 1.9 n.27.

<sup>28</sup> CR/PR at 1.8-1.9.

with a carbohydrate source, such as dextrose.<sup>29</sup> The bacterial medium then grows and creates a fermentation broth consisting of lysine, other amino acids, and biomass.<sup>30</sup> To produce lysine sulfate powder, the fermented broth undergoes an evaporation and drying process to remove excess water.<sup>31</sup> Because it does not undergo an additional purification or filtration process, lysine sulfate includes other fermentation byproducts and has a lower lysine content relative to other forms of lysine.<sup>32</sup>

To produce liquid (base) lysine, biomass and other impurities<sup>33</sup> are removed from the fermented broth using membrane filters and an ion exchange resin.<sup>34</sup> Excess water is removed until the product has a lysine content of at least 50 percent by weight.<sup>35</sup> The liquid (base) lysine is transferred to a storage tank, packaged into one-ton liquid totes or sold in bulk, then shipped via rail or truck.<sup>36</sup> The shelf life of liquid (base) lysine ranges from three to 18 months.<sup>37</sup>

To produce lysine HCl, the fermented broth is treated with hydrochloric acid (“HCl”) to create a crystallized slurry.<sup>38</sup> The pH of the slurry is then adjusted and sent to a centrifuge and

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<sup>29</sup> CR/PR at 1.11-1.12. Dextrose used for fermentation is produced from corn through a wet milling, steeping, and filtering process. *Id.* at 1.12, Figure 1.2. Other carbohydrate sources that can be used to produce dextrose include wheat and sugar beets. *Id.* at 1.12 n.47.

<sup>30</sup> CR/PR at 1.13.

<sup>31</sup> CR/PR at 1.13, Figure 1.3.

<sup>32</sup> CR/PR at 1.13.

<sup>33</sup> The amino acid production process also creates large amounts of electrolyte residues such as sulfuric acid, phosphoric acid, acetic acid, or ammonia. Although these electrolyte residues are generally considered waste byproducts, they can be repurposed into other products to reduce costs and environmental impacts. CR/PR at 1.15-1.16.

<sup>34</sup> CR/PR at 1.13, Figure 1.4. During the ion exchange process, lysine is adsorbed onto the cation-exchange resin to separate it from other unwanted components, then removed from the resin using an ammonium hydroxide solution. *Id.* at 1.17.

<sup>35</sup> CR/PR at 1.13-1.14.

<sup>36</sup> CR/PR at 1.14.

<sup>37</sup> CR/PR at 1.14.

<sup>38</sup> CR/PR at 1.14.

a series of dryers to remove excess moisture and to promote crystal formation.<sup>39</sup> Lysine HCl has the highest lysine content relative to other forms (*i.e.*, lysine sulfate or liquid (base) lysine).<sup>40</sup>

To produce lysine in a dry, granular form, lysine broth is concentrated through evaporation, sent to a fluid bed granulator, and then sent to a dryer to further remove any excess moisture.<sup>41</sup> To create lysine powder, fermented broth goes through two rounds of purification and filtration to remove large particulates before undergoing evaporation and further purification using an ion exchange resin.<sup>42</sup> The lysine powder is packaged into 25 kg bags or one-ton totes and then shipped via rail or truck.<sup>43</sup> The shelf life of dry lysine ranges from 18 months to 24 months.<sup>44</sup>

## **B. Petitioners' Arguments**

Petitioners contend that the Commission should define a single domestic like product, coextensive with the scope.<sup>45</sup> They argue that all forms of animal feed grade lysine have the same physical characteristics and end uses; can be used interchangeably; share similar production processes and overlapping production employees in the same manufacturing facilities; are sold through the same channels of distribution; are perceived as a single product category by producers and consumers; and are priced along a continuum based on lysine content.<sup>46</sup>

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<sup>39</sup> CR/PR at 1.14.

<sup>40</sup> CR/PR at 1.14.

<sup>41</sup> CR/PR at 1.14.

<sup>42</sup> CR/PR at 1.14-1.15, Figure 1.5.

<sup>43</sup> CR/PR at 1.15.

<sup>44</sup> CR/PR at 1.15.

<sup>45</sup> Pet. Postconf. Br. at 4.

<sup>46</sup> Pet. Postconf. Br. at 3-8.

Petitioners also argue that animal feed grade lysine does not share the same physical characteristics and end uses; channels of distribution; or production processes, manufacturing facilities, and workers as human food grade or pharmaceutical grade lysine from outside the scope.<sup>47</sup> They contend that equipment for those grades must meet specific U.S. Food and Drug Administration (“FDA”) quality standards and reach higher lysine purity levels, and that consequently, those grades of lysine are more expensive than and not interchangeable with animal feed grade lysine.<sup>48</sup> Additionally, petitioners claim that animal feed grade lysine is not interchangeable with other amino acids because other amino acids meet different nutritional needs than lysine.<sup>49</sup>

### **C. Analysis**

These investigations raise two potential domestic like product issues: (1) whether to include all forms of animal feed grade lysine in a single domestic like product; and (2) whether to include out-of-scope lysine intended for human consumption in the domestic like product along with animal feed grade lysine. Based on the record, we define a single domestic like product consisting of animal feed grade lysine, coextensive with the scope in these investigations.

*Physical Characteristics and Uses.* The record indicates that all forms of animal feed grade lysine covered by the scope of these investigations, regardless of form, share the same basic physical characteristics because they contain the same amino acid.<sup>50</sup> However, the purity

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<sup>47</sup> Pet. Postconf. Br. at 5-7.

<sup>48</sup> Pet. Postconf. Br. at 5-8.

<sup>49</sup> Pet. Postconf. Br. at 6.

<sup>50</sup> CR/PR at 1.9; Conf. Tr. at 17, 54 (Lucas).

levels and shelf life of various forms of animal feed grade lysine differ and each form of lysine has its own distinct color and characteristics.<sup>51</sup> Animal feed grade lysine can be produced as lysine HCl and lysine sulfate in dry forms and liquid (base) lysine.<sup>52</sup> All forms of animal feed grade lysine have the same end use: as an additive to animal feed to provide animals with an essential nutrient.<sup>53</sup>

According to petitioners, out-of-scope human food grade and pharmaceutical grade lysine are used as dietary supplements for humans and thus have different end uses than animal feed grade lysine.<sup>54</sup> Additionally, they argue that the purity and color of lysine intended for human consumption differs from that of animal feed grade lysine.<sup>55</sup>

*Manufacturing Facilities, Production Processes and Employees.* The production process for all forms of animal feed grade lysine begins with fermentation. Specific bacteria are combined with a carbohydrate, such as dextrose, and grow to create a fermentation broth consisting of lysine, other amino acids, and biomass.<sup>56</sup> Next, the fermentation broth is subject to different degrees of evaporation and filtration to achieve the desired form.<sup>57</sup> To produce lysine HCl, the fermentation broth is treated with hydrochloric acid and undergoes a crystallization process as intermediate steps.<sup>58</sup>

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<sup>51</sup> CR/PR at 1.9, 1.13-1.15; Conf. Tr. at 53 (Benson), 72 (Lucas).

<sup>52</sup> CR/PR at 1.10.

<sup>53</sup> CR/PR at 1.8, Table 1.2.

<sup>54</sup> Pet. Postconf. Br. at

<sup>55</sup> Pet. Postconf. Br. at 5.

<sup>56</sup> CR/PR at 1.11-1.12.

<sup>57</sup> CR/PR at 1.13-1.14.

<sup>58</sup> CR/PR at 1.14.

According to petitioners, all animal feed grade lysine is produced in the same facilities, on the same equipment, and by the same or overlapping production employees,<sup>59</sup> whereas lysine for human consumption requires different facilities and machinery to meet FDA quality standards and achieve higher purity levels.<sup>60</sup> Petitioners indicate that they only produce animal feed grade lysine and not lysine for human consumption.<sup>61</sup>

*Channels of Distribution.* U.S. producers sell domestically produced lysine to distributors, directly to end users, or through toll manufacturers that blend it with animal feed that is sold to end users.<sup>62</sup> Petitioners contend that animal feed grade lysine and lysine intended for human consumption are sold to different customers.<sup>63</sup>

*Interchangeability.* The record indicates that all forms of animal feed grade lysine can be blended into animal feed to provide nutritional benefits, but that only the encapsulated or coated forms of lysine are used to feed ruminants because microbes in their digestive systems would otherwise degrade the amino acid.<sup>64</sup> All responding U.S. producers and 12 of 18 responding importers reported that other products cannot be substituted for lysine.<sup>65</sup>

Petitioners argue that animal feed grade lysine is not interchangeable with lysine intended for human consumption.<sup>66</sup>

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<sup>59</sup> Pet. Postconf. Br. at 7; Pet. Vol. 1 at 13.

<sup>60</sup> Pet. Postconf. Br. at 7, Exhs. 4-5; Conf. Tr. at 52-53 (Choi).

<sup>61</sup> Conf. Tr. at 34-35 (Benson, Nel, Choi).

<sup>62</sup> CR/PR at Table 2.1; Conf. Tr. at 13 (Benson); Pet. Vol. 1 at 13.

<sup>63</sup> Pet. Postconf. Br. at 7.

<sup>64</sup> CR/PR at 1.9. *See also* Conf. Tr. at 54 (Benson).

<sup>65</sup> CR/PR at 2.9.

<sup>66</sup> Pet. Postconf. Br. at 6.

*Producer and Customer Perceptions.* Petitioners assert that producers and customers perceive animal feed grade lysine, regardless of form, as a distinct product category that is different from other grades of lysine, such as food and pharmaceutical grades.<sup>67</sup>

*Price.* Petitioners contend that animal feed grade lysine is priced along a continuum that generally reflects the lysine content of the product.<sup>68</sup> They also claim that animal feed grade lysine is less expensive than lysine intended for human consumption, which must meet regulatory standards and higher purity levels.<sup>69</sup>

*Conclusion.* We define a single domestic like product consisting of lysine, coextensive with the scope in these investigations, for purposes of the preliminary phase of these investigations. The evidence on the record shows that all animal feed grade lysine contains the same amino acid and is blended into animal feed as a nutritional supplement. Although later production steps differ depending on the desired form of lysine, production of all lysine begins with the same fermentation process. All animal feed grade lysine is sold through the same channels of distribution and perceived by producers and customers as a distinct product category, but there are some limits on the interchangeability of different forms of lysine due to certain animals' biology. There are also no substitutes for lysine. Although prices differ among lysine products, the prices of lysine products increase with the lysine content of the products. Thus, different types of in-scope lysine appear to exist on a continuum with no clear dividing lines between the products.

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<sup>67</sup> Pet. Postconf. Br. at 6.

<sup>68</sup> Pet. Postconf. Br. at 8; Pet. at Vol. I at 13-14, Exh. GEN-1.

<sup>69</sup> Pet. Postconf. Br. at 8; Conf. Tr. at 20, 34 (Nel), 51 (Choi).

By contrast, there appears to be a clear dividing line between animal feed lysine within the scope and lysine intended for human consumption from outside the scope. As compared to in-scope lysine, the higher purity required of out-of-scope lysine intended for human consumption corresponds to different end uses, differing manufacturing facilities, processes, and employees, different channels of distribution, insofar as lysine for human consumption is sold to different customers, and differing customer and producer perceptions. The relatively higher prices of lysine intended for human consumption would make it uneconomical to substitute such lysine for in-scope lysine in animal feed applications.

For these reasons, and in the absence of any contrary argument, we define a single domestic like product consisting of animal feed grade lysine, coextensive with the scope.

#### **IV. Domestic Industry**

The domestic industry is defined as the domestic “producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product.”<sup>70</sup> 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.

##### **A. Related Parties**

We must determine whether any producer of the domestic like product should be excluded from the domestic industry pursuant to Section 771(4)(B) of the Tariff Act. This provision allows the Commission, if appropriate circumstances exist, to exclude from the

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<sup>70</sup> 19 U.S.C. § 1677(4)(A).

domestic industry producers that are related to an exporter or importer of subject merchandise or which are themselves importers.<sup>71</sup> Exclusion of such a producer is within the Commission's discretion based upon the facts presented in each investigation.<sup>72</sup>

\*\*\* qualifies as a related party because it is affiliated with \*\*\*, a subject producer and exporter in China, through a common parent company, \*\*\*.<sup>73 74</sup>

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<sup>71</sup> See *Torrington Co. v. United States*, 790 F. Supp. 1161, 1168 (Ct. Int'l Trade 1992), *aff'd without opinion*, 991 F.2d 809 (Fed. Cir. 1993); *Sandvik AB v. United States*, 721 F. Supp. 1322, 1331-32 (Ct. Int'l Trade 1989), *aff'd mem.*, 904 F.2d 46 (Fed. Cir. 1990); *Empire Plow Co. v. United States*, 675 F. Supp. 1348, 1352 (Ct. Int'l Trade 1987).

<sup>72</sup> The primary factors the Commission has examined in deciding whether appropriate circumstances exist to exclude a related party include the following:

- (1) the percentage of domestic production attributable to the importing producer;
- (2) the reason the U.S. producer has decided to import the product subject to investigation (whether the firm benefits from the LTFV sales or subsidies or whether the firm must import in order to enable it to continue production and compete in the U.S. market);
- (3) whether inclusion or exclusion of the related party will skew the data for the rest of the industry;
- (4) the ratio of import shipments to U.S. production for the imported product; and
- (5) whether the primary interest of the importing producer lies in domestic production or importation. *Changzhou Trina Solar Energy Co. v. USITC*, 100 F. Supp.3d 1314, 1326-31 (Ct. Int'l. Trade 2015), *aff'd*, 879 F.3d 1377 (Fed. Cir. 2018); see also *Torrington Co. v. United States*, 790 F. Supp. at 1168.

<sup>73</sup> CR/PR at Table 3.2.

<sup>74</sup> \*\*\* also may be subject to exclusion because it purchased \*\*\* short tons HCl equivalent of imports of lysine from \*\*\* from \*\*\* in 2022. CR/PR at 3.12. A domestic producer that does not itself import subject merchandise or does not share a corporate affiliation with an importer may nonetheless be deemed a related party if it controls a purchaser of large volumes of subject imports. See Statement of Administrative Action (SAA) to the Uruguay Round Agreements Act at 858. The Commission has found such control to exist, for example, where the domestic producer's purchases were responsible for a predominant proportion of an importer's subject imports and the importer's subject imports were substantial. See, e.g., *Iron Construction Castings from Brazil, Canada, and China*, Inv. Nos. 701-TA-248, 731-TA-262-263, 265 (Fourth Review), USITC Pub. 4655 at 11 (Dec. 2016); *Chlorinated Isocyanurates from China and Spain*, Inv. Nos. 731-TA-1082-1083 (Second Review), USITC Pub. 4646 at 12 (Nov. 2016). Because \*\*\* purchases were equivalent to only \*\*\* percent of \*\*\* imports of subject merchandise in 2022, CR/PR at 3.12, it was not responsible for a predominant proportion of the importer's subject imports that year and does not qualify as a related party.

## A. Petitioners' Argument

Petitioners contend that the Commission should define the domestic industry to include all U.S. producers of lysine because none of the petitioning companies, including \*\*\*, imported lysine from China.<sup>75</sup>

## B. Analysis

We must consider whether appropriate circumstances exist to exclude \*\*\* from the domestic industry as a related party.<sup>76</sup> \*\*\* was the \*\*\* responding domestic producer in 2024, accounting for \*\*\* percent of reported U.S. lysine production that year, and a petitioner.<sup>77</sup> \*\*\* capital expenditures for its domestic production operations during the period of investigation ("POI") totaled \$\*\*\* in 2022, \$\*\*\* in 2023, \$\*\*\* in 2024, and \$\*\*\* in January through March 2025 ("interim 2025").<sup>78</sup> Its operating and net sales margins were \*\*\* than the domestic industry average throughout the POI; however, \*\*\* did not import lysine from China during the POI.<sup>79</sup>

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<sup>75</sup> Pet. Postconf. Br. at 9.

<sup>76</sup> CR/PR at Table 3.2; \*\*\* Questionnaire Resp., EDIS Doc. 853565 (June 12, 2025) at I-5, I-7. The record contains no information concerning exports of subject merchandise by \*\*\* because it did not provide a questionnaire response to the Commission.

<sup>77</sup> CR/PR at Table 3.1.

<sup>78</sup> CR/PR at Table 6.5. It also reported research and development expenses of \$\*\*\* in 2022, \$\*\*\* in 2023, \$\*\*\* in 2024, and \$\*\*\* in interim 2025. *Id.* at Table 6.7.

<sup>79</sup> CR/PR at 3.12, Table 6.3. The ratio of operating income to net sales reported by responding U.S. producers as a whole was \*\*\* percent in 2022, \*\*\* percent in 2023, and \*\*\* percent in 2024; it was \*\*\* percent in interim 2025, compared to \*\*\* percent in January through March 2024 ("interim 2024"). *Id.* \*\*\* ratio of operating income to net sales was \*\*\* percent in 2022, \*\*\* percent in 2023, and \*\*\* percent in 2024; it was \*\*\* percent in interim 2025, compared to \*\*\* percent in interim 2024. *Id.*

The ratio of net income to net sales reported by responding U.S. producers as a whole was \*\*\* percent in 2022, \*\*\* percent in 2023, and \*\*\* percent in 2024; it was \*\*\* percent in interim 2025, compared to \*\*\* percent in interim 2024. *Id.* \*\*\* ratio of net income to net sales was \*\*\* percent in 2022, \*\*\* percent in 2023, and \*\*\* percent in 2024; it was \*\*\* percent in interim 2025, compared to \*\*\* percent in interim 2024. *Id.*

Although \*\*\* operating and net sales margins were \*\*\* than the domestic industry averages throughout the POI, there is no information on the record that its relationship with \*\*\* had the effect of shielding it from the effects of subject imports such that its inclusion in the domestic industry would skew the data for the domestic industry or mask injury. Given these considerations, and the absence of any contrary argument, we find that appropriate circumstances do not exist to exclude \*\*\* from the domestic industry as a related party.<sup>80</sup>

### **C. Conclusion**

In sum, consistent with our definition of the domestic like product, we define the domestic industry as all U.S. producers of lysine.

## **V. Negligible Imports**

Pursuant to Section 771(24) of the Tariff Act, imports from a subject country of merchandise corresponding to a domestic like product that account for less than 3 percent of all such merchandise imported into the United States during the most recent 12 months for which data are available preceding the filing of the petition shall be deemed negligible.<sup>81</sup>

During the 12-month period preceding the filing of the petitions (May 2024 through April 2025), imports of lysine from China accounted for \*\*\* percent of total imports.<sup>82</sup> As subject imports are above the negligibility threshold, we find that imports of lysine from China subject to the antidumping and countervailing duty investigations are not negligible.

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<sup>80</sup> We intend to examine this issue further in any final phase of these investigations.

<sup>81</sup> 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)).

<sup>82</sup> CR/PR at Table 4.4. The volume of imports from China subject to the antidumping and countervailing duty investigations is the same.

## **VI. Reasonable Indication of Material Injury by Reason of Subject Imports**

### **A. Legal Standard**

In the preliminary phase of antidumping and countervailing duty investigations, the Commission determines whether there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury by reason of the imports under investigation.<sup>83</sup> 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.<sup>84</sup> The statute defines “material injury” as “harm which is not inconsequential, immaterial, or unimportant.”<sup>85</sup> In assessing whether there is a reasonable indication that the domestic industry is materially injured by reason of subject imports, we consider all relevant economic factors that bear on the state of the industry in the United States.<sup>86</sup> 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.”<sup>87</sup>

Although the statute requires the Commission to determine whether there is a reasonable indication that the domestic industry is “materially injured or threatened with material injury by reason of” unfairly traded imports,<sup>88</sup> it does not define the phrase “by reason

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<sup>83</sup> 19 U.S.C. §§ 1671b(a), 1673b(a).

<sup>84</sup> 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).

<sup>85</sup> 19 U.S.C. § 1677(7)(A).

<sup>86</sup> 19 U.S.C. § 1677(7)(C)(iii).

<sup>87</sup> 19 U.S.C. § 1677(7)(C)(iii).

<sup>88</sup> 19 U.S.C. §§ 1671b(a), 1673b(a).

of,” indicating that this aspect of the injury analysis is left to the Commission’s reasonable exercise of its discretion.<sup>89</sup> 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.<sup>90</sup>

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

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<sup>89</sup> *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’d*, 944 F. Supp. 943, 951 (Ct. Int’l Trade 1996).

<sup>90</sup> 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 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).

injury threshold.<sup>91</sup> In performing its examination, however, the Commission need not isolate the injury caused by other factors from injury caused by unfairly traded imports.<sup>92</sup> 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.<sup>93</sup> It is clear that the existence of injury caused by other factors does not compel a negative determination.<sup>94</sup>

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<sup>91</sup> 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.

<sup>92</sup> 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.”).

<sup>93</sup> S. Rep. 96-249 at 74-75; H.R. Rep. 96-317 at 47.

<sup>94</sup> *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.”).

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.”<sup>95</sup> 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.”<sup>96</sup> The Federal Circuit has examined and affirmed various Commission methodologies and has disavowed “rigid adherence to a specific formula.”<sup>97</sup>

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.<sup>98</sup> Congress has delegated this factual finding to the Commission because of the agency’s institutional expertise in resolving injury issues.<sup>99</sup>

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<sup>95</sup> *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*.

<sup>96</sup> *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.

<sup>97</sup> *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.”).

<sup>98</sup> We provide in our discussion below a full analysis of other factors that may have caused any material injury experienced by the domestic industry.

<sup>99</sup> *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.”).

## **B. Conditions of Competition and the Business Cycle**

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

### **1. Demand Conditions**

U.S. demand for lysine is driven by demand downstream for animal feed.<sup>100</sup> Lysine is mostly used as an animal feed additive for poultry and swine, though it is also used with fish and ruminants, such as cows.<sup>101</sup> Demand for lysine is thus subject to global pig and chicken inventories, which are in turn influenced by meat protein demand and animal diseases.<sup>102</sup>

Petitioners submit that no widespread, unexpected events impacted herd or flock sizes during the POI, and that any effects from the COVID-19 pandemic on demand had subsided by 2022.<sup>103</sup> They also contend that a bird flu outbreak that occurred towards the start of the POI did not significantly impact U.S. demand for lysine.<sup>104</sup> According to U.S. Department of Agriculture statistical data, U.S. inventories of swine, cattle, and hatchings of chickens fluctuated within a narrow band during the POI.<sup>105</sup>

Responding U.S. producers and importers generally reported that demand for lysine increased or remained unchanged during the POI, though several U.S. importers reported that demand had declined. Specifically, two of three responding U.S. producers and a plurality (9 of

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<sup>100</sup> CR/PR at 2.6. *See also* Pet. Postconf. Br. at 9.

<sup>101</sup> CR/PR at 2.6-2.7. *See also* Conf. Tr. At 60-61 (Walley, Rosenthal). Information on the record indicates that lysine accounts for a small share of the cost of the end-use animal feed products in which it is used, of between 1 to 5 percent. CR/PR at 2.6.

<sup>102</sup> CR/PR at 2.6. Three of 4 responding U.S. producers and 12 of 20 responding U.S. importers reported that the U.S. market for lysine is not subject to business cycles. *Id.*

<sup>103</sup> Pet. Postconf. Br. at 9.

<sup>104</sup> Pet. Postconf. Br. at 13.

<sup>105</sup> CR/PR at Table 2.6.

19) of responding U.S. importers reported that demand steadily increased or fluctuated upward during the period. One U.S. producer and seven importers reported no change in demand, whereas three U.S. importers reported that demand fluctuated down or steadily decreased.<sup>106</sup>

Apparent U.S. consumption of lysine increased from \*\*\* short tons HCl equivalent in 2022 to \*\*\* short tons HCl equivalent in 2023, and \*\*\* short tons HCl equivalent in 2024, for an overall increase of \*\*\* percent.<sup>107</sup>

## **2. Supply Conditions**

During the POI, the U.S. market for lysine was supplied by the domestic industry and subject imports.<sup>108</sup> Nonsubject imports, which supplied less than \*\*\* percent of the U.S. market by quantity throughout the POI, had a minimal presence.<sup>109</sup>

The domestic industry was the largest source of supply of lysine products to the U.S. market throughout the POI. Its share of apparent U.S. consumption by quantity declined throughout the period, from \*\*\* percent in 2022 to \*\*\* percent in 2023, and \*\*\* percent in 2024, for an overall loss of \*\*\* percentage points during this period.<sup>110</sup>

The domestic industry consisted of the four responding U.S. producers during the POI, including ADM, CJ Bio, Evonik, and Ajinomoto Health & Nutrition North America, Inc.

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<sup>106</sup> CR/PR at 2.6, Table 2.5.

<sup>107</sup> CR/PR at Tables 4.5, C.1. Apparent U.S. consumption was \*\*\* percent higher in interim 2025, at \*\*\* short tons HCl equivalent, than in January through March 2024 (“interim 2024”), at \*\*\* short tons HCl equivalent. *Id.*

<sup>108</sup> CR/PR at Tables 4.5, C.1.

<sup>109</sup> CR/PR at Table 4.5 Note.

<sup>110</sup> CR/PR at Tables 4.5, C.1. The domestic industry supplied \*\*\* percentage points less of the U.S. market in interim 2025, at \*\*\* percent, than in interim 2024, at \*\*\* percent. *Id.*

("Ajinomoto").<sup>111</sup> Three of these firms reported shifting their production away from lysine products during the POI. CJ Bio reported \*\*\*.<sup>112</sup> ADM reported that it stopped producing dry lysine, but continues to produce liquid (base) lysine.<sup>113</sup> Ajinomoto reported that it stopped selling most forms of lysine in the U.S. market towards the end of the POI \*\*\*.<sup>114</sup>

Petitioners argue that the domestic industry is capable of supplying the entire U.S. market for lysine, and the industry's practical capacity exceeded apparent U.S. consumption throughout the POI.<sup>115</sup> The available information on the record of these preliminary phase investigations indicates that the domestic industry has the ability to respond to changes in demand with large quantities of shipments of domestically manufactured lysine due to the availability of unused capacity, the possibility to shift shipments from alternate markets and, in the case of \*\*\*, the ability to shift production from alternative products.<sup>116</sup>

The domestic industry's practical capacity declined from \*\*\* short tons HCl equivalent in 2022 to \*\*\* short tons HCl equivalent in 2023, and then increased to \*\*\* short tons HCl equivalent in 2024, for an overall decline of \*\*\* percent.<sup>117</sup> As the decline in capacity outpaced the decline in production, the domestic industry's practical capacity utilization rate increased

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<sup>111</sup> CR/PR at 3.1.

<sup>112</sup> CR/PR at Table 3.3.

<sup>113</sup> CR/PR at Table 3.3. At the conference, a firm representative testified that ADM decided to cease producing dry lysine in 2022 due to "low-priced lysine from China." Conf. Tr. at 10 (Benson).

<sup>114</sup> CR/PR at Table 3.3. *See also* \*\*\* Questionnaire Resp., EDIS Doc. 855086 (June 25, 2025) at II-2. Ajinomoto reported that it ceased producing most lysine products \*\*\*. CR/PR at Table 3.3. Ajinomoto indicates that it continues to produce \*\*\*. *Id.*

<sup>115</sup> Pet. Postconf. Br. at 10; *Compare* CR/PR at Table 3.5 with Table 4.5.

<sup>116</sup> CR/PR at 2.4.

<sup>117</sup> CR/PR at Tables 3.5, C.1. The domestic industry's practical capacity was unchanged, at \*\*\* short tons HCl equivalent, in both interim periods. *Id.*

from \*\*\* percent in 2022 to \*\*\* percent in 2023, and \*\*\* percent in 2024, for an overall gain of \*\*\* percentage points during this period.<sup>118</sup>

Subject imports were the second largest source of supply of lysine products to the U.S. market throughout the POI. Their share of apparent U.S. consumption by quantity increased during the POI, from \*\*\* percent in 2022 to \*\*\* percent in 2023, and \*\*\* percent in 2024, for an overall gain of \*\*\* percentage points during this period.<sup>119</sup>

Nonsubject imports were minimally present in the U.S. market, accounting for less than \*\*\* percent of apparent U.S. consumption throughout the POI.<sup>120</sup> The largest sources of nonsubject imports in 2024 were France, India, and Canada.<sup>121</sup>

Three of four U.S. producers and 19 of 22 U.S. importers reported that they did not experience supply constraints during the POI.<sup>122</sup> U.S. producer Ajinomoto reported a supply constraint in 2025, in connection with its decision to cease producing most forms of lysine \*\*\*.<sup>123</sup> Three U.S. importers reported experiencing supply constraints from 2022 through 2024 arising from overseas logistical disruptions; one of these importers also reported experiencing a

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<sup>118</sup> CR/PR at Tables 3.5, C.1. The domestic industry's capacity utilization was \*\*\* percentage points lower in interim 2025, at \*\*\* percent, than in interim 2024, at \*\*\* percent. *Id.*

<sup>119</sup> CR/PR at Tables 4.5, C.1. Subject imports supplied \*\*\* percentage points more of the U.S. market in interim 2025, at \*\*\* percent, than in interim 2024, at \*\*\* percent. *Id.*

<sup>120</sup> CR/PR at Table 4.5 Note.

<sup>121</sup> CR/PR at 2.5.

<sup>122</sup> CR/PR at 2.5.

<sup>123</sup> CR/PR at 2.5. U.S. producers \*\*\* and \*\*\* reported experiencing prolonged shutdowns and production curtailments reportedly due to \*\*\*. *Id.* at Table 3.4.

supply constraint in 2025 due to “tariffs.”<sup>124</sup> Additionally, U.S. purchaser \*\*\* reported experiencing supply constraints in 2022 and prior to the POI \*\*\*<sup>125</sup>

### 3. Substitutability and Other Conditions

Based on the record in the preliminary phase of these investigations, we find that there is a high degree of substitutability between domestically produced lysine and subject imports.<sup>126</sup> All responding U.S. producers reported that domestically produced lysine is always interchangeable with subject imports.<sup>127</sup> Ten U.S. importers reported that domestically produced lysine is always or frequently interchangeable with subject imports, whereas four importers reported that domestically produced lysine was sometimes or never interchangeable with subject imports.<sup>128</sup> Furthermore, the record indicates that \*\*\* of the domestic industry’s U.S. shipments of the domestic like product and responding importers’ U.S. shipments of subject imports consisted of lysine products that were not mixed or blended.<sup>129</sup>

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<sup>124</sup> CR/PR at 2.5.

<sup>125</sup> CR/PR at Table 5.13.

<sup>126</sup> CR/PR at 2.10.

<sup>127</sup> CR/PR at 2.11.

<sup>128</sup> CR/PR at Table 2.8.

<sup>129</sup> Compare CR/PR at Table 3.10 with Table 4.3. Liquid (base) lysine that is not mixed or blended accounted for \*\*\* percent of the domestic industry’s U.S. shipments by quantity in 2024, followed by lysine sulfate that is not mixed or blended, which accounted for \*\*\* percent, and lysine HCl that is not mixed or blended, which accounted for the remaining \*\*\* percent. *Id.* at Table 3.10. Lysine HCl that is not mixed or blended accounted for \*\*\* percent of U.S. shipments reported by importers in 2024, followed by lysine sulfate that is not mixed or blended, which accounted for the remaining \*\*\* percent. *Id.* at Table 4.3. There were no shipments of subject imports in liquid form in 2024. *Id.*

Information on the record of these investigations indicates that, while there are generally no functional differences between dry and liquid (base) lysine, dry lysine contains a higher concentration of lysine than liquid (base) lysine, weighs less than liquid (base) lysine, and has longer average shelf lives. CR/PR at 1.14-1.15; Conf. Tr. at 15 (Choi), 54 (Lucas, Benson). Additionally, information provided by petitioners indicates that dry lysine is generally more expensive to produce than liquid (base) lysine, as dry lysine entails additional production steps relative to liquid (base) lysine production. See Pet. Postconf. Br., Exh. I at 9, Exh. 4 at para. 5 (Nel Decl.), 5 at para. 5, (Choi Decl.), and 6 at para. 4 (Walley Decl.).

The record in the preliminary phase of these investigations indicates that price is a very important factor in purchasing decisions for lysine. U.S. purchasers responding to the lost sales and lost revenue survey most frequently ranked price (11 firms), followed by quality (9 firms), then availability (6 firms) as their most important purchasing factors.<sup>130</sup> Additionally, all responding U.S. producers reported that non-price differences were never significant in sales of domestically produced lysine and subject imports.<sup>131</sup> The responses of U.S. importers were varied, with ten importers reporting that non-price differences were always or frequently significant, and five importers reporting that they were sometimes or never significant.<sup>132</sup>

Lysine is primarily sold from inventory. During the POI, the four responding U.S. producers reported that \*\*\* of their commercial U.S. shipments were sold from inventory, with lead times averaging 12.3 days.<sup>133</sup> Responding U.S. importers reported that 82.0 percent of their commercial U.S. shipments were sold from U.S. inventory, with lead times averaging 14.7 days, whereas 10.2 percent of their U.S. shipments were sold from foreign inventory, with lead times of 49.9 days, and 7.8 percent of their U.S. shipments were produced to-order, with lead times averaging 75.3 days.<sup>134</sup>

Several pricing methods are used in the industry. All four responding U.S. producers and 18 of 22 responding U.S. importers reported setting prices on a transaction-by-transaction

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<sup>130</sup> CR/PR at 2.10. Purchasers identified price as the most frequently reported first-most important purchasing factor (5 firms) and the third-most important purchasing factor (4 firms), whereas quality was the most frequently reported second-most important purchasing factor (4 firms). *Id.* at Table 2.9.

<sup>131</sup> CR/PR at 2.11-2.12.

<sup>132</sup> CR/PR at Table 2.9.

<sup>133</sup> CR/PR at 2.11.

<sup>134</sup> CR/PR at 2.11.

basis.<sup>135</sup> All responding U.S. producers and 14 of 22 U.S. importers also reported setting prices through contracts.<sup>136</sup> Responding U.S. producers reported selling most of their lysine pursuant to contracts in 2024, with a plurality selling lysine through long-term contracts, and slightly more than a third also selling through annual contracts.<sup>137</sup> U.S. importers reported selling lysine on a shorter-term basis in 2024, through spot and short-term contract sales that accounted for over \*\*\* percent of their commercial U.S. shipments.<sup>138</sup>

Substitutes for lysine are limited. All four responding U.S. producers and 12 of 18 U.S. importers reported that there were no substitutes for lysine.<sup>139</sup>

The primary raw material used to produce lysine is the starch from plant material feedstock used to produce dextrose, which consists of corn for all responding U.S. producers.<sup>140</sup> Other raw materials reported by U.S. producers include fermentation media, sugar beets, and hydrochloric acid.<sup>141</sup> Monthly U.S. corn prices increased from \$5.58 per bushel in January 2022 to \$7.38 per bushel in June 2022, declined irregularly through August 2024 to \$3.84 per bushel, then increased irregularly through April 2025 to \$4.62 per bushel, a level 17.2 percent lower

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<sup>135</sup> CR/PR at Table 5.2.

<sup>136</sup> CR/PR at Table 5.2. Moreover, nine U.S. importers reported selling lysine through set price lists. *Id.* No responding U.S. producer reported selling lysine using this pricing method.

<sup>137</sup> CR/PR at Table 5.3.

<sup>138</sup> CR/PR at Table 5.3.

<sup>139</sup> CR/PR at 2.9. Six U.S. importers reported that soybean meal could be used as a substitute for lysine, particularly for swine and chicken feed. *Id.* However, two domestic industry representatives testified at the conference that soybean meal is not a direct substitute for supplemental lysine. See Conf. Tr. at 63 (Lucas, Walley). Accordingly, the available record evidence in the preliminary phase of these investigations is mixed on the substitutability of soybean meal and lysine as feed supplements.

<sup>140</sup> CR/PR at 5.1. Domestic industry representatives testified at the conference that it would be difficult to change feedstock to a different crop. Conf. Tr. at 56-57 (Walley, Choi, Nel).

<sup>141</sup> CR/PR at Table 6.4.

than in January 2022.<sup>142</sup> Raw material costs were the largest component of the domestic industry's cost of goods sold ("COGS") throughout the period of investigation.<sup>143</sup> As a ratio to total net sales, the domestic industry's raw material costs increased irregularly from \*\*\* percent in 2022 to \*\*\* percent in 2023 and \*\*\* percent in 2024.<sup>144</sup>

Effective July 6, 2018, lysine from China imported under HTSUS statistical reporting numbers 2922.49.4950 and 2309.90.9500 are subject to additional duties of 25 percent *ad valorem* pursuant to section 301 of the Trade Act of 1974 (19 U.S.C. § 2411 *et seq.*).<sup>145</sup> Moreover, effective March 4, 2025, imports of lysine from China are subject to additional duties of 20 percent *ad valorem* under the International Emergency Economic Powers Act (50 U.S.C. § 1701 *et seq.*) ("IEEPA") in connection with the national emergency declaration regarding the illicit importation of fentanyl into the United States.<sup>146</sup>

### **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."<sup>147</sup>

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<sup>142</sup> CR/PR at Table 5.1.

<sup>143</sup> CR/PR at Table 6.1.

<sup>144</sup> CR/PR at Table 6.1. The ratio of raw material costs to net sales was \*\*\* percentage points lower in interim 2025, at \*\*\* percent, than in interim 2024, at \*\*\* percent. *Id.*

<sup>145</sup> CR/PR at 1.7 n.11.

<sup>146</sup> See *Further Amended Notice of Implementation of Additional Duties on Products of the People's Republic of China Pursuant to the President's Executive Order 14195, Imposing Duties To Address the Synthetic Opioid Supply Chain in the People's Republic of China*, 90 Fed. Reg. 11,426 (Mar. 6, 2025). Lysine products reported under HTSUS statistical reporting number 2922.41.0090 are included in the list of products that are not subject to reciprocal tariffs under IEEPA. CR/PR at 1.7 n.12.

<sup>147</sup> 19 U.S.C. § 1677(7)(C)(i).

The volume of subject imports increased from \*\*\* short tons HCl equivalent in 2022 to \*\*\* short tons HCl equivalent in 2023, and \*\*\* short tons HCl equivalent in 2024, for an overall increase of \*\*\* percent during this period.<sup>148</sup>

Subject imports as a share of apparent U.S. consumption by quantity increased from \*\*\* percent in 2022 to \*\*\* percent in 2023, and \*\*\* percent in 2024, for an overall increase of \*\*\* percentage points during this period.<sup>149</sup>

Based on the record in the preliminary phase of these investigations, we find that the volume of subject imports and the increase in that volume are significant, both in absolute terms and relative to 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 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.<sup>150</sup>

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

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<sup>148</sup> CR/PR at Table 4.2. The volume of subject imports was \*\*\* percent higher in interim 2025, at \*\*\* short tons HCl equivalent, than in interim 2024, at \*\*\* short tons HCl equivalent. *Id.*

<sup>149</sup> CR/PR at Tables 4.5, C.1. Subject imports supplied a larger share of apparent U.S. consumption in interim 2025, \*\*\* percent, than in interim 2024, at \*\*\* percent. *Id.*

<sup>150</sup> 19 U.S.C. § 1677(7)(C)(ii).

The Commission collected quarterly quantity and f.o.b. pricing data from U.S. producers and importers on their sales of two lysine products shipped to unrelated U.S. customers during the January 2022 to March 2025 period.<sup>151</sup> Four U.S. producers and 14 U.S. importers provided usable pricing data for sales of the requested products, although not all firms reported pricing data for all products for all quarters.<sup>152</sup> Pricing data reported by these firms accounted for \*\*\* of U.S. producers' commercial U.S. shipments of lysine and \*\*\* percent of U.S. importers' commercial U.S. shipments of subject imports from China.<sup>153</sup> There were no reported sales of pricing product 2 from China during the POI.<sup>154</sup> Accordingly, all the pricing data reported by importers of subject merchandise were for pricing product 1, a dry lysine product containing a minimum of 40.0 percent lysine by weight in HCl equivalent.<sup>155</sup> The pricing data reported by U.S. producers for pricing product 1 accounted for \*\*\* percent of the domestic industry's commercial U.S. shipments in 2024.<sup>156</sup>

The pricing data indicate that subject imports oversold domestically produced dry lysine in 10 of 13 quarterly comparisons, involving reported subject import sales of \*\*\* short tons HCl equivalent, at margins ranging from \*\*\* to \*\*\* percent and averaging \*\*\* percent.<sup>157</sup> Subject imports undersold domestically produced dry lysine in the remaining three quarterly

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<sup>151</sup> CR/PR at 5.4. The two pricing products are:

**Product 1.**— Dry L-lysine with a minimum of 40.0 percent lysine by weight, in HCl equivalent; and

**Product 2.**— Liquid L-lysine with a minimum of 40.0 percent lysine by weight, in HCl equivalent. *Id.*

<sup>152</sup> CR/PR at 5.4.

<sup>153</sup> CR/PR at 5.4.

<sup>154</sup> CR/PR at 5.8.

<sup>155</sup> CR/PR at Tables 5.4-5.5.

<sup>156</sup> CR/PR at Tables 5.4-5.5. This is consistent with information on the record indicating that the domestic industry's commercial U.S. shipments of lysine HCl and lysine sulfate accounted for \*\*\* percent of its total U.S. shipments of lysine products in 2024. *Id.* at Table 3.10.

<sup>157</sup> CR/PR at Table 5.8.

comparisons, involving reported subject import sales of \*\*\* short tons HCl equivalent, at margins ranging from \*\*\* and \*\*\* percent and averaging \*\*\* percent.<sup>158</sup> While subject imports universally oversold the domestically produced dry lysine in 2022, they undersold the domestic like product in three of eight quarterly comparisons during the 2023 to 2024 period.<sup>159</sup> Thus, over the POI, subject imports undersold domestically produced dry lysine in 23.0 percent of quarterly comparisons, involving \*\*\* percent of reported subject import sales volume.<sup>160</sup>

The record indicates that dry lysine is interchangeable with liquid (base) lysine for most feed uses and applications.<sup>161</sup> As liquid (base) lysine accounted for most of the domestic industry's commercial U.S. shipments during the POI, we find it instructive to compare U.S. producer sales of domestically produced pricing product 2, a liquid (base) lysine product containing a minimum of 40.0 percent lysine by weight in HCl equivalent, to U.S. importer sales of pricing product 1 imported from China, for purposes of our underselling analysis.<sup>162</sup> This comparison indicates that subject imports of product 1 oversold domestically produced liquid (base) lysine in 7 of 13 quarterly comparisons, involving reported subject import sales of \*\*\* short tons HCl equivalent, at margins ranging from \*\*\* to \*\*\* percent and averaging \*\*\*

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<sup>158</sup> CR/PR at Table 5.8.

<sup>159</sup> CR/PR at Table 5.8.

<sup>160</sup> CR/PR at Table 5.9 and *derived from* CR/PR at Table 5.8.

<sup>161</sup> Conf. Tr. at 15 (Choi), 54 (Lucas, Benson); Pet. Postconf. Br., Exh. I at 9, Exh. 4 at para. 5 (Nel Decl.), 5 at para. 5, (Choi Decl.), and 6 at para. 4 (Walley Decl.).

<sup>162</sup> CR/PR at Tables 3.10, 5.5. Petitioners assert that pricing product 1 (lysine in dry form) and pricing product 2 (lysine in liquid form) are comparable. Conf. Tr. at 15 (Choi), 17 (Lucas), 24 (Rosenthal), 26 (Rosenthal). However, there may be differences in costs that go into producing and shipping lysine in dry versus liquid form. See Pet. Postconf. Br., Exh. 1 at 9. Therefore, we intend to further examine the issue of comparing U.S. importer sales price of pricing product 2 (lysine in liquid form) to U.S. importer sales price of pricing product 1 (lysine in dry form) in any final phase of these investigations.

percent.<sup>163</sup> Subject imports of product 1 undersold domestically produced liquid (base) lysine in the remaining 6 instances, involving reported subject import sales of \*\*\* short tons HCl equivalent, at margins ranging from \*\*\* and \*\*\* percent and averaging \*\*\* percent.<sup>164</sup> While subject imports oversold domestically produced liquid (base) lysine throughout 2022, while the market was recovering from supply issues, they undersold the domestic like product in six of eight quarterly comparisons in 2023 and 2024.<sup>165</sup> Thus, over the POI subject imports undersold domestically produced liquid (base) lysine in 46.2 percent of quarterly comparisons, involving \*\*\* percent of reported subject import sales volume.<sup>166</sup>

Petitioners allege in their postconference brief that some U.S. importers provided erroneous pricing data.<sup>167</sup> Specifically, they argue that U.S. importer \*\*\* reported \*\*\*.<sup>168</sup> Petitioners also contend that importer \*\*\* reported sales values that were \*\*\* and that three other importers also neglected to report f.o.b. values or deduct certain other costs as instructed.<sup>169</sup> Staff subsequently obtained corrected pricing data from several importers, removed the data reported by certain importers, and incorporated corrections into the staff report.<sup>170</sup> In view of mixed overselling and underselling and the data issues alleged by petitioners regarding the pricing data available in these preliminary phase investigations, we

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<sup>163</sup> CR/PR at Table 5.9 and *derived from* CR/PR at Tables 5.4-5.5.

<sup>164</sup> CR/PR at Table 5.7 and *derived from* Tables 5.4-5.5.

<sup>165</sup> *Derived from* CR/PR at Tables 5.4-5.5.

<sup>166</sup> *Derived from* CR/PR at Tables 5.4-5.5, 5.8.

<sup>167</sup> Pet. Postconf. Br. at 15.

<sup>168</sup> Pet. Postconf. Br. at 15-16, Exh. 1 at 4-7.

<sup>169</sup> Pet. Postconf. Br. at Exh. 1 at 7.

<sup>170</sup> CR/PR at 5.4 n.6.

intend to further investigate ways to improve the price comparisons and ensure accuracy of the pricing data in any final phase of these investigations.<sup>171</sup>

We have also examined average unit values (“AUVs”) of U.S. producers’ and subject importers’ U.S. shipments. In 2024, AUVs of by U.S. importers’ commercial U.S. shipments for all in-scope lysine in 2024 were \*\*\* percent lower than the AUVs of the domestic industry’s commercial U.S. shipments of domestically produced lysine.<sup>172</sup>

We have also considered U.S. purchasers’ responses to the Commission’s lost sales/lost revenue survey. Six of the 11 responding purchasers reported purchasing subject imports instead of the domestic like product during the POI.<sup>173</sup> All six purchasers reported that subject imports were priced lower than U.S.-produced lysine products.<sup>174</sup> Five of the six purchasers reported that they purchased \*\*\* short tons HCl equivalent of subject imports instead of the domestic like product based primarily on price, accounting for \*\*\* percent of the \*\*\* short tons HCl equivalent of lysine purchased or imported by the 11 responding purchasers and \*\*\* percent of apparent U.S. consumption during the POI.<sup>175</sup>

Given the high degree of substitutability between subject imports and the domestic like product, the importance of price in purchasing decisions, the mixed over- and underselling shown by the pricing data, the data that subject importers’ U.S. shipment AUVs were lower

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<sup>171</sup> We invite the parties to address in their comments on the draft questionnaires how the Commission could improve its collection of pricing data and its price comparisons in any final phase of these investigations.

<sup>172</sup> Compare CR/PR at Table 3.10 with Table 4.3. We also note the possibility for product mix to affect this comparison, with subject imports predominately comprising lysine in dry lysine HCl form whereas the majority of U.S. producers’ U.S. shipments are of lysine in liquid form.

<sup>173</sup> CR/PR at Table 5.12.

<sup>174</sup> CR/PR at Table 5.12.

<sup>175</sup> Derived from CR/PR at Tables 5.10, 5.12.

than the AUVs of U.S. producers' U.S. shipments, and the information concerning lost sales, we cannot conclude that subject imports did not undersell the domestic like product to a significant degree during the POI. We also cannot conclude that subject import underselling did not cause a shift in market share from the domestic industry to subject imports from 2022 to 2024, particularly in the absence of any other explanation. Subject imports gained \*\*\* percentage points of market share from the domestic industry from 2022 to 2024.<sup>176</sup>

We have also considered whether subject imports depressed or suppressed prices to a significant degree. Between the first quarter of 2022 and the first quarter of 2025, prices for domestically produced product 1 declined by \*\*\* percent, and prices for domestically produced product 2 declined by \*\*\* percent.<sup>177</sup> For pricing product 1, the only product for which subject import pricing data were available, prices of subject imports declined irregularly by \*\*\* percent between the first and last quarters of the period of investigation.<sup>178</sup> Two of the 11 responding purchasers reported that U.S. producers lowered their prices in order to compete with lower-priced subject imports during the POI by \*\*\* and \*\*\* percent, respectively.<sup>179</sup>

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<sup>176</sup> On the basis of the record in these preliminary investigations, Commissioner Kearns finds a preponderance of evidence of significant underselling, based on the AUV and lost sales information and the pricing data. Even using this pricing dataset about which questions have been raised by petitioners, there is evidence that the observed market share shift toward subject imports mainly occurred during the six quarters when subject dry lysine (pricing product 1) undersold domestic liquid (base) lysine (pricing product 2). When comparing the quarterly U.S. shipment quantities of pricing product 1 from China with U.S. shipment quantities reported for domestically manufactured pricing products 1 and 2, subject imports substantially increased their share of market shipments from \*\*\* percent in the first quarter of 2023 to \*\*\* percent in the second quarter of 2024, a difference of \*\*\* percentage points. *Derived from* CR/PR at Tables 5.4-5.5.

<sup>177</sup> CR/PR at Tables 5.4-5.6.

<sup>178</sup> CR/PR at Tables 5.4, 5.6.

<sup>179</sup> CR/PR at Table 5.13. Three purchasers reported that U.S. producers did not lower prices, and six reported that they did not know. *Id.*

While domestic producer prices declined at time of declining costs, the domestic industry's net sales AUVs declined at a faster rate than the industry's unit COGS from 2022 to 2024 and the industry experienced a cost-price-squeeze, with its ratio of COGS to net sales increasing irregularly from \*\*\* percent in 2022 to \*\*\* percent in 2024.<sup>180</sup> Demand trends would not have contributed to the industry's declining prices because apparent U.S. consumption increased steadily by \*\*\* percent from 2022 to 2024.<sup>181</sup>

Given the foregoing, as well as the high degree of substitutability between subject imports and the domestic like product and the importance of price to purchasing decisions and our finding that we cannot conclude that subject imports did not significantly undersell the domestic like product during the POI, we cannot conclude that subject imports did not depress prices for the domestic like product to a significant degree.<sup>182</sup>

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<sup>180</sup> On a per-short ton HCl equivalent basis, the domestic industry's net sales AUV declined by \$\*\*\* between 2022 and 2024, or \*\*\* percent, while its unit COGS declined by \$\*\*\*, or \*\*\* percent. CR/PR at Table 6.2. On a per-short ton HCl equivalent basis, the domestic industry's net sales AUV declined from \$\*\*\* in 2022 to \$\*\*\* in 2023, and \$\*\*\* in 2024. *Id.* at Table 6.1. It was \$\*\*\* per short ton, or \*\*\* percent, lower in interim 2025, at \$\*\*\*, than in interim 2024, at \$\*\*\*. *Id.* On a per-short ton HCl equivalent basis, the domestic industry's unit COGS declined from \$\*\*\* in 2022 to \$\*\*\* in 2023, and \$\*\*\* in 2024. *Id.* It was \$\*\*\* per short ton, or \*\*\* percent, lower in interim 2025, at \$\*\*\*, than in interim 2024, at \$\*\*\*. *Id.* The \$\*\*\* per short ton HCl equivalent, or \*\*\* percent, decline in the domestic industry's unit COGS from 2022 to 2024 resulted entirely from the \$\*\*\* per short ton HCl equivalent, or \*\*\* percent, decline in the industry's unit raw material cost over the period, coupled with an \$\*\*\* per short ton HCl equivalent, or \*\*\* percent, increase in unit labor costs and a \$\*\*\* per short ton HCl equivalent, or \*\*\* percent, increase in unit other factory costs. *Id.*

<sup>181</sup> CR/PR at Table 4.5.

<sup>182</sup> Commissioner Kearns finds that the significant increase in the volume of subject imports over the POI depressed U.S. prices to a significant degree. He would reach this finding regardless of the underselling as, in his view, the statute does not require a finding of significant underselling as a precursor to a finding of price depression. *See* 19 U.S.C. § 1677(7)(C)(ii). *See also, e.g., Cemex S.A. v. United States*, 790 F. Supp. 290, 299 (Ct. Int'l Trade 1992) ("To require findings of underselling would be inconsistent with the proposition that price suppression or depression is sufficient."), *aff'd*, 989 F.2d 1202 (Fed. Cir. 1993).

In sum, based on the record of the preliminary phase of these investigations, we cannot conclude that subject imports did not significantly undersell the domestic like product, thereby causing a market share shift from the domestic industry to subject imports and depressing prices for the domestic like product to a significant degree. Accordingly, we cannot conclude that subject imports did not have significant price effects.<sup>183</sup>

#### **E. Impact of the Subject Imports<sup>184</sup>**

Section 771(7)(C)(iii) of the Tariff Act provides that the Commission, in examining the impact of the subject imports on the domestic industry, “shall evaluate all relevant economic factors which have a bearing on the state of the industry.” These factors include output, sales, inventories, capacity utilization, market share, employment, wages, productivity, gross profits, net profits, operating profits, cash flow, return on investment, return on capital, ability to raise capital, ability to service debt, research and development, and factors affecting domestic prices. 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.”<sup>185</sup>

The domestic industry’s performance declined during the POI according to most trade, employment, and financial indicators, driven by declines in the domestic industry’s sales volume, market share, and prices during the period.<sup>186</sup> The domestic industry’s declining

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<sup>183</sup> In line with his previous findings, Commissioner Kearns finds subject imports had significant price effects.

<sup>184</sup> Commerce initiated the antidumping duty investigation on lysine from China based on an estimated dumping margin of 198.51 percent *ad valorem*. See *L-Lysine From the People's Republic of China: Initiation of Less-Than-Fair-Value Investigation*, 90 Fed. Reg. 26782 (June 24, 2025).

<sup>185</sup> 19 U.S.C. § 1677(7)(C)(iii). This provision was amended by the Trade Preferences Extension Act of 2015, Pub. L. 114-27.

<sup>186</sup> CR/PR at Tables 3.5, 3.9, 3.11-3.12, 4.5, 6.3, 6.5, 6.7, 6.9-6.10, C.1.

performance across key metrics occurred despite increases in apparent U.S. consumption throughout the POI.<sup>187</sup>

The domestic industry's practical capacity and production declined irregularly from 2022 to 2024. The domestic industry's practical capacity declined from \*\*\* short tons HCl equivalent in 2022 to \*\*\* short tons HCl equivalent in 2023, then increased to \*\*\* short tons HCl equivalent in 2024, for an overall decline of \*\*\* percent.<sup>188</sup> The domestic industry's production declined from \*\*\* short tons HCl equivalent in 2022 to \*\*\* short tons HCl equivalent in 2023, then increased to \*\*\* short tons HCl equivalent in 2024, for an overall decline of \*\*\* percent.<sup>189</sup> As the domestic industry's practical capacity declined by more than its production between 2022 and 2023 and increased by less between 2023 and 2024, its practical capacity utilization rate increased throughout the 2022 to 2024 period, from \*\*\* percent in 2022 to \*\*\* percent in 2023, and \*\*\* percent in 2024, for an overall gain of \*\*\* percentage points.<sup>190</sup>

Several of the domestic industry's employment indicators declined irregularly from 2022 to 2024. The domestic industry's number of production-related workers ("PRWs") declined throughout the POI, from \*\*\* in \*\*\* in 2023, and \*\*\* in 2024, for an overall decline of \*\*\* percent during this period.<sup>191</sup> Hours worked increased from \*\*\* hours in 2022 to \*\*\* hours

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<sup>187</sup> CR/PR at Tables 4.5, C.1.

<sup>188</sup> CR/PR at Tables 3.5, C.1. The domestic industry's practical capacity for lysine was unchanged, at \*\*\* short tons HCl equivalent, in both interim periods. *Id.*

<sup>189</sup> CR/PR at Tables 3.5, C.1. The domestic industry's production was \*\*\* percent lower in interim 2025, at \*\*\* short tons HCl equivalent, than in interim 2024, at \*\*\* short tons HCl equivalent. *Id.*

<sup>190</sup> CR/PR at Tables 3.5, C.1. The domestic industry's capacity utilization was \*\*\* percentage points lower in interim 2025, at \*\*\* percent, than in interim 2024, at \*\*\* percent. *Id.*

<sup>191</sup> CR/PR at Tables 3.12, C.1. The domestic industry's number of PRWs was \*\*\* percent lower in interim 2025, at \*\*\*, than in interim 2024, at \*\*\*. *Id.*

worked in 2023, then declined to \*\*\* hours, for an overall decline of \*\*\* percent during this period.<sup>192</sup> Wages paid increased from \$\*\*\* in 2022 to \$\*\*\* in 2023, then declined to \$\*\*\*, for an overall decline of \*\*\* percent during this period.<sup>193</sup> Additionally, on a short tons HCl equivalent per 1,000 hours basis, productivity decreased from \*\*\* in 2022 to \*\*\* in 2023, then increased to \*\*\* in 2024, for an overall decline of \*\*\* percent during this period.<sup>194</sup>

The domestic industry's commercial U.S. shipments by quantity declined throughout the POI, from \*\*\* short tons HCl equivalent in 2022 to \*\*\* short tons HCl equivalent in 2023, and \*\*\* short tons HCl equivalent in 2024, for an overall decline of \*\*\* percent during this period.<sup>195</sup> The domestic industry's share of apparent U.S. consumption by quantity also declined throughout the POI, from \*\*\* percent in 2022 to \*\*\* percent in 2023, and \*\*\* percent in 2024, for an overall loss of \*\*\* percentage points during this period.<sup>196</sup>

The domestic industry's end-of-period inventories declined from \*\*\* short tons HCl equivalent in 2022 to \*\*\* short tons HCl equivalent in 2023, then increased to \*\*\* short tons HCl equivalent in 2024, for an overall decline of \*\*\* percent during this period.<sup>197</sup> As a ratio to

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<sup>192</sup> CR/PR at Tables 3.12, C.1. The domestic industry's hours worked were \*\*\* percent lower in interim 2025, at \*\*\* hours, than in interim 2024, at \*\*\* hours. *Id.*

<sup>193</sup> CR/PR at Tables 3.12, C.1. The domestic industry's wages paid were \*\*\* percent lower in interim 2025, at \$\*\*\*, than in interim 2024, at \$\*\*\*. *Id.*

<sup>194</sup> CR/PR at Tables 3.12, C.1. The domestic industry's productivity was \*\*\* percent lower in interim 2025, at \*\*\* short tons HCl equivalent per 1,000 hours, than in interim 2024, at \*\*\* short tons HCl equivalent per 1,000 hours. *Id.*

<sup>195</sup> CR/PR at Tables 3.9, C.1. The domestic industry's commercial U.S. shipments were \*\*\* percent higher in interim 2025, at \*\*\* short tons HCl equivalent, than in interim 2024, at \*\*\* short tons HCl equivalent. *Id.*

<sup>196</sup> CR/PR at Tables 4.5, C.1. The domestic industry supplied \*\*\* percentage points less of the U.S. market in interim 2025, at \*\*\* percent, than in interim 2024, at \*\*\* percent. *Id.*

<sup>197</sup> CR/PR at Tables 3.11, C.1. The domestic industry's end-of-period inventories were \*\*\* percent lower in interim 2025, at \*\*\* short tons HCl equivalent, than in interim 2024, at \*\*\* short tons HCl equivalent. *Id.*

total shipments, the domestic industry's end-of-period inventories declined from \*\*\* percent in 2022 to \*\*\* percent in 2023, then increased to \*\*\* percent in 2024, for an overall decline of \*\*\* percentage points during this period.<sup>198</sup>

Most of the domestic industry's financial indicators deteriorated during the POI. The domestic industry's net sales revenue declined from \$\*\*\* in 2022 to \$\*\*\* in 2023, and \$\*\*\* in 2024, for an overall decline of \*\*\* percent during this period.<sup>199</sup> The domestic industry's gross profit declined from \$\*\*\* in 2022 to \$\*\*\* in 2023, then increased to \$\*\*\*, for an overall decline of \*\*\* percent during this period.<sup>200</sup> The domestic industry's operating and net income indicators also declined irregularly during the POI. The domestic industry's operating income declined from \$\*\*\* in 2022 to \*\*\* in 2023, then improved to \*\*\* in 2024.<sup>201</sup> The domestic industry's ratio of operating income to net sales declined from \*\*\* percent in 2022 to \*\*\* percent in 2023, then improved to \*\*\* percent in 2024.<sup>202</sup> The domestic industry's net income declined from \$\*\*\* in 2022 to \*\*\* in 2023, then increased to \*\*\* in 2024.<sup>203</sup> The domestic

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<sup>198</sup> CR/PR at Tables 3.11, C.1. The domestic industry's ratio of end-of-period inventories to total shipments was \*\*\* percentage points lower in interim 2025, at \*\*\* percent, than in interim 2024, at \*\*\* percent. *Id.*

<sup>199</sup> CR/PR at Tables 6.3, C.1. The domestic industry's net sales revenues were \*\*\* percent higher in interim 2025, at \$\*\*\*, than in interim 2024, at \$\*\*\*. *Id.*

<sup>200</sup> CR/PR at Tables 6.3, C.1. The domestic industry's gross profits were \*\*\* percent higher in interim 2025, at \$\*\*\*, than in interim 2024, at \$\*\*\*. *Id.*

<sup>201</sup> CR/PR at Tables 6.3, C.1. The domestic industry's operating income was \*\*\* percent higher in interim 2025, at \$\*\*\*, than in interim 2024, at \$\*\*\*. *Id.*

<sup>202</sup> CR/PR at Tables 6.3, C.1. The domestic industry's ratio of operating income to net sales was \*\*\* percentage points higher in interim 2025, at \*\*\* percent, than in interim 2024, at \*\*\* percent. *Id.*

<sup>203</sup> CR/PR at Tables 6.3, C.1. The domestic industry's net income was \*\*\* percent higher in interim 2025, at \$\*\*\*, than in interim 2024, at \$\*\*\*. *Id.*

industry's ratio of net income to net sales declined from \*\*\* percent in 2022 to \*\*\* percent in 2023, then improved to \*\*\* percent in 2024.<sup>204</sup>

The domestic industry's capital expenditures increased throughout the POI, from \$\*\*\* in 2022 to \$\*\*\* in 2023, and \$\*\*\* in 2024, for an overall increase of \*\*\* percent during this period.<sup>205</sup> Conversely, the industry's research & development ("R&D") expenditures declined during the POI, from \$\*\*\* in 2022 to \$\*\*\* in 2023, and \$\*\*\* in 2024, for an overall decline of \*\*\* percent during this period.<sup>206</sup> The domestic industry's net assets declined from \$\*\*\* in 2022 to \$\*\*\* in 2023, and \$\*\*\* in 2024, for an overall decline of \*\*\* percent during this period.<sup>207</sup> The domestic industry's return on assets declined from \*\*\* percent in 2022 to \*\*\* percent in 2023, then improved to \*\*\* percent in 2024.<sup>208</sup> Finally, U.S. producers reported negative effects on investment, growth, and development due to subject imports.<sup>209</sup>

We have found that subject imports are highly substitutable for the domestic like product and entered the U.S. market in significant and increasing volumes during the POI. We cannot conclude on the record of these preliminary phase investigations that subject import underselling was not significant, causing a market share shift from the domestic industry to subject imports and depressing domestic prices to a significant degree between 2022 and 2024. Consequently, we cannot conclude that subject imports are not a cause of the domestic

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<sup>204</sup> CR/PR at Tables 6.3, C.1. The domestic industry's ratio of operating income to net sales was \*\*\* percentage points higher in interim 2025, at \*\*\* percent, than in interim 2024, at \*\*\* percent. *Id.*

<sup>205</sup> CR/PR at Tables 6.5, C.1. The domestic industry's capital expenditures were \*\*\* percent higher in interim 2025, at \$\*\*\*, than in interim 2024, at \$\*\*\*. *Id.*

<sup>206</sup> CR/PR at Tables 6.7, C.1. The domestic industry's R&D expenditures were \*\*\* percent higher in interim 2025, at \$\*\*\* than in interim 2024, at \$\*\*\*. *Id.*

<sup>207</sup> CR/PR at Tables 6.9, C.1.

<sup>208</sup> CR/PR at Table 6.10.

<sup>209</sup> CR/PR at Table 6.12.

industry's declining trade, employment, and financial measures. Accordingly, we find that there is a reasonable indication that subject imports had a significant impact on the domestic industry.<sup>210</sup>

We have also considered whether there are other factors that may have had an impact on the domestic industry to ensure that we are not attributing injury from such other factors to subject imports. As discussed in section VI.B.2 above, nonsubject imports were minimally present in the U.S. market throughout the POI.<sup>211</sup> Moreover, the information available indicates that the AUVs of nonsubject imports were substantially higher than those of subject imports throughout the POI.<sup>212</sup> Consequently, nonsubject imports do not explain the injury we have attributed to subject imports.

Trends in demand also do not explain the injury we have attributed to subject imports. Apparent U.S. consumption increased throughout the POI and was \*\*\* higher in 2024 than in 2022.<sup>213</sup> Thus, the record in these preliminary phase investigations indicates that changes in demand do not explain the declining condition of the domestic industry during the POI.

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<sup>210</sup> As noted in Section VI.D above, Commissioner Kearns finds a preponderance of evidence of significant underselling, which caused a market share shift and depressed domestic prices to a significant degree.

<sup>211</sup> CR/PR at Tables 4.5, C.1.

<sup>212</sup> CR/PR at Tables 4.2, C.1.

<sup>213</sup> CR/PR at Tables 4.5, C.1. Additionally, apparent U.S. consumption was \*\*\* percent higher in interim 2025 than in interim 2024. *Id.*

## **VII. Conclusion**

For the reasons stated above, we determine that there is a reasonable indication that an industry in the United States is materially injured by reason of subject imports of lysine from China that are allegedly sold in the United States at LTFV and subsidized by the government of China.

# Part 1: 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 Archer Daniels Midland Company, Chicago, Illinois (“ADM”), CJ Bio America, Inc. an Iowa corporation (“CJ America”), and Evonik Corporation, Piscataway, NJ (“Evonik”), on May 28, 2025, alleging that an industry in the United States is materially injured and threatened with material injury by reason of subsidized and less-than-fair-value (“LTFV”) imports of l-lysine (“lysine”)<sup>1</sup> from China. Table 1.1 presents information relating to the background of these investigations.<sup>2 3</sup>

**Table 1.1 Lysine: Information relating to the background and schedule of this proceeding**

| Effective date | Action                                                                                                                       |
|----------------|------------------------------------------------------------------------------------------------------------------------------|
| May 28, 2025   | Petitions filed with Commerce and the Commission; institution of the Commission investigations (90 FR 23565, June 3, 2025)   |
| June 17, 2025  | Commerce’s notice of initiation of its countervailing duty investigation with respect to China (90 FR 26799, June 24, 2025)  |
| June 17, 2025  | Commerce’s notice of initiation of its less-than-fair-value investigation with respect to China (90 FR 26782, June 24, 2025) |
| June 18, 2025  | Commission’s conference                                                                                                      |
| July 11, 2025  | Commission’s vote                                                                                                            |
| July 14, 2025  | Commission’s determinations                                                                                                  |
| June 21, 2025  | Commission’s views                                                                                                           |

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<sup>1</sup> See the section entitled “The subject merchandise” in Part 1 of this report for a complete description of the merchandise subject in this proceeding.

<sup>2</sup> Pertinent Federal Register notices are referenced in appendix A and may be found at the Commission’s website ([www.usitc.gov](http://www.usitc.gov)).

<sup>3</sup> A list of witnesses appearing at the conference is presented in appendix B of this 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—<sup>4</sup>

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

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<sup>4</sup> Amended by PL 114—27 (as signed, June 29, 2015), Trade Preferences Extension Act of 2015.

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—<sup>5</sup>

(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 1 of this report presents information on the subject merchandise, alleged subsidy rates/dumping margins, and domestic like product. Part 2 of this report presents information on conditions of competition and other relevant economic factors. Part 3 presents information on the condition of the U.S. industry, including data on capacity, production, shipments, inventories, and employment. Parts 4 and 5 present the volume of subject imports and pricing of domestic and imported products, respectively. Part 6 presents information on the financial experience of U.S. producers. Part 7 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**

Lysine is an amino acid that is added to animal feed to promote the biosynthesis of proteins. It is typically produced through fermentation of a strain of bacteria with a supply of dextrose. Lysine is added to animal feed to achieve the desired protein balance and blend. The U.S. producers of lysine are ADM, CJ America, Evonik, and Ajinomoto Health & Nutrition North America, Inc. (“Ajinomoto”), while leading producers of lysine outside the United States include Meihua Group (“Meihua”), Eppen Bio (“Eppen Bio”), and Fufeng Group Co., Ltd. of China. The leading U.S. importers of lysine from China are SAM HPRP Chemical, Inc., Beans Nutrition, LLC, and Fufeng (USA), Inc. Leading importers of product from nonsubject countries (Canada, France, and India) include ADM, Evonik Corp., and Sabinsa Corp. U.S. purchasers of lysine are end users, distributors, and toll manufacturers that blend the lysine into feed mix and then sell it to the end user; leading purchasers include \*\*\*.

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<sup>5</sup> Amended by PL 114—27 (as signed, June 29, 2015), Trade Preferences Extension Act of 2015.

Apparent U.S. consumption of lysine totaled approximately \*\*\* short tons HCl equivalent (\$\*\*\*) in 2024. Currently, four firms are known to produce lysine in the United States. U.S. producers' U.S. shipments of lysine totaled \*\*\* short tons HCl equivalent (\$\*\*\*) in 2024, and accounted for \*\*\* percent of apparent U.S. consumption by quantity and \*\*\* percent by value. U.S. imports from subject sources totaled \*\*\* short tons HCl equivalent (\$\*\*\*) in 2024 and accounted for \*\*\* percent of apparent U.S. consumption by quantity and \*\*\* percent by value. U.S. imports from nonsubject sources totaled \*\*\* short tons HCl equivalent (\*\*\*) in 2024 and accounted for \*\*\* percent of apparent U.S. consumption by quantity and \*\*\* percent by value.

## **Summary data and data sources**

A summary of data collected in these investigations is presented in appendix C, table C.1. The Commission's questionnaires collected data for the years 2022 to 2024 and interim periods January through March of 2024 ("interim 2024") and January through March of 2025 ("interim 2025"). Except as noted, U.S. industry data are based on questionnaire responses of four firms that accounted for all known U.S. production of lysine during 2024. U.S. imports are based on official U.S. import statistics of the U.S. Department of Commerce Census Bureau adjusted to include other HTS numbers as reported in Commission questionnaires.

## **Previous and related investigations**

Lysine has not been the subject of prior antidumping and/or countervailing duty investigations in the United States.

## **Nature and extent of alleged subsidies and sales at LTFV**

### **Alleged subsidies**

On June 24, 2025, Commerce published a notice in the Federal Register of the initiation of its countervailing duty investigation on lysine from China.<sup>6</sup>

### **Alleged sales at LTFV**

On June 24, 2025, Commerce published a notice in the Federal Register of the initiation of its antidumping duty investigations on lysine from China.<sup>7</sup> Commerce has initiated antidumping duty investigations based on estimated dumping margins of 198.51 percent for lysine from China.

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<sup>6</sup> For further information on the alleged subsidy programs see Commerce's notice of initiation and related CVD Initiation Checklist. 90 FR 26799, June 24, 2025.

<sup>7</sup> 90 FR 26782, June 24, 2025.

## The subject merchandise

### Commerce's scope

In the current proceeding, Commerce has defined the scope as follows:<sup>8</sup>

The scope of this investigation covers animal feed grade L-lysine (lysine). Lysine is an essential amino acid added to animal feed that is used in the biosynthesis of proteins. The scope covers lysine regardless of form, including lysine monohydrochloride, also referred to as lysine HCl, lysine sulfate, and liquid lysine. The scope includes lysine that has been coated or encapsulated for use with ruminants to ensure bioavailability.

Lysine HCl in the dry form has the molecular formula  $C_6H_{14}N_2O_2HCl$ . The Chemical Abstracts Service (CAS) registry number for lysine HCl is 657-27-2. Lysine HCl contains a minimum of 78 percent lysine by weight, as well as additional amino acids, carbohydrates, mineral salts, and organic acids. Lysine sulfate is the sulfate salt of lysine, and in the dry form it has the molecular formula  $C_6H_{16}N_2O_6S$ . The CAS registry number for lysine sulfate is 60343-69-3. Lysine sulfate typically contains approximately 40-70 percent lysine by weight, as well as additional amino acids, carbohydrates, mineral salts, and organic acids. Liquid lysine is a concentrated form of lysine in an aqueous solution with the molecular formula  $C_6H_{14}N_2O_2$ . The CAS registry number for liquid lysine is 56-87-1. Liquid lysine normally contains at least 50 percent lysine by weight, as well as additional amino acids, carbohydrates, mineral salts, and organic acids.

The scope includes animal feed grade lysine that is combined with other products, including for example, by mixing, blending, compounding, or granulating (e.g., base mixes, premixes, and concentrates). For such combined products, only the lysine component is covered by the scope of this investigation.

Subject merchandise also includes lysine that has been processed in a third country, including by commingling, diluting, adding or removing additives, refining, converting from liquid to dry or dry to liquid form, coating or encapsulating, or performing any processing that would not otherwise remove the merchandise from the scope of the investigation if performed in the subject country.

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<sup>8</sup> 90 FR 26782, June 24, 2025.

## Tariff treatment

Lysine is currently imported under Harmonized Tariff Schedule of the United States (“HTS”) statistical reporting number 2922.41.0090. The general rate of duty is 3.7 percent ad valorem for HTS subheading 2922.41.00.<sup>9 10</sup> Decisions on the tariff classification and treatment of imported goods are within the authority of U.S. Customs and Border Protection.

Lysine originating in China under HTS subheading 2922.41.00 is not subject to reciprocal tariffs under the International Emergency Economic Powers Act (“IEEPA”).<sup>11 12</sup>

## The product

### Description and applications

Lysine is an essential amino acid that is often added to animal feed for swine, poultry, cows, and fish to help promote protein growth.<sup>13</sup> Amino acids, the building blocks of proteins, have important physiological functions that aid in the growth and development of animals.<sup>14</sup>

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<sup>9</sup> The subject merchandise in this proceeding may also be imported under the following HTS statistical reporting numbers: 2922.41.0010, 2922.49.4950, and 2309.90.9500. USITC, HTS (2025) Revision 15, Publication 5641, June 2025, pp. 29.86, 29.88, and 23.6.

<sup>10</sup> Effective July 6, 2018, lysine originating in China under HTS subheadings 2922.49.4950 and 2309.90.9500 is subject to an additional 25 percent ad valorem duty under section 301 of the Trade Act of 1974. 83 FR 47974, September 21, 2018; 84 FR 20459, May 9, 2019. See also HTS headings 9903.88.03 and 9903.88.04 and U.S. notes 20(e), 20(f), and 20(g) to subchapter III of chapter 99 and related tariff provisions for this duty treatment. USITC, HTS (2025) Revision 15, Publication 5641, June 2025, pp. 99.3.51 to 99.3.52, 99.3.361. Goods exported from China to the United States prior to May 10, 2019, and entering the United States prior to June 1, 2019, were not subject to the escalated 25 percent duty (84 FR 21892, May 15, 2019).

<sup>11</sup> Lysine under HTS subheading 2922.41.00 is included in the list of products that are not subject to reciprocal tariffs. Subheadings listed in Annex II of 90 FR 15041, April 7, 2025, and in U.S. note 2(v)(iii) to subchapter III of chapter 99. 90 FR 15041, April 7, 2025. See also HTS headings 9903.01.25 and 9903.01.32 and U.S. note 2(v) to subchapter III of chapter 99 and related tariff provisions for this duty treatment. USITC, HTS (2025) Revision 15, Publication 5641, June 2025, pp. 99.3.6 to 99.3.14, 99.3.304 to 99.3.305.

<sup>12</sup> Effective February 4, 2025, lysine originating in China under HTS subheadings 2922.49.4950 and 2309.90.9500 is subject to an additional 10 percent ad valorem duty under the International Emergency Economic Powers Act (“IEEPA”), and on March 4, 2025, that additional duty increased to 20 percent ad valorem.

<sup>13</sup> Petition, vol. 1, pp. 1 and 6.

<sup>14</sup> Wu, Guoyao, “Dietary Requirements of Synthesizable Amino Acids by Animals: A Paradigm Shift in Protein Nutrition,” *Journal of Animal Science and Biotechnology*, vol. 5 (34), June 14, 2014, <https://doi.org/10.1186/2049-1891-5-34>.

Amino acids are also one of the most produced goods using the fermentation process.<sup>15</sup> In order to decrease CO<sub>2</sub> emissions and to lower reliance on crude protein, amino acids must be used in the livestock industry.<sup>16</sup>

Animals whose diets consist mainly of grass or grain (e.g., corn or soybean meal) do not obtain the necessary amount of essential amino acids.<sup>17</sup> <sup>18</sup> As a result, amino acids such as lysine are added to their diets in the form of an additive or supplement.<sup>19</sup> These animals cannot produce amino acids by themselves or from other nutrients, making them highly dependent on lysine additives and supplements.<sup>20</sup> Furthermore, lysine encourages calcium absorption and growth rate, especially in pigs where lysine acts as the primary growth factor and as the major limiting amino acid.<sup>21</sup> <sup>22</sup>

Animal feed grade lysine<sup>23</sup> corresponding to the scope of these investigations is typically produced in the following forms: lysine sulfate, liquid (base) lysine, and lysine monohydrochloride (lysine HCl).<sup>24</sup> Lysine can also be produced in either liquid or dry form (e.g., powder, granules, coated, or encapsulated).<sup>25</sup> Each form of lysine has its own distinct color and characteristics (see table 1.2). The encapsulated or coated forms of lysine are about the size of

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<sup>15</sup> Kim, Jun-Woo. "Plant-Scale Circular Economy Using Biological Reuse of Electrolyte Residues in the Amino Acid Industry," *Bioengineering*, vol. 12 (24), December 30, 2024, <https://doi.org/10.3390/bioengineering12010024>.

<sup>16</sup> Ibid.

<sup>17</sup> The list of essential amino acids for animals includes cysteine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, tyrosine, and valine. Wu, Guoyao, "Dietary Requirements of Synthesizable Amino Acids by Animals: A Paradigm Shift in Protein Nutrition," *Journal of Animal Science and Biotechnology*, vol. 5 (34), June 14, 2014, <https://doi.org/10.1186/2049-1891-5-34>.

<sup>18</sup> Petition, vol. 1, p. 1.

<sup>19</sup> "Certain L-Lysine Feed Products, Their Methods of Production and Genetic Constructs for Production," Inv. No. 337-TA-571 (final), USITC Pub. 4113 at 6 (November 2009).

<sup>20</sup> Ibid.

<sup>21</sup> In this scenario, limiting amino acids are the relatively deficient amino acids in an animal's diet. The absence of these limiting amino acids prevents other amino acids from being utilized properly. Kim, Jun-Woo. "Plant-Scale Circular Economy Using Biological Reuse of Electrolyte Residues in the Amino Acid Industry," *Bioengineering*, vol. 12 (24), December 30, 2024, <https://doi.org/10.3390/bioengineering12010024>.

<sup>22</sup> Conference transcript, p. 68 (Nel).

<sup>23</sup> Other grades of lysine include pharmaceutical grade and human food grade. Pharmaceutical grade lysine is an ultra-pure form of lysine that is substantially more expensive than animal feed grade lysine. Human food grade lysine has purity levels over 99 percent while animal feed grade lysine is typically over 98.5 percent. Conference transcript, p. 20 (Nel), p. 51 (Choi).

<sup>24</sup> Petition, vol. 1, p. 6.

<sup>25</sup> Ibid.

a pebble and are used to feed ruminants.<sup>26 27</sup> For ruminants like cattle, lysine must be administered in the encapsulated form because the microbes in the rumen can degrade the amino acid.<sup>28</sup> For non-ruminants, which account for most of the market, lysine must be included in their diets because their small intestines lack the ability to absorb the required amount of amino acids.<sup>29 30</sup>

Despite the many forms of lysine, all the forms of lysine are interchangeable and can be utilized by all animal species, and the end use remains the same—an essential amino acid in animal feed.<sup>31 32</sup> The amount of lysine that is blended into animal feed can be adjusted based on the dietary requirements of the specific animal. There are no substitutes for lysine as an essential amino acid additive.<sup>33</sup>

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<sup>26</sup> Ibid.

<sup>27</sup> Ruminants are animals with multiple compartments in their stomach like sheep and cows while non-ruminants are animals with single-compartment stomachs like pigs and chickens. Wu, Guoyao, “Dietary Requirements of Synthesizable Amino Acids by Animals: A Paradigm Shift in Protein Nutrition,” *Journal of Animal Science and Biotechnology*, vol. 5 (34), June 14, 2014, <https://doi.org/10.1186/2049-1891-5-34>.

<sup>28</sup> Conference transcript, p. 68 (Nel).

<sup>29</sup> Wu, Guoyao, “Dietary Requirements of Synthesizable Amino Acids by Animals: A Paradigm Shift in Protein Nutrition,” *Journal of Animal Science and Biotechnology*, vol. 5 (34), June 14, 2014, <https://doi.org/10.1186/2049-1891-5-34>.

<sup>30</sup> Conference transcript, p. 61 (Rosenthal).

<sup>31</sup> Most of the lysine is used in complete feeds, which are nutritionally adequate feeds for animals (other than man). Conference transcript, p. 71 (Lucas). Food and Agricultural Association of the United Nations, “Definitions,” <https://www.fao.org/4/y1453e/y1453e06.htm>.

<sup>32</sup> Conference transcript, p. 15 (Choi), p. 54 (Benson).

<sup>33</sup> Petition, vol. 1, p. 7.

**Table 1.2: Various forms of animal feed grade lysine**

| Lysine Form          | Physical Description                                 | Color | CAS Number | Percent by Weight Lysine    | Molecular Formula    | Molecular Structure |
|----------------------|------------------------------------------------------|-------|------------|-----------------------------|----------------------|---------------------|
| Lysine sulfate       | Granular-like                                        | Tan   | 60343—69—3 | 32 to 70                    | $C_6H_{16}N_2O_6S$   |                     |
| Liquid (base) lysine | Aqueous, semi-viscous                                | Dark  | 56—87—1    | Greater than or equal to 50 | $C_6H_{14}N_2O_2$    |                     |
| Lysine HCl           | Crystalline-like powder, free-flowing, water-soluble | White | 657—27—2   | Greater than or equal to 78 | $C_6H_{14}N_2O_2HCl$ |                     |

Source: Petition, vol. 1, p. 6; Bampidis et al., “Safety and Efficacy of L-lysine Monohydrochloride and Concentrated Liquid L-lysine (Base) Produced by Fermentation with *Corynebacterium Glutamicum* KCCM 80216 As Feed Additive for All Animal Species,” EFSA Journal, vol. 18 (issue 12), pp. 8 to 10, November 28, 2018, <https://doi.org/10.2903/j.efsa.2020.6334>; Bampidis et al., “Safety and Efficacy of L-lysine Sulfate Produced by Fermentation Using *Corynebacterium Glutamicum* KFCC 11043 As a Feed Additive for All Animal Species,” EFSA Journal, vol. 18 (issue 7), p. 6, July 1, 2020, <https://doi.org/10.2903/j.efsa.2020.6203>; Conference transcript, p. 53 (Benson); Conference transcript, pp. 71 to 72 (Benson, Lucas, Nel).

Usage of lysine in the poultry industry, which encompasses birds such as chicken, turkey, duck, ostrich, and quail can be seen as follows.<sup>34</sup> Poultry feed ingredients include animal proteins, cereal grains, vitamins, and minerals.<sup>35</sup> To help alleviate the cost of feed ingredients, the poultry industry has routinely combined purified amino acids with lowered crude protein contents in the poultry feed.<sup>36</sup> Studies have shown that exposing chickens to low-protein diets over a prolonged period resulted in lower amino acids in the plasma and in higher infection rates.<sup>37</sup> For chickens whose diets are based on corn and soybean, the three most limiting amino acids are methionine, lysine, and threonine.<sup>38</sup> Lysine is the second limiting amino acid for

<sup>34</sup> Lee et al., “Effects of Lysine and Methionine in a Low Crude Protein Diet on the Growth Performance and Gene Expression of Immunity Genes in Broilers,” Poultry Science, vol. 99 (6), June 2020, <https://doi.org/10.1016/j.psj.2020.03.013>.

<sup>35</sup> Ibid.

<sup>36</sup> Ibid.

<sup>37</sup> Ibid.

<sup>38</sup> Ibid.

broiler chickens,<sup>39</sup> as lysine has been shown to be particularly effective in breast muscle development.<sup>40 41</sup>

## Manufacturing processes

Lysine is produced primarily through a fermentation process, which involves the growth of select bacteria over time and then harvesting the desired fermentation product from the respective culture medium (e.g., broth).<sup>42</sup> Lysine is commonly produced via a fermentation process involving a bacterial strain<sup>43 44</sup> (*Corynebacterium glutamicum*) and a carbohydrate source (e.g., dextrose).<sup>45</sup> The initial fermentation stage involves the following three steps (see figure 1.1):<sup>46</sup>

1. Growing the bacterium in a suitable culture medium
2. Producing and accumulating lysine in the culture medium
3. Collecting lysine from the culture medium

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<sup>39</sup> Broiler chickens are bred specifically for meat production. Other types of chickens include layers (bred for egg production) and breeders (bred for breeding). Ishii et al., “Dietary Supplementation with Lysine and Threonine Modulates the Performance and Plasma Metabolites of Broiler Chicken,” Japan Poultry Science Association, vol. 56 (3), July 25, 2019, <https://doi.org/10.2141/jpsa.0180104>.

<sup>40</sup> The other limiting amino acid for poultry diets is methionine. Lee et al., “Effects of Lysine and Methionine in a Low Crude Protein Diet on the Growth Performance and Gene Expression of Immunity Genes in Broilers,” Poultry Science, vol. 99 (6), June 2020, <https://doi.org/10.1016/j.psj.2020.03.013>.

<sup>41</sup> Lee et al., “Effects of Lysine and Methionine in a Low Crude Protein Diet on the Growth Performance and Gene Expression of Immunity Genes in Broilers,” Poultry Science, vol. 99 (6), June 2020, <https://doi.org/10.1016/j.psj.2020.03.013>.

<sup>42</sup> “Certain L-Lysine Feed Products, Their Methods of Production and Genetic Constructs for Production,” Inv. No. 337-TA-571 (final), USITC Pub. 4113 at 6 (November 2009).

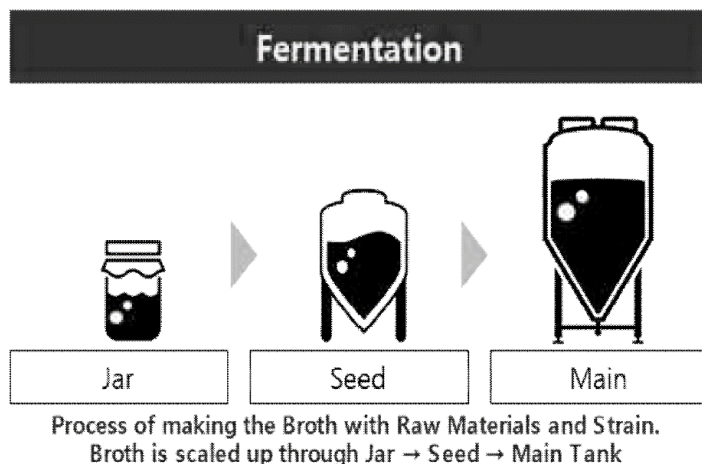
<sup>43</sup> Industrial L-lysine bioprocesses can also utilize the bacterial strain *Escherichia coli* (*E. coli*). Malla et al., “A Novel Efficient L-Lysine Exporter Identified by Functional Metagenomics,” Frontiers in Microbiology, vol. 13, April 14, 2022, <https://doi.org/10.3389/fmicb.2022.855736>.

<sup>44</sup> Wild-type *E. coli* converts sugars into lysine for its own internal use via a biosynthetic pathway that includes a series of intracellular chemical reactions, and wild-type *E. coli* also has an intracellular mechanism to break down lysine into other related compounds. Wild-type refers to bacterial cells that have not undergone genetic engineering. “Certain L-Lysine Feed Products, Their Methods of Production and Genetic Constructs for Production,” Inv. No. 337-TA-571 (final), USITC Pub. 4113 at 6 (November 2009).

<sup>45</sup> Petition, vol. 1, p. 6.

<sup>46</sup> “Certain L-Lysine Feed Products, Their Methods of Production and Genetic Constructs for Production,” Inv. No. 337-TA-571 (final), USITC Pub. 4113 at 6 (November 2009).

**Figure 1.1 Lysine: Simplified fermentation process**



Source: Petition, vol. 1, exh. Gen—2 (exh. B).

All forms of lysine follow a similar process in the first stage of production, where a carbohydrate source<sup>47</sup> such as corn is processed to produce a base sugar in the form of dextrose (which then undergoes fermentation and purification).<sup>48 49</sup> To produce dextrose, a wet milling process takes place where the corn is refined. As seen in figure 1.2, after the corn is received and screened to remove any debris, the corn is subjected to a steeping process, where the corn is softened.<sup>50</sup> The softened corn becomes more amenable to the separation process where the corn is separated into four parts: germ, fiber, gluten, and starch.<sup>51 52</sup> The corn goes through a grinding mill to remove the germ for further processing, and then the corn slurry is ground again to remove the fiber for further processing.<sup>53</sup> The remaining mixture is centrifuged to remove the gluten.<sup>54</sup> The last remaining component of the corn is the starch (i.e., dextrose), which is washed to lower its protein content and to be prepared for the next step.<sup>55</sup>

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<sup>47</sup> Other carbohydrate sources include wheat and sugar beets. Petition, vol. 1, p. 10.

<sup>48</sup> Lysine production can either be batched or continuous. Conference transcript, p. 12 (Benson), 75 (Benson, Choi, Nel).

<sup>49</sup> Petition, vol. 1, p. 8, 10.

<sup>50</sup> Petition, vol. 1, p. 8.

<sup>51</sup> Ibid.

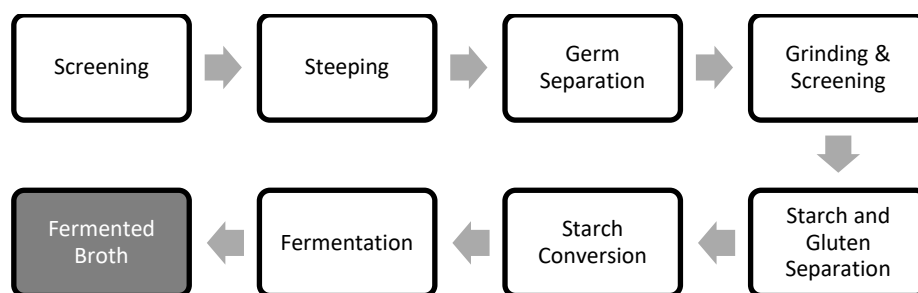
<sup>52</sup> Conference transcript, p. 12 (Benson).

<sup>53</sup> Petition, vol. 1, p. 8.

<sup>54</sup> Ibid.

<sup>55</sup> Ibid.

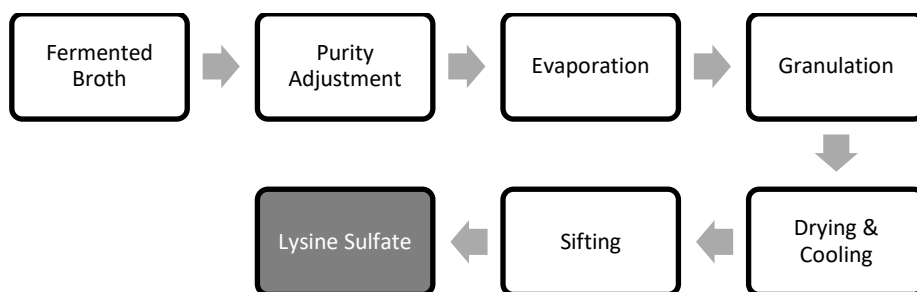
**Figure 1.2 Lysine: Corn refining process to produce the fermented broth**



Source: Petition, vol. 1, exh. Gen—2 (exh. A).

The next step involves dextrose being transported to another facility where it is combined with a bacterial strain to start the fermentation process and create the fermented broth consisting of lysine, other amino acids, and biomass.<sup>56</sup> To produce lysine sulfate (see figure 1.3), the fermented broth undergoes an evaporation and drying process to remove excess water and produce lysine sulfate in powder form.<sup>57</sup> Unlike other forms of lysine, lysine sulfate does not undergo an additional purification or filtration process. As a result, excess materials such as biomass and salts are included in the lysine sulfate.<sup>58</sup> Therefore, lysine sulfate has a lower lysine content relative to other forms of lysine.<sup>59</sup>

**Figure 1.3 Lysine: Production flow diagram for lysine sulfate**



Source: Petition, vol. 1, exh. Gen—2 (exh. B).

In order to produce liquid (base) lysine (see figure 1.4), the aforementioned fermented broth undergoes a filtration process where biomass is removed via membrane filters and a purification process where impurities are removed via an ion exchange resin.<sup>60</sup> Afterwards,

<sup>56</sup> Petition, vol. 1, p. 9.

<sup>57</sup> Ibid.

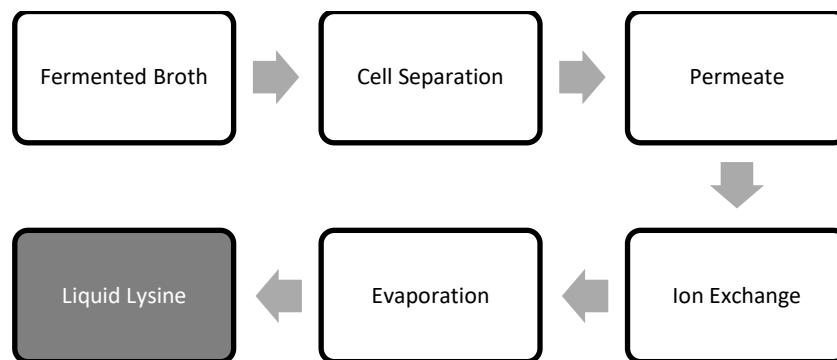
<sup>58</sup> Ibid.

<sup>59</sup> Ibid.

<sup>60</sup> Petition, vol. 1, exh. B.

another round of evaporation takes place to remove excess water, resulting in a final product with lysine content of at least 50 percent by weight.<sup>61</sup> The liquid lysine is transferred to a storage tank, whereafter the product is packaged into one-ton liquid totes or in bulk, where it is then shipped via rail or truck.<sup>62</sup> The shelf life of liquid lysine ranges from 3 to 18 months.<sup>63</sup>

**Figure 1.4 Lysine: Production flow diagram for liquid (base) lysine**



Source: Petition, vol. 1, exh. Gen—2 (exh. B).

Compared with the other previous forms of lysine, lysine HCl has the highest lysine content, and additional production steps must take place to produce lysine HCl.<sup>64</sup> The fermented broth undergoes a crystallization process with hydrochloric acid (HCl), where a crystal slurry is formed and then goes through a pH adjustment.<sup>65</sup> The slurry is then sent to a centrifuge followed by a series of dryers to remove excess moisture and to promote crystal formation.<sup>66</sup>

Lysine can also be produced in the form of granules or powders. To produce lysine in granular forms, the lysine undergoes an evaporation process to increase the content of the solid form following which it is sent to a fluid bed granulator, which turns the concentrated liquid broth into granules.<sup>67</sup> The granules are then sent to a dryer to remove any excess moisture, resulting in the final granular product.

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<sup>61</sup> Petition, vol. 1, p. 9.

<sup>62</sup> Ibid.

<sup>63</sup> Conference transcript, p. 87 (Benson, Nel).

<sup>64</sup> Conference transcript, p. 53 (Benson).

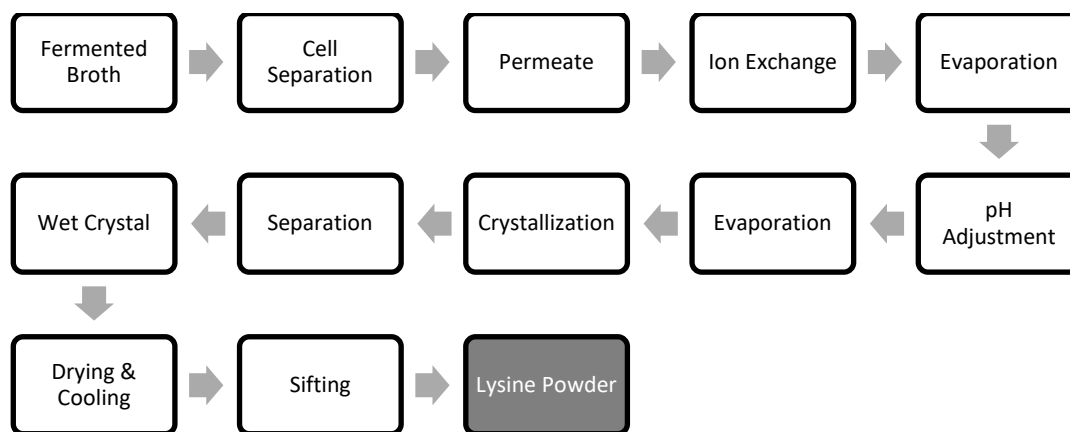
<sup>65</sup> Petition, vol. 1, p. 9.

<sup>66</sup> Ibid.

<sup>67</sup> Petition, vol. 1, exh. B.

To create lysine powder, the fermented broth goes through two rounds of purification and filtration to remove large particulates such as biomass and solids.<sup>68 69</sup> Then the broth goes through an initial round of evaporation and purification via ion exchange (using an ion exchange resin, see figure 1.5) to produce lysine powder (90 percent pure, dry basis). The lysine powder is packaged into 25kg bags or one-ton totes and then shipped via rail or truck.<sup>70 71</sup> The shelf life of dry lysine ranges from 18 months to 24 months.<sup>72</sup>

**Figure 1.5 Lysine: Production flow diagram for lysine powder**



Source: Petition, vol. 1, exh. Gen—2 (exh. B).

Apart from lysine sulfate, all the other forms of lysine are purified via the ion exchange process to separate lysine from the other unwanted components. During the ion exchange process, lysine is adsorbed onto the cation-exchange resin. Lysine is eluted from the resin using an ammonium hydroxide solution, resulting in the permeate.<sup>73</sup> Concurrently, the raffinate is neutralized using a sulfuric acid solution, which results in ammonium sulfate  $((\text{NH}_4)_2\text{SO}_4)$

<sup>68</sup> Petition, vol. 1, p. 9.

<sup>69</sup> Petition, vol. 1, exh. B.

<sup>70</sup> Ibid.

<sup>71</sup> Conference transcript, p. 89 (Nel).

<sup>72</sup> Conference transcript, p. 87 (Benson, Choi, Nel).

<sup>73</sup> Permeate contains the desired material while raffinate contains the rejected material. Kim, Jun-Woo. "Plant-Scale Circular Economy Using Biological Reuse of Electrolyte Residues in the Amino Acid Industry," *Bioengineering*, vol. 12 (24), December 30, 2024, <https://doi.org/10.3390/bioengineering12010024> and conference transcript, p. 74 (Benson).

solution residues.<sup>74</sup> During the amino acid production process, large amounts of electrolyte residues are typically generated as byproducts that consist of sulfuric acid, phosphoric acid, acetic acid, or ammonia.<sup>75</sup>

These electrolyte residues are generally considered waste byproducts, but incorporating them into a circular economy helps with cost savings and environmental sustainability.<sup>76</sup> For instance, instead of the ammonium sulfate solution (i.e., mother liquor) being discarded as waste, the solution can be repurposed to be used as a nitrogen source and pH buffering agent for use in the fermentation process.<sup>77</sup> More importantly, approximately 2 percent in production costs can be saved from the reuse of ammonium sulfate due to the reduction of raw materials needed such as ammonia (NH<sub>3</sub>) and sulfuric acid (H<sub>2</sub>SO<sub>4</sub>). In addition to being used in the fermentation process, the ammonium sulfate mother liquor solution can also be sold to local farmers and used as a raw material for liquid or solid fertilizers due to its source of nitrogen and sulfur.<sup>78 79</sup>

## Domestic like product issues

Petitioner proposes that the Commission should define a single domestic like product consisting of lysine, co-extensive with the scope of these investigations.<sup>80</sup>

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<sup>74</sup> Raffinate refers to the solution that remains after the desired material (i.e., lysine) has been extracted. Kim, Jun-Woo. “Plant-Scale Circular Economy Using Biological Reuse of Electrolyte Residues in the Amino Acid Industry,” *Bioengineering*, vol. 12 (24), December 30, 2024, <https://doi.org/10.3390/bioengineering12010024>.

<sup>75</sup> Kim, Jun-Woo. “Plant-Scale Circular Economy Using Biological Reuse of Electrolyte Residues in the Amino Acid Industry,” *Bioengineering*, vol. 12 (24), December 30, 2024, <https://doi.org/10.3390/bioengineering12010024>.

<sup>76</sup> Ibid.

<sup>77</sup> Ibid.

<sup>78</sup> Ibid.

<sup>79</sup> Conference transcript, p. 57 (Benson).

<sup>80</sup> Postconference brief, pp. 3-8.

## Part 2: Conditions of competition in the U.S. market

### U.S. market characteristics

Lysine is an amino acid that is added directly to animal feed to promote the biosynthesis of proteins. Lysine is produced in multiple interchangeable forms that may be in a dry or liquid state.

All four U.S. producers and 13 of 19 importers indicated that the market was not subject to distinctive conditions of competition. Of the importers that stated that the market was subject to distinctive conditions of competition, importer \*\*\* reported that the lysine market is subject to fluctuations in agricultural commodity prices that directly impact production costs and pricing competitiveness, logistics and sea freight fluctuations, and disease outbreaks that dramatically alter demand in major regions. Importer \*\*\* reported that there is increased demand for lysine when soybeans prices are higher since farms will often purchase the cheaper of the two products to add nutrition to the animal feed.

Apparent U.S. consumption of lysine increased \*\*\* percent from January 2022 to December 2024. Overall, apparent U.S. consumption was \*\*\* percent higher in interim 2025 than in interim 2024.

### Tariff impacts

U.S. producers, importers, and purchasers were asked to report the impact, if any, of section 301 tariffs on overall demand, supply, prices, and raw material costs. Three responding U.S. producers and 9 of 15 importers reported that the 301 tariffs did not have an impact.<sup>1</sup> Lysine was not subject to the section 301 tariffs though other amino acids are subject to section 301 tariffs.

U.S. producers and importers were asked to report the impact of tariff announcements and tariff changes associated with executive orders since January 1, 2025 (e.g., changes in existing 301 tariffs, new “reciprocal” or “fentanyl” tariffs, or new China tariffs as imposed under the International Emergency Economic Powers Act (“IEEPA”)) on overall demand, supply, prices, or raw material costs. One U.S. producer and 13 of 14 responding importers reported that the new tariffs had an impact. Two U.S. producers and one importer said that there was no impact.<sup>2</sup>

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<sup>1</sup> In addition, eight importers reported that they did not know whether the section 301 duties had an impact on the lysine market and one purchaser responded “yes” and “no”.

<sup>2</sup> An additional eight importers reported that they did not know.

U.S producer \*\*\* reported that the “so called 'fentanyl tariff'” of additional 20 percent on lysine chloride has somewhat helped to keep prices stable. However, the provisional tariffs of the European Union against Chinese lysine imports have led to a significant decrease in Chinese FOB prices that outweigh the additional 20 percent tariff for U.S. imports on lysine chloride.” Importers largely reported that recent tariff changes led to an increase in costs. Importer \*\*\* reported that the recent tariffs have caused customer hesitation, resulting in reduced purchasing, and importer \*\*\* added that the uncertainty of tariffs made importing product from China very difficult and higher priced. Importer \*\*\* reported that the tariffs led to an earlier-than-expected increase in product costs; however, pricing did not fully reflect the added tariff burden. Importer \*\*\* reported that the ‘fentanyl tariffs’ were 20 percent for all China products though China FOB prices dropped more than 30 percent starting from January 2025 to May 2025. It explained that this was the reason the U.S. market price did not change even though there is a new tariff.

## Channels of distribution

U.S. producers sold mainly to end users while importers were fairly evenly split, with a slight majority selling to end users, as shown in table 2.1.

**Table 2.1 Lysine: Share of U.S. shipments by source, channel of distribution, and period shares in percent; interim is January through March**

Share in percent; Interim period is January through March

| Source        | Channel      | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|---------------|--------------|------|------|------|--------------|--------------|
| United States | Distributors | ***  | ***  | ***  | ***          | ***          |
| United States | End users    | ***  | ***  | ***  | ***          | ***          |
| United States | Blenders     | ***  | ***  | ***  | ***          | ***          |
| China         | Distributors | ***  | ***  | ***  | ***          | ***          |
| China         | End users    | ***  | ***  | ***  | ***          | ***          |
| China         | Blenders     | ***  | ***  | ***  | ***          | ***          |
| Nonsubject    | Distributors | ***  | ***  | ***  | ***          | ***          |
| Nonsubject    | End users    | ***  | ***  | ***  | ***          | ***          |
| Nonsubject    | Blenders     | ***  | ***  | ***  | ***          | ***          |
| All imports   | Distributors | ***  | ***  | ***  | ***          | ***          |
| All imports   | End users    | ***  | ***  | ***  | ***          | ***          |
| All imports   | Blenders     | ***  | ***  | ***  | ***          | ***          |

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

## Geographic distribution

U.S. producers and importers reported selling lysine to all regions in the contiguous United States (table 2.2). Importers most frequently sold to the Midwest, Northeast, Central Southwest, and the Pacific Coast. 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 \*\*\* percent within 100 miles of their U.S. point of shipment, \*\*\* percent between 101 and 1,000 miles, and \*\*\* percent over 1,000 miles.

**Table 2.2 Lysine: Count of U.S. producers' and U.S. importers' geographic markets**

| Region                     | U.S. producers | China |
|----------------------------|----------------|-------|
| Northeast                  | 4              | 10    |
| Midwest                    | 4              | 19    |
| Southeast                  | 4              | 5     |
| Central Southwest          | 4              | 8     |
| Mountains                  | 4              | 5     |
| Pacific Coast              | 4              | 7     |
| Other                      | 1              | 1     |
| All regions (except Other) | 4              | 3     |
| Reporting firms            | 4              | 21    |

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

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

## Supply and demand considerations

### U.S. supply

Table 2.3 provides a summary of the supply factors regarding lysine from U.S. producers and from subject countries. Production capacity in the United States declined by \*\*\* percent from 2022 to 2024 while China's capacity increased \*\*\* percent. China has very a high inventory ratio while the United States has minimal inventories. The ratio of both countries declined over the period.

**Table 2.3 Lysine: Supply factors that affect the ability to increase shipments to the U.S. market, by country**

Quantity in short tons HCl equivalent; ratios and shares in percent; count in number of firms reporting

| Factor                              | Measure  | United States | China |
|-------------------------------------|----------|---------------|-------|
| Capacity 2022                       | Quantity | ***           | ***   |
| Capacity 2024                       | Quantity | ***           | ***   |
| Capacity utilization 2022           | Ratio    | ***           | ***   |
| Capacity utilization 2024           | Ratio    | ***           | ***   |
| Inventories to total shipments 2022 | Ratio    | ***           | ***   |
| Inventories to total shipments 2024 | Ratio    | ***           | ***   |
| Home market shipments 2024          | Share    | ***           | ***   |
| Non-US export market shipments 2024 | Share    | ***           | ***   |
| Ability to shift production         | Count    | ***           | ***   |

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

Note: Responding U.S. producers accounted for all known U.S. production of lysine in 2025. Responding foreign producer/exporter firms accounted for more than \*\*\* percent of U.S. imports of lysine from China during 2024. For additional data on the number of responding firms and their share of U.S. production and of U.S. imports from each subject country, please refer to Parts 3 and 7.

### Domestic production

Based on available information, U.S. producers of lysine have the ability to respond to changes in demand with large changes in the quantity of shipments of U.S.-produced lysine to the U.S. market. The main contributing factors to this degree of responsiveness of supply are the availability of unused capacity, an ability to shift production to or from alternate products \*\*\*<sup>3</sup>, and the ability to shift shipments from alternate markets. One factor mitigating responsiveness of supply is the limited availability of inventories.

### Subject imports from China

Based on available information, producers of lysine from China have the ability to respond to changes in demand with large changes in the quantity of shipments of lysine to the U.S. market. While foreign producers in China reported relatively little available capacity to increase shipments of lysine to the United States, the availability of substantial unused inventories, and the ability to shift shipments from alternate markets to enhance their ability to increase shipments. In addition, foreign producer \*\*\*, reportedly can produce other amino acids such as serine and proline on the same equipment as lysine. When asked about factors affecting their ability to shift production foreign producer \*\*\* reported that lysine production requires extremely precise control over temperature, pH, dissolved oxygen,

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<sup>3</sup> The product that \*\*\* reportedly can produce on the same equipment as lysine is threonine, and Histidine which are both essential amino acids.

feeding strategy, and fermentation duration. It indicated that these parameters are tailored specifically for the particular lysine-producing strain and its target product. It added that producing other compounds may demand entirely different conditions, for which the existing control system may be inadequate or require modifications.

**Imports from nonsubject sources**

Nonsubject imports accounted for \*\*\* percent of total U.S. imports in 2024. The largest source of nonsubject imports in 2024 were France, India, and Canada. Combined, these countries accounted for \*\*\* percent of nonsubject imports in 2024.

**Supply constraints**

Three of four U.S. producers and 19 of 22 importers reported that they had not experienced supply constraints since January 1, 2022. U.S. producer \*\*\* reported experiencing a supply constraint in 2025 stating that it \*\*\*.

Of the three importers that reported experiencing supply constraints, all three reported constraints which occurred during 2022 through 2024, and one reported a constraint in 2025. Importer \*\*\* reported that overseas manufacturing had production constraints resulting in supply constraints. Importers \*\*\* reported that ocean freight demands were also a factor due to the limited space availability on ocean vessels. Importer \*\*\* reported that in April and May 2024 it was hard for the firm to source lysine from manufacturers stating that “availability is the issue, manufacturers cannot produce it on time.” Regarding constraints during 2025, importer \*\*\* cited tariffs.

**Table 2.4 Lysine: Count of firms’ responses regarding supply constraints, by firm type and period**

Count in number of firms reporting

| Period of constraint | U.S. producers | Importers |
|----------------------|----------------|-----------|
| 2022                 | 0              | 3         |
| 2023                 | 0              | 3         |
| 2024                 | 0              | 3         |
| 2025                 | 1              | 1         |

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

## **U.S. demand**

Based on available information, the overall demand for lysine 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 share of lysine in most of its end-use products.

### **End uses and cost share**

U.S. demand for lysine depends on the demand for animal feed, when lysine from feed sources, such as soybean meal or corn, is insufficient. Lysine is used most with poultry and swine but is also used to a lesser extent with cows, and fish. Lysine helps with protein synthesis, growth, and development of the animal. Reported end uses include additive in feed.

Lysine accounts for a small share of the cost of the end-use products in which it is used. Reported cost shares for general animal feed were 1 to 5 percent while some firms specified poultry feed with cost shares of 1 to 4 percent and swine feed with cost shares of 3 to 5 percent.

### **Business cycles**

Three responding U.S. producers and 12 of 20 importers indicated that the lysine market was not subject to business cycles. Importers that reported that the lysine market demonstrated changes in demand due to business cycles stated that lysine price is subject to changes in substitute products like soybean meal that contain lysine. Demand is also subject to global pig and chicken inventories, which are in turn influenced by meat protein demand and animal diseases that reduce animal numbers. Importers also stated that in the winter months, generally around the last quarter of the year, there is higher demand largely because animals require higher energy intake during those colder months. Importer \*\*\* reported that when soybean meal and corn prices drop, its nutritionists would adjust the formula for the animal feed to reduce the usage of lysine which typically happens during the summer.

### **Demand trends**

Two of four responding domestic producers reported either a steady or fluctuating increase in U.S. demand for lysine since January 1, 2022 (table 2.5). A plurality of responding importers (9 of 18) reported demand had increased while seven importers reported no change in U.S. demand or that demand had fluctuated but was similar at the start and end of the period. Only three importers reported that demand decreased over the period.

U.S. producers and importers sell lysine to animal feed producers, which consume lysine (whether in dry, liquid, granular, powder, or other form) and other ingredients to formulate an animal feed that is specific to the type of livestock. The lysine these animal feed producers purchase is the same regardless of the livestock for which the animal feed is intended.<sup>4</sup> The poultry, swine, and other livestock markets are not end-use markets for lysine but are end-use markets for the downstream animal feed product that incorporates lysine. Lysine is a small, albeit important, component of animal feed. U.S. producer \*\*\* estimates that \*\*\* percent of the lysine it produces is used to feed swine, \*\*\* percent for broilers (i.e., chickens for meat production), \*\*\* percent for turkeys, and \*\*\* percent for layers (i.e., chickens for egg production). U.S. producer \*\*\* estimates that the downstream end-use market comprises \*\*\* percent for swine feed, \*\*\* percent for poultry (broilers, turkeys, and layers), and \*\*\* percent for ruminants and other animals.<sup>5</sup>

The bird flu outbreak that the United States experienced during the period of investigation reportedly did not significantly impact U.S. demand for lysine. U.S. producer \*\*\* stated that \*\*\*.<sup>6</sup>

Inventories of swine and cattle as well as monthly hatchings of chickens in the United States have remained steady during the period of investigation (table 2.6 and figure 2.1).

**Table 2.5 Lysine: Count of firms' responses regarding overall domestic and foreign demand, by firm type**

Count in number of firms reporting

| Market          | Firm type      | Steadily increase | Fluctuate upward | No change | Fluctuate downward | Steadily decrease |
|-----------------|----------------|-------------------|------------------|-----------|--------------------|-------------------|
| Domestic demand | U.S. producers | 1                 | 1                | 1         | 0                  | 0                 |
| Domestic demand | Importers      | 4                 | 5                | 7         | 2                  | 1                 |
| Foreign demand  | U.S. producers | 1                 | 2                | 0         | 0                  | 0                 |
| Foreign demand  | Importers      | 7                 | 2                | 3         | 1                  | 0                 |

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

<sup>4</sup> Petition, p. 7.

<sup>5</sup> Petitioner's postconference brief, pp. 10 and 11.

<sup>6</sup> Petitioner's postconference brief, p. 13

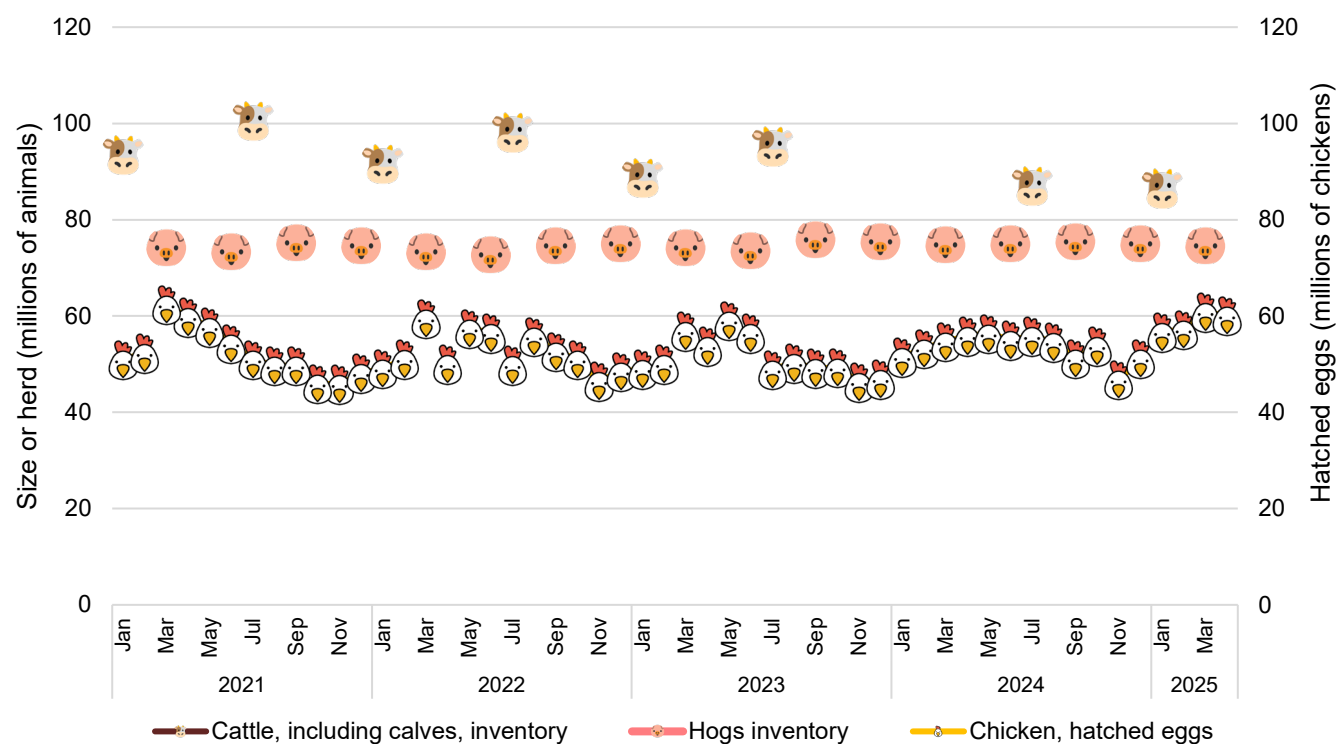
**Table 2.6 Lysine: National swine and cattle inventories and hatched chicken eggs, by month**

In thousands of animals, N/A in the table is "not available"

| Year | Month     | Chickens,<br>eggs hatched | Hogs   | Cattle |
|------|-----------|---------------------------|--------|--------|
| 2022 | January   | 49,050                    | N/A    | 91,789 |
| 2022 | February  | 51,057                    | N/A    | N/A    |
| 2022 | March     | 59,495                    | 73,249 | N/A    |
| 2022 | April     | 49,993                    | N/A    | N/A    |
| 2022 | May       | 57,433                    | N/A    | N/A    |
| 2022 | June      | 56,489                    | 72,654 | N/A    |
| 2022 | July      | 49,798                    | N/A    | 98,300 |
| 2022 | August    | 55,709                    | N/A    | N/A    |
| 2022 | September | 52,643                    | 74,525 | N/A    |
| 2022 | October   | 51,011                    | N/A    | N/A    |
| 2022 | November  | 46,565                    | N/A    | N/A    |
| 2022 | December  | 48,438                    | 74,956 | N/A    |
| 2023 | January   | 48,949                    | N/A    | 88,841 |
| 2023 | February  | 49,988                    | N/A    | N/A    |
| 2023 | March     | 56,880                    | 74,136 | N/A    |
| 2023 | April     | 53,768                    | N/A    | N/A    |
| 2023 | May       | 59,081                    | N/A    | N/A    |
| 2023 | June      | 56,427                    | 73,551 | N/A    |
| 2023 | July      | 48,924                    | N/A    | 95,400 |
| 2023 | August    | 50,234                    | N/A    | N/A    |
| 2023 | September | 49,127                    | 75,938 | N/A    |
| 2023 | October   | 49,233                    | N/A    | N/A    |
| 2023 | November  | 46,294                    | N/A    | N/A    |
| 2023 | December  | 46,863                    | 75,461 | N/A    |
| 2024 | January   | 51,447                    | N/A    | N/A    |
| 2024 | February  | 53,241                    | N/A    | N/A    |
| 2024 | March     | 54,719                    | 74,691 | N/A    |
| 2024 | April     | 55,823                    | N/A    | N/A    |
| 2024 | May       | 56,352                    | N/A    | N/A    |
| 2024 | June      | 55,034                    | 74,891 | N/A    |
| 2024 | July      | 55,860                    | N/A    | 87,157 |
| 2024 | August    | 54,571                    | N/A    | N/A    |
| 2024 | September | 51,178                    | 75,490 | N/A    |
| 2024 | October   | 53,787                    | N/A    | N/A    |
| 2024 | November  | 46,760                    | N/A    | N/A    |
| 2024 | December  | 51,145                    | 74,905 | N/A    |
| 2025 | January   | 56,675                    | N/A    | 86,662 |
| 2025 | February  | 57,191                    | N/A    | N/A    |
| 2025 | March     | 60,769                    | 74,512 | N/A    |
| 2025 | April     | 60,121                    | N/A    | N/A    |

Source: United States Department of Agriculture National Agricultural Statistics Service. Data series:  
Hogs – inventory; Cattle, incl calves – inventory; chickens, chicks, egg type - hatched, measured in head.

**Figure 2.1 Lysine: Demand driver: national swine and cattle inventories and hatched chicken eggs, by month**



Source: United States Department of Agriculture National Agricultural Statistics Service. Data series: Hogs – inventory; Cattle, incl calves – inventory; chickens, chicks, egg type - hatched, measured in head.

### Substitute products

All four U.S. producers and 12 of 18 importers reported that there were no substitutes for lysine. Six importers reported that soybean meal could be a substitute for lysine, especially for swine and chicken feed.

## **Substitutability issues**

This section assesses the degree to which U.S.-produced lysine and imports of lysine from subject countries can be substituted for one another by examining the importance of certain purchasing factors and the comparability of lysine from domestic and imported sources based on those factors. Based on available data, staff believes that there is a high degree of substitutability between domestically produced lysine and lysine imported from China.<sup>7</sup> Factors contributing to this level of substitutability include similar quality, availability, and lead times for lysine from inventory, little preference for particular country of origin or producers, interchangeability between domestic and subject sources, and limited significant factors other than price.

### **Factors affecting purchasing decisions**

#### **Most important purchase factors**

The most often cited top three factors that firms consider in their purchasing decisions for lysine were price (11 firms), quality (9 firms), and availability (6 firms) as shown in table 2.7. Price was the most frequently cited first-most important factor (cited by 5 firms), followed by quality (3 firms); quality was the most frequently reported second-most important factor (4 firms); and price was the most frequently reported third-most important factor (4 firms). Other factors included dependability and the working relationship with the supplier (both ranked first), availability and manufacture location (ranked second), and logistics of purchasing as well as the physical form of the lysine (ranked third).

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<sup>7</sup> The degree of substitution between domestic and imported lysine depends upon the extent of product differentiation between the domestic and imported products and reflects how easily purchasers can switch from domestically produced lysine to the lysine imported from subject countries (or vice versa) when prices change. The degree of substitution may include such factors as quality differences (e.g., grade standards, defect rates, etc.), and differences in sales conditions (e.g., lead times between order and delivery dates, reliability of supply, product services, etc.).

**Table 2.7 Lysine: Count of ranking of factors used in purchasing decisions as reported by purchasers, by factor**

| Factor                    | First | Second | Third | Total |
|---------------------------|-------|--------|-------|-------|
| Price                     | 5     | 2      | 4     | 11    |
| Quality                   | 3     | 4      | 2     | 9     |
| Reliability/dependability | 2     | 1      | 1     | 4     |
| Relationship/service      | 1     | 1      | 1     | 3     |
| Availability              | 0     | 1      | 1     | 2     |
| Manufacturer/location     | 0     | 1      | 0     | 1     |
| All other factors         | 0     | 0      | 2     | 2     |

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

Note: Purchasers noted the physical form of lysine and logistics as third-most important factors. Three purchasers listed factors beyond the top three as well: availability/supply constraints, customer preference, and customer service.

### Lead times

Lysine is primarily sold from inventory. U.S. producers reported that all of their commercial shipments were sold from inventory, with lead times averaging \*\*\* days. Importers reported that \*\*\* percent of sales came from their U.S. inventories with lead times averaging \*\*\* days whereas \*\*\* percent of sales came from their foreign inventory with lead times of \*\*\* days. The remaining \*\*\* percent of their commercial shipments were produced to order, with lead times averaging \*\*\* days.

### Comparison of U.S.-produced and imported lysine

In order to determine whether U.S.-produced lysine can generally be used in the same applications as imports from China, U.S. producers and importers were asked whether the products can always, frequently, sometimes, or never be used interchangeably. All U.S. producers stated that products from the United States were always interchangeable with lysine imported from China. As shown in table 2.8, importers' responses were more varied, though a majority of importers reported that the products were always or frequently interchangeable.

**Table 2.8 Lysine: Count of U.S. importers reporting interchangeability between product produced in the United States and in other countries reported, by country pair**

| Country pair            | Always | Frequently | Sometimes | Never |
|-------------------------|--------|------------|-----------|-------|
| United States vs. China | 6      | 4          | 3         | 1     |
| United States vs. Other | 3      | 1          | 1         | 1     |
| China vs. Other         | 4      | 2          | 0         | 1     |

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

In addition, U.S. producers, importers, and purchasers were asked to assess how often differences other than price were significant in sales of lysine from the United States, subject, or nonsubject countries. All four responding U.S. producers reported that differences other

than price were never significant factors in the market when comparing lysine from the different sources. As seen in table 2.9, importers noted that there are often differences other than price when comparing domestic lysine to lysine imported from China: seven importers reported that differences other than price were always significant, and three each reported that differences were either frequently or sometimes significant. Two importers reported that differences were never significant. Importer \*\*\*, which reported that differences were always significant, reported that its company's transportation network on the \*\*\* River makes it more efficient to source from China, even with the added cost of ocean freight. It stated that due to the freight charged by U.S. producers, it is not possible for it to source efficiently from U.S. producers. Importer \*\*\*, which reported that differences were frequently significant, stated that differences included lead times, buying in bulk, and service.

When comparing nonsubject lysine to that produced in the United States and China, a majority of importers (four of the six which responded) noted that there were sometimes or never differences other than price that are important factors in their sales of lysine, but two noted there are always differences.

**Table 2.9 Lysine: Count of U.S. importers reporting the significance of differences other than price between product produced in the United States and in other countries reported, by country pair**

| Country pair            | Always | Frequently | Sometimes | Never |
|-------------------------|--------|------------|-----------|-------|
| United States vs. China | 7      | 3          | 3         | 2     |
| United States vs. Other | 2      | 0          | 3         | 1     |
| China vs. Other         | 2      | 0          | 3         | 1     |

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

## Part 3: 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 were presented in Part 1 of this report and information on the volume and pricing of imports of the subject merchandise are presented in Part 4 and Part 5, respectively. Information on the other factors specified is presented in this section and/or Part 6 and (except as noted) is based on the questionnaire responses of four firms that accounted for \*\*\* U.S. production of lysine during 2024.

### U.S. producers

The Commission issued a U.S. producer questionnaire to all known firms based on information contained in the petitions, and through staff research. Four firms provided usable data on their operations. Table 3.1 lists U.S. producers of lysine, their production locations, positions on the petitions, and shares of total production.

**Table 3.1 Lysine: U.S. producers, their positions on the petitions, production locations, and shares of reported production, 2024**

Shares in percent

| Firm      | Position on petition | Production location(s) | Share of production |
|-----------|----------------------|------------------------|---------------------|
| ADM       | Petitioner           | Decatur, IL            | ***                 |
| Ajinomoto | ***                  | Eddyville, IA          | ***                 |
| CJ Bio    | Petitioner           | Fort Dodge, IA         | ***                 |
| Evonik    | Petitioner           | Blair, NE              | ***                 |
| All firms | Various              | Various                | 100.0               |

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

Table 3.2 presents information on U.S. producers' ownership, related and/or affiliated firms. As indicated in table 3.2, one U.S. producer, \*\*\*, is related to foreign producers of the subject merchandise. In addition, as discussed in greater detail below, no U.S. producer reported directly importing the subject merchandise and none reported purchasing the subject merchandise from U.S. importers.<sup>1</sup>

**Table 3.2 Lysine: U.S. producers' ownership, related and/or affiliated firms**

| <b>Reporting firm</b> | <b>Relationship type and related firm</b> | <b>Details of relationship</b> |
|-----------------------|-------------------------------------------|--------------------------------|
| ***                   | ***                                       | ***                            |
| ***                   | ***                                       | ***                            |
| ***                   | ***                                       | ***                            |
| ***                   | ***                                       | ***                            |
| ***                   | ***                                       | ***                            |
| ***                   | ***                                       | ***                            |
| ***                   | ***                                       | ***                            |

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

Table 3.3 presents events in the U.S. industry since January 1, 2022.

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<sup>1</sup> One importer, \*\*\*, identified U.S. producer \*\*\* as a customer of lysine from China.

**Table 3.3 Lysine: Important industry events since 2022**

| Item                             | Firm                                            | Event |
|----------------------------------|-------------------------------------------------|-------|
| Expansions                       | CJ Bio America, Inc.<br>(CheilJedang, CJ Group) | ***   |
| Shift in Production              | CJ Bio America, Inc.<br>(CheilJedang, CJ Group) | ***   |
| Shift in Production              | Archer-Daniels-Midland (ADM)                    | ***   |
| Shift in Production              | Ajinomoto Co.                                   | ***   |
| Strategic Alliance               | Ajinomoto Co.                                   | ***   |
| Weather related or force majeure | Ajinomoto Co.                                   | ***   |
| Grand jury subpoenas             | Archer-Daniels-Midland (ADM)                    | ***   |
| Layoffs                          | Archer-Daniels-Midland (ADM)                    | ***   |
| Acquisitions                     | Meihua Group                                    | ***   |
| Other                            | Evonik                                          | ***   |
| Other                            | Fufeng USA                                      | ***   |
| Other                            | Evonik                                          | ***   |
| Other                            | CJ Bio America, Inc.<br>(CheilJedang, CJ Group) | ***   |

Source: The Messenger, “Commitment to innovation; CJ Bio America celebrates \$20 million expansion to FD plant,” February 18, 2023, <https://www.messengernews.net/progress-2023/progress-business-and-industry-2023/2023/02/cj-bio-america-2/>; Conference transcript, p. 16 (Choi); Conference transcript, pp. 10, 85 (Walley); Conference transcript, p. 22 (Nel), pp. 25, 28 (Rosenthal), pp. 65 to 66 (Walley); Feedstuffs, “CJ BIO Completes Thr Pro Expansion,” January 13, 2021, <https://www.feedstuffs.com/agribusiness-news/cj-bio-completes-thr-pro-expansion>; ChemAnalyst, “Ajinomoto and Danone Establish Global Strategic Alliance to Reduce Dairy Industry GHG,” September 20, 2024, <https://www.chemanalyst.com/NewsAndDeals/NewsDetails/ajinomoto-and-danone-establish-global-strategic-alliance-to-reduce-dairy-industry-30386>; CBS2Iowa, “Southeast Iowa Manufacturing Facility, EPA Reach Settlement over Chemical Leaks,” December 16, 2024, <https://cbs2iowa.com/news/local/southeast-iowa-manufacturing-facility-and-epa-reach-settlement-over-chemical-leaks>; Reuters, “Exclusive: FBI Agents Deliver Grand Jury Subpoenas as ADM Criminal Probe Escalates, Sources Say,” March 7, 2024, <https://www.reuters.com/legal/government/fbi-agents-deliver-grand-jury-subpoenas-adm-criminal-probe-escalates-sources-say-2024-03-07/>; WAND News, ADM expecting up to 700 global layoffs in 2025,” February 4, 2025, [https://www.wandtv.com/news/adm-expecting-up-to-700-global-layoffs-in-2025/article\\_60c89456-e312-11ef-aa14-b3357b067418.html](https://www.wandtv.com/news/adm-expecting-up-to-700-global-layoffs-in-2025/article_60c89456-e312-11ef-aa14-b3357b067418.html); Southeast Missourian, “BioKyowa Facility Among Businesses Sold to Chinese Amino Acids Supplier,” February 3, 2025, <https://www.semissourian.com/business/biokyowa-facility-among-businesses-sold-to-chinese-amino-acids-supplier-da25b755>; Reuters, “Evonik Aims to Spin Off Assets and Could Shed 7,000 Jobs,” <https://www.reuters.com/business/evonik-restructure-business-lines-into-two-core-segments->

[2024-12-13/](#); World Grain, “FuFeng Considering Illinois Site for Corn Wet Mill,” January 8, 2025, <https://www.world-grain.com/articles/20900-fufeng-considering-illinois-site-for-corn-wet-mill>; Reuters, “Germany's Evonik to Pause Acquisitions for Two Years, CEO Says,” <https://www.reuters.com/en/germanys-evonik-pause-acquisitions-two-years-ceo-says-2025-04-25/>; The Korea Economic Daily, “CJ CheilJedang Scraps \$3.5 Bn Green Bio Sale, Shifts Gears to Expansion,” April 30, 2025, <https://www.kedglobal.com/mergers-acquisitions/newsView/ked202504300005>.

Producers in the United States were asked to report any change in the character of their operations or organization relating to the production of lysine since 2022. Three of four producers indicated in their questionnaires that they had experienced such changes. Table 3.4 presents the changes identified by these producers.

**Table 3.4 Lysine: U.S. producers' reported changes in operations, since January 1, 2022**

| <b>Item</b>             | <b>Firm name and narrative response on changes in operations</b> |
|-------------------------|------------------------------------------------------------------|
| Prolonged shutdowns     | ***                                                              |
| Production curtailments | ***                                                              |
| Production curtailments | ***                                                              |
| Production curtailments | ***                                                              |

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

## U.S. production, capacity, and capacity utilization

Table 3.5 presents U.S. producers' installed and practical capacity and production on the same equipment. From 2022 to 2024, installed overall capacity decreased \*\*\* percent and was the same in both interim periods. Installed overall capacity utilization increased \*\*\* percentage points from 2022 to 2024 and was \*\*\* percentage points lower in interim 2025 than in interim 2024.

Practical overall capacity decreased \*\*\* percent from 2022 to 2024 and remained the same in both interim 2024 and interim 2025. Practical overall production decreased \*\*\* percent from 2022 to 2024 and was \*\*\* percent lower in interim 2025 than in interim 2024. Practical overall utilization increased \*\*\* percentage points from 2022 to 2024 but \*\*\* percentage points lower in interim 2025 than in interim 2024.

**Table 3.5 Lysine: U.S. producers' installed and practical capacity and production on the same equipment as in-scope production, by period**

Capacity and production in short tons HCl equivalent; utilization in percent; interim is January through March

| Item              | Measure     | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-------------------|-------------|------|------|------|--------------|--------------|
| Installed overall | Capacity    | ***  | ***  | ***  | ***          | ***          |
| Installed overall | Production  | ***  | ***  | ***  | ***          | ***          |
| Installed overall | Utilization | ***  | ***  | ***  | ***          | ***          |
| Practical overall | Capacity    | ***  | ***  | ***  | ***          | ***          |
| Practical overall | Production  | ***  | ***  | ***  | ***          | ***          |
| Practical overall | Utilization | ***  | ***  | ***  | ***          | ***          |
| Practical lysine  | Capacity    | ***  | ***  | ***  | ***          | ***          |
| Practical lysine  | Production  | ***  | ***  | ***  | ***          | ***          |
| Practical lysine  | Utilization | ***  | ***  | ***  | ***          | ***          |

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

Table 3.6 presents U.S. producers' reported narratives regarding practical capacity constraints.

**Table 3.6 Lysine: U.S. producers' reported constraints to practical overall capacity, since January 1, 2022**

| <b>Item</b>            | <b>Firm name and narrative response on constraints to practical overall capacity</b> |
|------------------------|--------------------------------------------------------------------------------------|
| Production bottlenecks | ***                                                                                  |
| Production bottlenecks | ***                                                                                  |
| Production bottlenecks | ***                                                                                  |
| Production bottlenecks | ***                                                                                  |
| Production bottlenecks | ***                                                                                  |
| Production bottlenecks | ***                                                                                  |
| Production bottlenecks | ***                                                                                  |

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

Table 3.7 and figure 3.1 present U.S. producers' production, capacity, and capacity utilization. Practical capacity decreased \*\*\* percent from 2022 to 2024 and remained the same in interims 2024 and 2025. Aggregate production decreased \*\*\* percent from 2022 to 2024 and was \*\*\* percent lower in interim 2025 than in interim 2024. \*\*\* of the four responding firms reported a decrease in production from 2022 to 2024. \*\*\* operations were mostly steady during the POI compared with other producers. Capacity utilization increased \*\*\* percentage points from 2022 to 2024 but was \*\*\* percentage points lower in interim 2025 than in interim 2024. \*\*\* had the largest share of production in all periods.

**Table 3.7 Lysine: U.S. producers' output, by firm and period****Practical capacity**

Capacity in short tons HCl equivalent; interim is January through March

| <b>Firm</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>Interim 2024</b> | <b>Interim 2025</b> |
|-------------|-------------|-------------|-------------|---------------------|---------------------|
| ADM         | ***         | ***         | ***         | ***                 | ***                 |
| Ajinomoto   | ***         | ***         | ***         | ***                 | ***                 |
| CJ Bio      | ***         | ***         | ***         | ***                 | ***                 |
| Evonik      | ***         | ***         | ***         | ***                 | ***                 |
| All firms   | 686,015     | 488,920     | 492,228     | 123,032             | 123,032             |

Table continued.

**Table 3.7 (Continued) Lysine: U.S. producers' output, by firm and period****Production**

Production in short tons HCl equivalent; interim is January through March

| <b>Firm</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>Interim 2024</b> | <b>Interim 2025</b> |
|-------------|-------------|-------------|-------------|---------------------|---------------------|
| ADM         | ***         | ***         | ***         | ***                 | ***                 |
| Ajinomoto   | ***         | ***         | ***         | ***                 | ***                 |
| CJ Bio      | ***         | ***         | ***         | ***                 | ***                 |
| Evonik      | ***         | ***         | ***         | ***                 | ***                 |
| All firms   | 462,166     | 390,790     | 399,219     | 102,792             | 94,259              |

Table continued.

**Table 3.7 (Continued) Lysine: U.S. producers' output, by firm and period****Capacity utilization**

Capacity utilization ratio in percent; interim is January through March

| <b>Firm</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>Interim 2024</b> | <b>Interim 2025</b> |
|-------------|-------------|-------------|-------------|---------------------|---------------------|
| ADM         | ***         | ***         | ***         | ***                 | ***                 |
| Ajinomoto   | ***         | ***         | ***         | ***                 | ***                 |
| CJ Bio      | ***         | ***         | ***         | ***                 | ***                 |
| Evonik      | ***         | ***         | ***         | ***                 | ***                 |
| All firms   | 67.4        | 79.9        | 81.1        | 83.5                | 76.6                |

Note: Capacity utilization ratio represents the ratio of the U.S. producer's production to its production capacity.

Table continued.

**Table 3.7 (Continued) Lysine: U.S. producers' output, by firm and period**

**Share of production**

Share of production in percent; interim is January through March

| Firm      | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-----------|------|------|------|--------------|--------------|
| ADM       | ***  | ***  | ***  | ***          | ***          |
| Ajinomoto | ***  | ***  | ***  | ***          | ***          |
| CJ Bio    | ***  | ***  | ***  | ***          | ***          |
| Evonik    | ***  | ***  | ***  | ***          | ***          |
| All firms | ***  | ***  | ***  | ***          | ***          |

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

**Figure 3.1 Lysine: Lysine: U.S. producers' output, by firm and period**

\* \* \* \* \*

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

**Alternative products**

As shown in table 3.8, \*\*\* percent of the product produced during 2024 by U.S. producers was lysine. Two firms, \*\*\*, reported producing \*\*\* on the same equipment as the in-scope product.

**Table 3.8 Lysine: U.S. producers' overall production on the same equipment as in-scope production, by period**

Quantity in short tons HCl equivalent; share in percent; interim period is January through March

| Product type   | Measure  | 2022    | 2023    | 2024    | Interim 2024 | Interim 2025 |
|----------------|----------|---------|---------|---------|--------------|--------------|
| Lysine         | Quantity | 462,166 | 390,790 | 399,219 | 102,792      | 94,259       |
| Other products | Quantity | ***     | ***     | ***     | ***          | ***          |
| All products   | Quantity | ***     | ***     | ***     | ***          | ***          |
| Lysine         | Share    | ***     | ***     | ***     | ***          | ***          |
| Other products | Share    | ***     | ***     | ***     | ***          | ***          |
| All products   | Share    | 100.0   | 100.0   | 100.0   | 100.0        | 100.0        |

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

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

Table 3.9 presents U.S. producers' U.S. shipments, export shipments, and total shipments. U.S. shipments accounted for the largest share of total shipments by quantity and value, above \*\*\* percent between 2022 and 2024, and in both interim periods.

**Table 3.9 Lysine: U.S. producers' total shipments, by destination and period**

Quantity in short tons HCl equivalent; value in 1,000 dollars; unit values in dollars per short tons HCl equivalent; shares in percent; interim period is January through March

| Item             | Measure           | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|------------------|-------------------|------|------|------|--------------|--------------|
| U.S. shipments   | Quantity          | ***  | ***  | ***  | ***          | ***          |
| Export shipments | Quantity          | ***  | ***  | ***  | ***          | ***          |
| Total shipments  | Quantity          | ***  | ***  | ***  | ***          | ***          |
| U.S. shipments   | Value             | ***  | ***  | ***  | ***          | ***          |
| Export shipments | Value             | ***  | ***  | ***  | ***          | ***          |
| Total shipments  | Value             | ***  | ***  | ***  | ***          | ***          |
| U.S. shipments   | Unit value        | ***  | ***  | ***  | ***          | ***          |
| Export shipments | Unit value        | ***  | ***  | ***  | ***          | ***          |
| Total shipments  | Unit value        | ***  | ***  | ***  | ***          | ***          |
| U.S. shipments   | Share of quantity | ***  | ***  | ***  | ***          | ***          |
| Export shipments | Share of quantity | ***  | ***  | ***  | ***          | ***          |
| Total shipments  | Share of quantity | ***  | ***  | ***  | ***          | ***          |
| U.S. shipments   | Share of value    | ***  | ***  | ***  | ***          | ***          |
| Export shipments | Share of value    | ***  | ***  | ***  | ***          | ***          |
| Total shipments  | Share of value    | ***  | ***  | ***  | ***          | ***          |

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

Table 3.10 presents U.S. producers' U.S. shipments by type. Liquid lysine accounted for the majority of U.S. shipments by quantity (\*\*\*) and by value (\*\*\*) in 2024. \*\*\* U.S. producers' U.S. shipments were of \*\*\*.

**Table 3.10 Lysine: U.S. producers' U.S. shipments in 2024, by product type and mixture status**

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

| Type                | Measure           | Not mixed or blended | Mixed or blended | All mixtures |
|---------------------|-------------------|----------------------|------------------|--------------|
| Lysine HCl          | Quantity          | ***                  | ***              | ***          |
| Lysine sulfate      | Quantity          | ***                  | ***              | ***          |
| Liquid lysine       | Quantity          | ***                  | ***              | ***          |
| All in-scope lysine | Quantity          | ***                  | ***              | ***          |
| Lysine HCl          | Value             | ***                  | ***              | ***          |
| Lysine sulfate      | Value             | ***                  | ***              | ***          |
| Liquid lysine       | Value             | ***                  | ***              | ***          |
| All in-scope lysine | Value             | ***                  | ***              | ***          |
| Lysine HCl          | Unit value        | ***                  | ***              | ***          |
| Lysine sulfate      | Unit value        | ***                  | ***              | ***          |
| Liquid lysine       | Unit value        | ***                  | ***              | ***          |
| All in-scope lysine | Unit value        | ***                  | ***              | ***          |
| Lysine HCl          | Share of quantity | ***                  | ***              | ***          |
| Lysine sulfate      | Share of quantity | ***                  | ***              | ***          |
| Liquid lysine       | Share of quantity | ***                  | ***              | ***          |
| All in-scope lysine | Share of quantity | ***                  | ***              | ***          |
| Lysine HCl          | Share of value    | ***                  | ***              | ***          |
| Lysine sulfate      | Share of value    | ***                  | ***              | ***          |
| Liquid lysine       | Share of value    | ***                  | ***              | ***          |
| All in-scope lysine | Share of value    | 100.0                | —                | 100.0        |

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

Note: Zeroes, null values, and undefined calculations are suppressed and shown as “—”.

## U.S. producers' inventories

Table 3.11 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. The quantity of U.S. producers' inventories decreased by \*\*\* percent from 2022 to 2024 and was \*\*\* percent lower in interim 2025 than in interim 2024.

**Table 3.11 Lysine: U.S. producers' inventories and their ratio to select items, by period**

Quantity in short tons HCl equivalent; ratios in percent; interim period is January through March

| Item                               | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|------------------------------------|------|------|------|--------------|--------------|
| End-of-period inventory quantity   | ***  | ***  | ***  | ***          | ***          |
| Inventory ratio to U.S. production | ***  | ***  | ***  | ***          | ***          |
| Inventory ratio to U.S. shipments  | ***  | ***  | ***  | ***          | ***          |
| Inventory ratio to total shipments | ***  | ***  | ***  | ***          | ***          |

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

## U.S. producers' imports from subject sources

No responding U.S. producer reported imports of lysine from 2022 to 2024 or either interim periods.

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

\*\*\* purchased \*\*\* short tons HCl equivalent of imports of lysine from \*\*\* from \*\*\* in 2022. This purchase is equivalent to \*\*\* percent of \*\*\* imports from \*\*\* and \*\*\* percent of all imports from \*\*\* in that year.

## U.S. employment, wages, and productivity

Table 3.12 shows U.S. producers' employment-related data. From 2022 to 2024, the overall number of production and related workers ("PRWs") and total hours worked decreased, and were lower in interim 2025 than in interim 2024.<sup>2</sup> The number of PRWs was \*\*\* percent lower in interim 2024 than interim 2025. Total wages paid decreased by \*\*\* percent from 2022 to 2024 while hourly wages increased by \*\*\* percent in the same period. When comparing interims 2024 and 2025, total wages paid were \*\*\* percent lower and hourly wages were \*\*\* percent higher. Productivity was unchanged from 2022 to 2024.

**Table 3.12 Lysine: U.S. producers' employment related information, by period**

Interim is January through March

| Item                                                     | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|----------------------------------------------------------|------|------|------|--------------|--------------|
| Production and related workers (PRWs) (number)           | ***  | ***  | ***  | ***          | ***          |
| Total hours worked (1,000 hours)                         | ***  | ***  | ***  | ***          | ***          |
| Hours worked per PRW (hours)                             | ***  | ***  | ***  | ***          | ***          |
| Wages paid (\$1,000)                                     | ***  | ***  | ***  | ***          | ***          |
| Hourly wages (dollars per hour)                          | ***  | ***  | ***  | ***          | ***          |
| Productivity (short tons HCl equivalent per 1,000 hours) | ***  | ***  | ***  | ***          | ***          |
| Unit labor costs (dollars per short tons HCl equivalent) | ***  | ***  | ***  | ***          | ***          |

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

<sup>2</sup> The reported increase in PRWs by \*\*\* were offset by the decrease in PRWs reported by \*\*\*, which accounted for \*\*\* of the aggregate decrease from 2022 to 2024.



## **Part 4: U.S. imports, apparent U.S. consumption, and market shares**

### **U.S. importers**

The Commission issued importer questionnaires to 98 firms believed to be importers of lysine, as well as to all U.S. producers of lysine.<sup>1</sup> Usable questionnaire responses were received from 28 companies, representing \*\*\* percent of U.S. imports from China and \*\*\* percent of imports from nonsubject sources in 2024 under HTS statistical reporting number 2922.41.0090, a “basket” category. Table 4.1 lists all responding U.S. importers of lysine from China and other sources, their locations, and their shares of U.S. imports, in 2024.

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<sup>1</sup> The Commission issued questionnaires to those firms identified in the petitions; staff research; and proprietary, Census-edited Customs’ import records.

**Table 4.1 Lysine: U.S. importers, their headquarters, and share of imports within each source, 2024**

Share in percent

| Firm                      | Headquarters      | China | Nonsubject sources | All import sources |
|---------------------------|-------------------|-------|--------------------|--------------------|
| Asiamerica                | Montvale, NJ      | ***   | ***                | ***                |
| Beans Nutrition           | Leonia, NJ        | ***   | ***                | ***                |
| Essential Biotech         | Oak Brook, IL     | ***   | ***                | ***                |
| Feed Products South       | St. Louis, MO     | ***   | ***                | ***                |
| Fenchem                   | Chino, CA         | ***   | ***                | ***                |
| FNF Ingredients           | St. Marys, ON     | ***   | ***                | ***                |
| Fondel Chemicals          | Stratford, ON     | ***   | ***                | ***                |
| Fufeng                    | Oak Brook, IL     | ***   | ***                | ***                |
| GHW                       | Missouri City, TX | ***   | ***                | ***                |
| Good Earth                | Lincolnshire, IL  | ***   | ***                | ***                |
| Green Wave                | Orange, CA        | ***   | ***                | ***                |
| Hanley                    | Belmont, MA       | ***   | ***                | ***                |
| J&R Livestock             | Winnipeg, MB      | ***   | ***                | ***                |
| Matrix Environmental      | Winnipeg, MB      | ***   | ***                | ***                |
| Nutribins                 | Covina, CA        | ***   | ***                | ***                |
| Provimi                   | Lewisburg, OH     | ***   | ***                | ***                |
| Ridley                    | Mankato, MN       | ***   | ***                | ***                |
| SAM HPRP Chemicals        | Bloomington, MN   | ***   | ***                | ***                |
| Shanco                    | Somerset, NJ      | ***   | ***                | ***                |
| Strategic Global Sourcing | New York, NY      | ***   | ***                | ***                |
| Sunland Nutrition         | Aliso Viejo, CA   | ***   | ***                | ***                |
| SureSource                | Petrolia, ON      | ***   | ***                | ***                |
| Uniprime                  | Boca Raton, FL    | ***   | ***                | ***                |
| All firms                 | Various           | 100.0 | —                  | 100.0              |

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

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

## U.S. imports

Table 4.2 and figure 4.1 present data for U.S. imports of lysine from China and all other sources. U.S. imports from China, by quantity, increased by \*\*\* percent from 2022 to 2024 and were \*\*\* percent higher in interim 2025 than in interim 2024. Similarly, U.S. imports from China, by value, increased by \*\*\* percent from 2022 to 2024 and were \*\*\* percent higher in interim 2025 than in interim 2024. Imports from China accounted for the majority of U.S. imports in all periods. The average unit value (“AUV”) of imports from China decreased by \*\*\* percent from 2022 to 2024 but was \*\*\* percent higher in interim 2025 than in interim 2024.

By quantity, nonsubject imports decreased by \*\*\* percent from 2022 to 2024 and were \*\*\* percent lower in interim 2025 than in interim 2024. By value, nonsubject imports decreased by \*\*\* percent from 2022 to 2024 and were \*\*\* percent lower in interim 2025 than in interim 2024. The AUV of imports from nonsubject imports increased by \*\*\* percent from 2022 to 2024 and were \*\*\* percent lower in interim 2025 than in interim 2024. The AUVs of nonsubject imports were substantially higher than those of imports from China in all periods (\$\*\*\* per short ton vs. \$\*\*\* per short ton in 2024), as shown in table 4.2.

As a ratio to U.S. production, imports from China increased by \*\*\* percentage points from 2022 to 2024 and was \*\*\* percentage points higher in interim 2025 than in interim 2024. The ratio of imports from all sources to U.S. production of lysine increased by \*\*\* percentage points from 2022 to 2024 and was \*\*\* percentage points higher in interim 2025 than in interim 2024.

**Table 4.2 Lysine: U.S. imports by source and period**

Quantity in short tons HCl equivalent; value in 1,000 dollars; unit value in dollars per short tons HCl equivalent; shares and ratio in percent; interim is January through March

| Source             | Measure           | 2022  | 2023  | 2024  | Interim 2024 | Interim 2025 |
|--------------------|-------------------|-------|-------|-------|--------------|--------------|
| China              | Quantity          | ***   | ***   | ***   | ***          | ***          |
| Nonsubject sources | Quantity          | ***   | ***   | ***   | ***          | ***          |
| All import sources | Quantity          | ***   | ***   | ***   | ***          | ***          |
| China              | Value             | ***   | ***   | ***   | ***          | ***          |
| Nonsubject sources | Value             | ***   | ***   | ***   | ***          | ***          |
| All import sources | Value             | ***   | ***   | ***   | ***          | ***          |
| China              | Unit value        | ***   | ***   | ***   | ***          | ***          |
| Nonsubject sources | Unit value        | ***   | ***   | ***   | ***          | ***          |
| All import sources | Unit value        | ***   | ***   | ***   | ***          | ***          |
| China              | Share of quantity | ***   | ***   | ***   | ***          | ***          |
| Nonsubject sources | Share of quantity | ***   | ***   | ***   | ***          | ***          |
| All import sources | Share of quantity | 100.0 | 100.0 | 100.0 | 100.0        | 100.0        |
| China              | Share of value    | ***   | ***   | ***   | ***          | ***          |
| Nonsubject sources | Share of value    | ***   | ***   | ***   | ***          | ***          |
| All import sources | Share of value    | 100.0 | 100.0 | 100.0 | 100.0        | 100.0        |
| China              | Ratio             | ***   | ***   | ***   | ***          | ***          |
| Nonsubject sources | Ratio             | ***   | ***   | ***   | ***          | ***          |
| All import sources | Ratio             | ***   | ***   | ***   | ***          | ***          |

Source: Compiled from official U.S. imports statistics of the U.S. Department of Commerce Census Bureau using HTS statistical reporting number 2922.41.0090, accessed January 24, 2025. Official U.S. import statistics were adjusted to: (1) remove out-of-scope imports under the primary HTS number using proprietary, Census-edited Customs records for firms that certified they do not import lysine, (2) add in imports of lysine entered in under other HTS numbers using responses to Commission questionnaires, and to (3) remove imports of out-of-scope products imported under the primary HTS numbers using responses to Commission questionnaires. Imports are based on the imports for consumption data series. Value data reflect landed duty-paid values.

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

**Figure 4.1 Lysine: U.S. import quantities and average unit values, by source and period**

\* \* \* \* \*

Source: Compiled from official U.S. imports statistics of the U.S. Department of Commerce Census Bureau using HTS statistical reporting number 2922.41.0090, accessed January 24, 2025. Official U.S. import statistics were adjusted to: (1) remove out-of-scope imports under the primary HTS number using proprietary, Census-edited Customs records for firms that certified they do not import Lysine; (2) add in imports of Lysine entered in under other HTS numbers using responses to Commission questionnaires; (3) remove imports of out-of-scope products imported under the primary HTS numbers using responses to Commission questionnaires; (4) remove certain imports under the primary HTS number whose average unit value were anomalously high (>7,250 dollars per short ton), many of those entries were reported by importers whose firm names indicated that the merchandise was likely related to pharmaceutical or nutraceutical grade lysine. Imports are based on the imports for consumption data series. Value data reflect landed duty-paid values.

Table 4.3 presents data for U.S. importers' U.S. shipments of lysine from China in 2024, by product type and mixture status. Lysine HCl that is not mixed or blended accounted for the majority of U.S. importers' U.S. imports from China in 2024. There were no reported U.S. shipments of nonsubject imports in 2024.

**Table 4.3 Lysine: U.S. shipments of imports from China in 2024, by product type and mixture status**

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

| Type                | Measure           | Not mixed or blended | Mixed or blended | All mixtures |
|---------------------|-------------------|----------------------|------------------|--------------|
| Lysine HCL          | Quantity          | ***                  | ***              | ***          |
| Lysine sulfate      | Quantity          | ***                  | ***              | ***          |
| Liquid lysine       | Quantity          | ***                  | ***              | ***          |
| All in-scope lysine | Quantity          | ***                  | ***              | ***          |
| Lysine HCL          | Value             | ***                  | ***              | ***          |
| Lysine sulfate      | Value             | ***                  | ***              | ***          |
| Liquid lysine       | Value             | ***                  | ***              | ***          |
| All in-scope lysine | Value             | ***                  | ***              | ***          |
| Lysine HCL          | Unit value        | ***                  | ***              | ***          |
| Lysine sulfate      | Unit value        | ***                  | ***              | ***          |
| Liquid lysine       | Unit value        | ***                  | ***              | ***          |
| All in-scope lysine | Unit value        | ***                  | ***              | ***          |
| Lysine HCL          | Share of quantity | ***                  | ***              | ***          |
| Lysine sulfate      | Share of quantity | ***                  | ***              | ***          |
| Liquid lysine       | Share of quantity | ***                  | ***              | ***          |
| All in-scope lysine | Share of quantity | 100.0                | 100.0            | 100.0        |
| Lysine HCL          | Share of value    | ***                  | ***              | ***          |
| Lysine sulfate      | Share of value    | ***                  | ***              | ***          |
| Liquid lysine       | Share of value    | ***                  | ***              | ***          |
| All in-scope lysine | Share of value    | 100.0                | 100.0            | 100.0        |

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

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

# Negligibility

The statute requires that an investigation be terminated without an injury determination if imports of the subject merchandise are found to be negligible.<sup>2</sup> 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.<sup>3</sup> Imports from China accounted for \*\*\* percent of total imports of lysine, by quantity, from May 2024 through April 2025.

**Table 4.4 Lysine: U.S. imports in the twelve-month period preceding the filing of the petitions, May 2024 through April 2025**

Quantity in short tons HCl equivalent; share of quantity in percent

| Source of imports  | Quantity | Share of quantity |
|--------------------|----------|-------------------|
| China              | ***      | ***               |
| Nonsubject sources | ***      | ***               |
| All import sources | ***      | ***               |

Source: Compiled from official U.S. imports statistics of the U.S. Department of Commerce Census Bureau using HTS statistical reporting number 2922.41.0090, accessed January 24, 2025. Official U.S. import statistics were adjusted to: (1) remove out-of-scope imports under the primary HTS number using proprietary, Census-edited Customs records for firms that certified they do not import Lysine; (2) add in imports of Lysine entered in under other HTS numbers using responses to Commission questionnaires; (3) remove imports of out-of-scope products imported under the primary HTS numbers using responses to Commission questionnaires; (4) remove certain imports under the primary HTS number whose average unit value were anomalously high (>7,250 dollars per short ton), many of those entries were reported by importers whose firm names indicated that the merchandise was likely related to pharmaceutical or nutraceutical grade lysine. Imports are based on the imports for consumption data series. Value data reflect landed duty-paid values.

<sup>2</sup> 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)).

<sup>3</sup> Section 771 (24) of the Act (19 U.S.C § 1677(24)).

## Apparent U.S. consumption and market shares

### Quantity

Table 4.5 and figure 4.2 present data on apparent U.S. consumption and U.S. market shares by quantity for lysine. Apparent consumption increased by \*\*\* percent from 2022 to 2024 and was \*\*\* percent higher in interim 2024 than in interim 2025. The share of quantity held by U.S. producers decreased \*\*\* percentage points from 2022 to 2024 and was \*\*\* percentage points lower in interim 2025 than in interim 2024. The share of quantity held by imports from China increased by \*\*\* percentage points from 2022 to 2024 and was \*\*\* percentage points lower in interim 2024 than in interim 2025. Imports from China accounted for the majority of U.S. imports in all periods.

**Table 4.5 Lysine: Apparent U.S. consumption and market shares based on quantity data, by source and period**

Quantity in short tons HCl equivalent; share in percent; interim is January through March

| Source             | Measure  | 2022  | 2023  | 2024  | Interim 2024 | Interim 2025 |
|--------------------|----------|-------|-------|-------|--------------|--------------|
| U.S. producers     | Quantity | ***   | ***   | ***   | ***          | ***          |
| China              | Quantity | ***   | ***   | ***   | ***          | ***          |
| Nonsubject sources | Quantity | ***   | ***   | ***   | ***          | ***          |
| All import sources | Quantity | ***   | ***   | ***   | ***          | ***          |
| All sources        | Quantity | ***   | ***   | ***   | ***          | ***          |
| U.S. producers     | Share    | ***   | ***   | ***   | ***          | ***          |
| China              | Share    | ***   | ***   | ***   | ***          | ***          |
| Nonsubject sources | Share    | ***   | ***   | ***   | ***          | ***          |
| All import sources | Share    | ***   | ***   | ***   | ***          | ***          |
| All sources        | Share    | 100.0 | 100.0 | 100.0 | 100.0        | 100.0        |

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

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

**Figure 4.2 Lysine: Apparent U.S. consumption based on quantity, by source and period**

\* \* \* \* \*

Source: Compiled from data submitted in response to Commission questionnaires and compiled from official U.S. imports statistics of the U.S. Department of Commerce Census Bureau using HTS statistical reporting number 2922.41.0090, accessed January 24, 2025. Official U.S. import statistics were adjusted to: (1) remove out-of-scope imports under the primary HTS number using proprietary, Census-edited Customs records for firms that certified they do not import Lysine; (2) add in imports of Lysine entered in under other HTS numbers using responses to Commission questionnaires; (3) remove imports of out-of-scope products imported under the primary HTS numbers using responses to Commission questionnaires; (4) remove certain imports under the primary HTS number whose average unit value were anomalously high (>7,250 dollars per short ton), many of those entries were reported by importers whose firm names indicated that the merchandise was likely related to pharmaceutical or nutraceutical grade lysine. Imports are based on the imports for consumption data series.

**Value**

Table 4.6 and figure 4.3 present data on apparent U.S. consumption and U.S. market shares, by value, for lysine. Apparent consumption decreased by \*\*\* percent from 2022 to 2024 but was \*\*\* percent higher in interim 2025 than in interim 2024. The share of value held by U.S. producers decreased by \*\*\* percentage points from 2022 to 2024 and was \*\*\* percentage points lower in interim 2025 than in interim 2024. The share of value held by imports from China increased by \*\*\* percentage points from 2022 to 2024 and was \*\*\* percentage points higher in interim 2025 than in interim 2024. The share of value held by nonsubject imports \*\*\* during the period of these investigations.

**Table 4.6 Lysine: Apparent U.S. consumption and market shares based on value, by source and period**

Value in 1,000 dollars; share in percent; interim is January through March

| Source             | Measure | 2022  | 2023  | 2024  | Interim 2024 | Interim 2025 |
|--------------------|---------|-------|-------|-------|--------------|--------------|
| U.S. producers     | Value   | ***   | ***   | ***   | ***          | ***          |
| China              | Value   | ***   | ***   | ***   | ***          | ***          |
| Nonsubject sources | Value   | ***   | ***   | ***   | ***          | ***          |
| All import sources | Value   | ***   | ***   | ***   | ***          | ***          |
| All sources        | Value   | ***   | ***   | ***   | ***          | ***          |
| U.S. producers     | Share   | ***   | ***   | ***   | ***          | ***          |
| China              | Share   | ***   | ***   | ***   | ***          | ***          |
| Nonsubject sources | Share   | ***   | ***   | ***   | ***          | ***          |
| All import sources | Share   | ***   | ***   | ***   | ***          | ***          |
| All sources        | Share   | 100.0 | 100.0 | 100.0 | 100.0        | 100.0        |

Source: Compiled from data submitted in response to Commission questionnaires and compiled from official U.S. imports statistics of the U.S. Department of Commerce Census Bureau using HTS statistical reporting number 2922.41.0090, accessed January 24, 2025. Official U.S. import statistics were adjusted to: (1) remove out-of-scope imports under the primary HTS number using proprietary, Census-edited Customs records for firms that certified they do not import Lysine; (2) add in imports of Lysine entered in under other HTS numbers using responses to Commission questionnaires; (3) remove imports of out-of-scope products imported under the primary HTS numbers using responses to Commission questionnaires; (4) remove certain imports under the primary HTS number whose average unit value were anomalously high (>7,250 dollars per short ton), many of those entries were reported by importers whose firm names indicated that the merchandise was likely related to pharmaceutical or nutraceutical grade lysine. Imports are based on the imports for consumption data series. Value data reflect landed duty-paid values.

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

**Figure 4.3 Lysine: Apparent U.S. consumption based on value, by source and period**

\* \* \* \* \*

Source: Compiled from data submitted in response to Commission questionnaires and compiled from official U.S. imports statistics of the U.S. Department of Commerce Census Bureau using HTS statistical reporting number 2922.41.0090, accessed January 24, 2025. Official U.S. import statistics were adjusted to: (1) remove out-of-scope imports under the primary HTS number using proprietary, Census-edited Customs records for firms that certified they do not import Lysine; (2) add in imports of Lysine entered in under other HTS numbers using responses to Commission questionnaires; (3) remove imports of out-of-scope products imported under the primary HTS numbers using responses to Commission questionnaires; (4) remove certain imports under the primary HTS number whose average unit value were anomalously high (>7,250 dollars per short ton), many of those entries were reported by importers whose firm names indicated that the merchandise was likely related to pharmaceutical or nutraceutical grade lysine. Imports are based on the imports for consumption data series. Value data reflect landed duty-paid values.



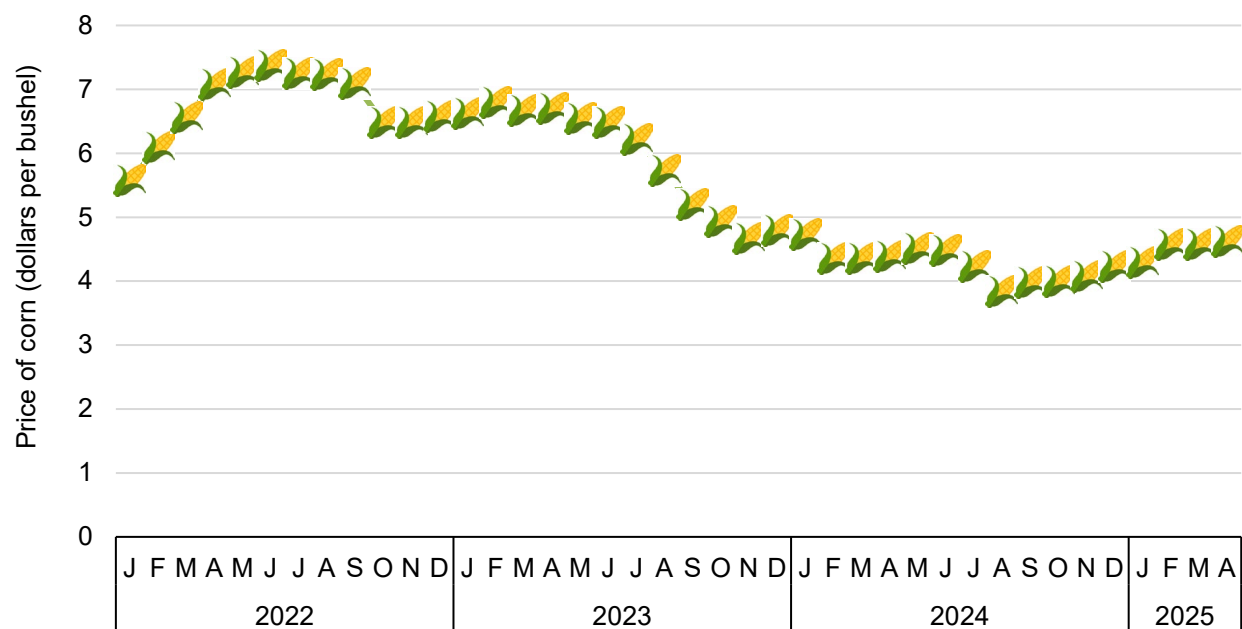
## Part 5: Pricing data

### Factors affecting prices

#### Raw material costs

As noted in Part 1, lysine is created from the starch of plant materials such as corn, sugar beets, and wheat.<sup>1</sup> Domestic producers' manufacturing plants all rely on corn as the feedstock to produce lysine, and it would be "incredibly difficult" to change feedstock to a different crop.<sup>2</sup> Raw materials, as a share of U.S. producers' cost of goods sold ("COGS"), declined from \*\*\* percent in 2022 to \*\*\* percent in 2024, and were \*\*\* percent in January to March 2025 compared with \*\*\* percent in January to March 2024. This decrease in the share of COGS reflects decreasing corn prices over the period, as shown in figure 5.1 and table 5.1). Monthly U.S. corn prices were highest in 2022, reaching \$7.38 per bushel in June 2022 and then generally decreased until August 2024 (\$3.84 per bushel) before starting to increase. By April 2025, corn prices reached \$4.62 per bushel.

**Figure 5.1 Raw materials: U.S. corn prices, January 2022 to April 2025**



Source: U.S. Department of Agriculture, National Agriculture Statistical Service, [nass.usda.gov/Charts\\_and\\_Maps/graphics/data/pricecn.txt](https://nass.usda.gov/Charts_and_Maps/graphics/data/pricecn.txt), retrieved June 23, 2025.

<sup>1</sup> Conference transcript, pp. 46-47 (Benson).

<sup>2</sup> Ibid., pp. 56-57 (Walley, Choi, and Nel)

**Table 5.1 Raw materials: U.S. corn prices, January 2022 to April 2025**

Dollars per bushel

| Year | Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 2022 | 5.58 | 6.09 | 6.56 | 7.07 | 7.26 | 7.38 | 7.25 | 7.24 | 7.09 | 6.49 | 6.49 | 6.58 |
| 2023 | 6.63 | 6.8  | 6.67 | 6.70 | 6.54 | 6.49 | 6.22 | 5.73 | 5.21 | 4.93 | 4.66 | 4.80 |
| 2024 | 4.74 | 4.36 | 4.36 | 4.39 | 4.51 | 4.48 | 4.23 | 3.84 | 3.98 | 3.99 | 4.07 | 4.23 |
| 2025 | 4.29 | 4.58 | 4.57 | 4.62 | —    | —    | —    | —    | —    | —    | —    | —    |

Source: U.S. Department of Agriculture, National Agriculture Statistical Service, [nass.usda.gov/Charts\\_and\\_Maps/graphics/data/pricecn.txt](https://nass.usda.gov/Charts_and_Maps/graphics/data/pricecn.txt), retrieved June 23, 2025.

Note: Null values are suppressed and shown as “—”.

## Transportation costs to the U.S. market

Transportation costs for lysine shipped from China to the United States averaged 7.1 percent during 2024. These estimates were derived from official import data and represent the transportation and other charges on imports.<sup>3</sup>

## U.S. inland transportation costs

Three of four responding U.S. producers and a majority of responding importers (19 of 22) reported that they typically arrange transportation to their customers. Three U.S. producers reported that their U.S. inland transportation costs were \*\*\* percent while most importers reported costs of 2 to 10 percent, averaging just over 5 percent.<sup>4</sup>

## Pricing practices

### Pricing methods

All U.S. producers and 18 of 22 importers reported setting prices using transaction-by-transaction negotiations. All producers and a majority of importers (14 of 22) also reported setting prices via contracts. Additionally, nine importers indicated that they use price lists, but no domestic producer indicated using them (table 5.2).

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<sup>3</sup> The estimated transportation costs were obtained by subtracting the customs value from the c.i.f. value of the imports for 2024 and then dividing by the customs value based on the HTS statistical reporting number 2922.41.0090.

<sup>4</sup> Not included in these averages are three importers reporting outlier data of 0, 36, and 50 percent and one U.S. producer reporting 100 percent.

**Table 5.2 Lysine: Count of U.S. producers' and importers' reported price setting methods**

| Method                     | U.S. producers | Importers |
|----------------------------|----------------|-----------|
| Transaction-by-transaction | 4              | 18        |
| Contract                   | 4              | 14        |
| Set price list             | 0              | 9         |
| Other                      | 0              | 1         |
| Responding firms           | 4              | 22        |

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

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

U.S. producers reported selling the vast majority of their lysine via contracts, with a plurality sold via long-term contracts and slightly more than a third sold via annual contracts. Importers typically sold on a shorter-term basis, with spot and short-term contract sales accounting for more than 88 percent of their U.S. shipments in 2024 (table 5.3).

**Table 5.3 Lysine: U.S. producers' and importers' shares of commercial U.S. shipments by type of sale, 2024**

Share in percent

| Type of sale         | U.S. producers | Subject importers |
|----------------------|----------------|-------------------|
| Long-term contracts  | 48.4           | 4.3               |
| Annual contracts     | 38.0           | 7.4               |
| Short-term contracts | 11.5           | 66.4              |
| Spot sales           | 2.1            | 21.9              |
| Total                | 100.0          | 100.0             |

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

Note: Because of rounding, figures may not add to the totals shown.

Producers reported that their annual and long-term contracts typically allow for price renegotiation, but two of three producers' short-term contracts do not. No contracts were reported to be indexed to raw material prices. While two of four producers' short-term contracts fix both price and quantity, annual and long-term contracts were reported by one producer each to only fix price or quantity. Twelve of 15 importers' short-term contracts typically do not allow for price renegotiation. All 13 responding importers' short-term contracts fix both price and quantity, and a large majority (12 of 14) indicated they are not indexed to raw material prices.

## Sales terms and discounts

Three of four U.S. producers typically quote prices on a delivered basis and slightly more than half of responding importers (14 of 22) do as well. The large majority of importers (18 of 20) do not maintain a discount policy whereas one domestic producer each offers quantity discounts, total volume discounts, early payment discounts, and a rebate based on total volume purchased.

## 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 lysine products shipped to unrelated U.S. customers during January 2022 to March 2025.

**Product 1.**— Dry L-lysine with a minimum of 40.0 percent lysine by weight, in HCl equivalent

**Product 2.**— Liquid L-lysine with a minimum of 40.0 percent lysine by weight, in HCl equivalent

Four U.S. producers and 14 importers provided usable pricing data for sales of the requested products, although not all firms reported pricing for all products for all quarters.<sup>5 6</sup> Pricing data reported by these firms accounted for \*\*\* of U.S. producers' U.S. shipments of lysine, and \*\*\* percent of U.S. shipments of subject imports from China.<sup>7</sup> Price data for products 1 and 2 are presented in tables 5.4 and 5.5 and all price data are presented in figure 5.2.

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<sup>5</sup> 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.

<sup>6</sup> \*\*\* was unable to remove delivery costs from its submitted data in order to provide their data on a f.o.b. basis, as requested. As a result, \*\*\* pricing data is slightly higher than it otherwise would be. \*\*\* accounted for \*\*\* sales in 2024, and \*\*\*.

<sup>7</sup> Pricing coverage is based on U.S. shipments reported in questionnaires.

**Table 5.4 Lysine: Weighted-average f.o.b. prices and quantities of domestic and imported product 1 and margins of underselling/(overselling), by source and quarter**

Price in dollars per pound HCl equivalent, quantity in thousand pounds HCl equivalent, margin in percent

| Period  | U.S. price | U.S. quantity | China price | China quantity | China margin |
|---------|------------|---------------|-------------|----------------|--------------|
| 2022 Q1 | 1.09       | 72,964        | ***         | ***            | ***          |
| 2022 Q2 | 1.05       | 61,215        | ***         | ***            | ***          |
| 2022 Q3 | 0.91       | 65,221        | 1.04        | 12,096         | (15.0)       |
| 2022 Q4 | 0.84       | 63,077        | 0.91        | 19,825         | (8.6)        |
| 2023 Q1 | 0.82       | 59,408        | ***         | ***            | ***          |
| 2023 Q2 | 0.79       | 56,971        | 0.78        | 25,082         | 1.5          |
| 2023 Q3 | 0.78       | 56,234        | 0.75        | 29,802         | 4.9          |
| 2023 Q4 | 0.74       | 58,287        | 0.75        | 30,541         | (1.3)        |
| 2024 Q1 | 0.75       | 55,479        | 0.77        | 29,797         | (2.2)        |
| 2024 Q2 | 0.74       | 52,775        | 0.73        | 41,033         | 2.3          |
| 2024 Q3 | 0.73       | 56,991        | 0.77        | 34,147         | (4.6)        |
| 2024 Q4 | 0.75       | 66,445        | 0.79        | 40,011         | (5.6)        |
| 2025 Q1 | ***        | ***           | 0.83        | 44,506         | ***          |

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

Note: Product 1: Dry L-lysine with a minimum of 40.0 percent lysine by weight, in HCl equivalent

**Table 5.5 Lysine: Weighted-average f.o.b. prices and quantities of domestic product 2, by quarter**

Price in dollars per pound HCl equivalent, quantity in thousand pounds HCl equivalent

| Period  | U.S. price | U.S. quantity |
|---------|------------|---------------|
| 2022 Q1 | ***        | ***           |
| 2022 Q2 | ***        | ***           |
| 2022 Q3 | ***        | ***           |
| 2022 Q4 | ***        | ***           |
| 2023 Q1 | ***        | ***           |
| 2023 Q2 | ***        | ***           |
| 2023 Q3 | ***        | ***           |
| 2023 Q4 | ***        | ***           |
| 2024 Q1 | ***        | ***           |
| 2024 Q2 | ***        | ***           |
| 2024 Q3 | ***        | ***           |
| 2024 Q4 | ***        | ***           |
| 2025 Q1 | ***        | ***           |

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

Note: Product 2: Liquid L-lysine with a minimum of 40.0 percent lysine by weight, in HCl equivalent

**Figure 5.2 Lysine: Weighted-average f.o.b. prices and quantities of domestic and imported products 1 and 2, by source and quarter**

**Prices of products 1 and 2**

\* \* \* \* \*

**Volume of products 1 and 2**

\* \* \* \* \*

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

Note: Product 1: Dry L-lysine with a minimum of 40.0 percent lysine by weight, in HCl equivalent, and Product 2: Liquid L-lysine with a minimum of 40.0 percent lysine by weight, in HCl equivalent

## Price trends

In general, prices decreased during January 2022 to March 2025. Table 5.6 summarizes the price trends, by country and by product. Prices for product 1 from both sources decreased in each quarter of the first half of the period of investigation. Prices for product 1 produced in the United States generally continued to decrease slightly in four of the final six quarters, while prices for product 1 imported from China increased slightly in five of the final six quarters. After an increase from the first quarter of 2022 to the second quarter of 2022, the price of domestically produced product 2 decreased in eight of the next nine quarters before increasing very slightly in the final two quarters (by \*\*\* and \*\*\* percent). As shown in the table, domestic prices decreased by \*\*\* and \*\*\* percent overall for products 1 and 2 during January 2022 to March 2025 while import prices for product 1 decreased by \*\*\* percent. Prices of domestic product 2 (liquid lysine) were higher than prices of domestic product 1 (dry lysine) in all quarters except the first two quarters of 2022, in which it was \*\*\* percent lower, respectively. Prices for product 1 imported from China generally decreased until the second quarter of 2024 but have increased in each quarter since that time.

**Table 5.6 Lysine: Summary of price data, by product and source, January 2022 to March 2025**

Quantity in thousand pounds HCl equivalent, price in dollars per pound HCl equivalent

| Product   | Source        | Number of quarters | Quantity of shipments | Low price | High price | First quarter price | Last quarter price | Percent change in price over period |
|-----------|---------------|--------------------|-----------------------|-----------|------------|---------------------|--------------------|-------------------------------------|
| Product 1 | United States | 13                 | ***                   | ***       | ***        | ***                 | ***                | ***                                 |
| Product 1 | China         | 13                 | ***                   | ***       | ***        | ***                 | ***                | ***                                 |
| Product 2 | United States | 13                 | ***                   | ***       | ***        | ***                 | ***                | ***                                 |
| Product 2 | China         | —                  | —                     | —         | —          | —                   | —                  | —                                   |

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

Note: Percent change column is percentage change from the first quarter of 2022 to the first quarter of 2025. Null values and undefined calculations are suppressed and shown as “—”.

## Price comparisons

As noted above, there were no imports of product 2 from China. Therefore, table 5.7 shows that prices for product 1 imported from China were above those for U.S.-produced product in 10 of 13 instances (\*\* pounds HCl equivalent); margins of overselling ranged from \*\* to \*\* percent and averaged \*\* percent. In the remaining 3 instances (\*\* pounds HCl equivalent), prices for product from China were between \*\* and \*\* percent below prices for the domestic product and averaged \*\* percent. Overselling occurred in throughout the period studied, as shown in table 5.8, and underselling occurred in 2023 and 2024.

Domestic producers have noted that dry lysine also competes with liquid lysine.<sup>8</sup> In comparing the dry lysine imported from China (product 1) with the liquid lysine produced in the United States (product 2) there is a nearly even mix of underselling and overselling (table 5.7). In these comparisons, underselling occurred in 6 of 13 quarters, starting in the first quarter of 2023 and ending in the second quarter of 2024 (table 5.9).

**Table 5.7 Lysine: Instances of underselling and overselling and the range and average of margins, by product**

Quantity in thousand pounds HCl equivalent; margin in percent

| Product                            | Type         | Number of quarters | Quantity | Average margin | Min margin | Max margin |
|------------------------------------|--------------|--------------------|----------|----------------|------------|------------|
| Product 1                          | Underselling | 3                  | **       | **             | **         | **         |
| Product 1                          | Overselling  | 10                 | **       | **             | **         | **         |
| U.S. product 2 vs. China product 1 | Underselling | 6                  | —        | **             | **         | **         |
| U.S. product 2 vs. China product 1 | Overselling  | 7                  | —        | **             | **         | **         |

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

Note: To preclude double-counting of quantities of imported Chinese product, quantities are not presented again in comparing U.S. product 2 to China product 1. Null values are suppressed and shown as “—”.

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<sup>8</sup> “Lysine is produced in multiple interchangeable forms that may be in a dry or liquid state.” Petition, vol. 1, p. 6. See also, e.g., conference transcript, p. 14 (Benson). Data were collected on a separate basis to be able to assess this contention and allow for separate comparison.

**Table 5.8 Lysine: Instances of underselling and overselling and the range and average of margins for product 1, by year**

Quantity in thousand pounds HCl equivalent; margin in percent

| Year             | Type         | Number of quarters | Quantity | Average margin | Min margin | Max margin |
|------------------|--------------|--------------------|----------|----------------|------------|------------|
| 2022             | Underselling | 0                  | —        | —              | —          | —          |
| 2023             | Underselling | 2                  | ***      | ***            | ***        | ***        |
| 2024             | Underselling | 1                  | 41,033   | 2.3            | 2.3        | 2.3        |
| 2025 Q1          | Underselling | 0                  | —        | —              | —          | —          |
| Total, all years | Underselling | 3                  | ***      | ***            | ***        | ***        |
| 2022             | Overselling  | 4                  | ***      | ***            | ***        | ***        |
| 2023             | Overselling  | 2                  | ***      | ***            | ***        | ***        |
| 2024             | Overselling  | 3                  | 103,956  | (4.1)          | (2.2)      | (5.6)      |
| 2025 Q1          | Overselling  | 1                  | ***      | ***            | ***        | ***        |
| Total, all years | Overselling  | 10                 | ***      | ***            | ***        | ***        |

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

Note: Null values and undefined calculations are suppressed and shown as “—”.

**Table 5.9 Lysine: Instances of underselling and overselling and the range and average of margins in comparing imported product 2 to U.S.-produced product 1, by year**

Quantity in thousand pounds HCl equivalent; margin in percent

| Year             | Type         | Number of quarters | Quantity | Average margin | Min margin | Max margin |
|------------------|--------------|--------------------|----------|----------------|------------|------------|
| 2022             | Underselling | 0                  | —        | —              | —          | —          |
| 2023             | Underselling | 4                  | —        | ***            | ***        | ***        |
| 2024             | Underselling | 2                  | —        | ***            | ***        | ***        |
| 2025 Q1          | Underselling | 0                  | —        | —              | —          | —          |
| Total, all years | Underselling | 6                  | —        | ***            | ***        | ***        |
| 2022             | Overselling  | 4                  | —        | ***            | ***        | ***        |
| 2023             | Overselling  | 0                  | —        | —              | —          | —          |
| 2024             | Overselling  | 2                  | —        | ***            | ***        | ***        |
| 2025 Q1          | Overselling  | 1                  | —        | ***            | ***        | ***        |
| Total, all years | Overselling  | 7                  | —        | ***            | ***        | ***        |

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

Note: Null values, undefined calculations, and suppressed quantities to prevent double-counting are suppressed and shown as “—”.

## Lost sales and lost revenue

The Commission requested that U.S. producers of lysine report purchasers with which they experienced instances of lost sales or revenue due to competition from imports of lysine from China during January 2022 to March 2025. Of the four responding U.S. producers, three reported that they had to reduce prices, two reported that they had to roll back announced price increases, and three reported that they had lost sales. Two U.S. producers submitted lost sales and lost revenue allegations and identified 36 firms with which they lost sales or revenue (33 consisting of lost sales allegations, 2 consisting of lost revenue allegations, and 1 consisting of both types of allegations). Allegations were listed to have occurred throughout the period of investigation with a majority of the claims occurring in 2023 and 2024. The two U.S. producers alleged total lost sales of \*\*\* short tons HCl equivalent of lysine from subject imports.

Staff contacted 35 purchasers and received responses from 11 purchasers. Responding purchasers reported purchasing or importing 204,126 short tons HCL equivalent of lysine during January 2022 to March 2025 (table 5.10).

**Table 5.10 Lysine: U.S. purchasers' reported purchases and imports, by firm and source**

Quantity in short tons HCl equivalent; Change in shares in percentage points

| Firm      | Domestic quantity | Subject quantity | All other quantity | Change in domestic share | Change in subject share | Change in all other share |
|-----------|-------------------|------------------|--------------------|--------------------------|-------------------------|---------------------------|
| ***       | ***               | ***              | ***                | ***                      | ***                     | ***                       |
| ***       | ***               | ***              | ***                | ***                      | ***                     | ***                       |
| ***       | ***               | ***              | ***                | ***                      | ***                     | ***                       |
| ***       | ***               | ***              | ***                | ***                      | ***                     | ***                       |
| ***       | ***               | ***              | ***                | ***                      | ***                     | ***                       |
| ***       | ***               | ***              | ***                | ***                      | ***                     | ***                       |
| ***       | ***               | ***              | ***                | ***                      | ***                     | ***                       |
| ***       | ***               | ***              | ***                | ***                      | ***                     | ***                       |
| ***       | ***               | ***              | ***                | ***                      | ***                     | ***                       |
| ***       | ***               | ***              | ***                | ***                      | ***                     | ***                       |
| ***       | ***               | ***              | ***                | ***                      | ***                     | ***                       |
| All firms | ***               | ***              | ***                | ***                      | ***                     | ***                       |

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

Note: The "all other" category includes known nonsubject sources and unknown sources. Changes in shares represent the share of the firm's total purchases of domestic and/or subject country imports between first and last years and are presented in percentage points. Zeroes, null values, and undefined calculations are suppressed and shown as "—".

A plurality of purchasers (5 of 11) indicated that their purchase levels from domestic producers were about the same at the beginning and ending of the period of investigation, although four noted that their domestic purchases declined and two noted that their domestic purchases increased (table 5.11). In contrast, four of seven purchasers had increased their purchases of lysine imported from China, compared with two that had no change in their purchase levels and one which reported decreased purchases from China.

**Table 5.11 Lysine: Count of changes in purchase patterns from U.S., subject, and nonsubject countries**

| Source of purchases | Steadily increase | Fluctuate upward | No change | Fluctuate downward | Steadily decrease | Did not purchase |
|---------------------|-------------------|------------------|-----------|--------------------|-------------------|------------------|
| United States       | 0                 | 2                | 5         | 2                  | 2                 | 0                |
| China               | 3                 | 1                | 2         | 1                  | 0                 | 3                |
| All other sources   | 0                 | 0                | 1         | 0                  | 0                 | 8                |
| Sources unknown     | 0                 | 0                | 2         | 0                  | 0                 | 7                |

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

Of the 11 responding purchasers, six reported that, since 2022, they had purchased imported lysine from China instead of U.S.-produced product. All six of these purchasers reported that subject import prices were lower than U.S.-produced product, and five of these purchasers reported that price was a primary reason for the decision to purchase imported product rather than U.S.-produced product. Four purchasers estimated the quantity of lysine from China purchased instead of domestic product; quantities ranged from \*\*\* short tons HCl equivalent to \*\*\* short tons HCl equivalent (table 5.12). Purchaser \*\*\* reported that domestic manufacturers do not always have available supply of lysine HCl.

**Table 5.12 Lysine: U.S. purchasers' responses to purchasing subject imports instead of domestic product, by firm**

Quantity in short tons HCl equivalent

| Firm      | Purchased subject imports instead of domestic | Imports priced lower | Choice based on price | Quantity | Narrative on reasons for purchasing imports |
|-----------|-----------------------------------------------|----------------------|-----------------------|----------|---------------------------------------------|
| ***       | ***                                           | ***                  | ***                   | ***      | ***                                         |
| ***       | ***                                           | ***                  | ***                   | ***      | ***                                         |
| ***       | ***                                           | ***                  | ***                   | ***      | ***                                         |
| ***       | ***                                           | ***                  | ***                   | ***      | ***                                         |
| ***       | ***                                           | ***                  | ***                   | ***      | ***                                         |
| ***       | ***                                           | ***                  | ***                   | ***      | ***                                         |
| ***       | ***                                           | ***                  | ***                   | ***      | ***                                         |
| ***       | ***                                           | ***                  | ***                   | ***      | ***                                         |
| ***       | ***                                           | ***                  | ***                   | ***      | ***                                         |
| ***       | ***                                           | ***                  | ***                   | ***      | ***                                         |
| ***       | ***                                           | ***                  | ***                   | ***      | ***                                         |
| All firms | Yes: 6;<br>No: 5                              | Yes: 6;<br>No: 0     | Yes: 5;<br>No: 1      | ***      | NA                                          |

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

When asked whether domestic producers had to decrease their prices to compete with imports of lysine from China, 2 of the 11 purchasers reported that U.S. producers had reduced their prices (table 5.13). These purchasers reported the estimated price reduction to be \*\*\* and \*\*\* percent. In describing the price reductions, purchasers indicated that the reductions were made in order to stay competitive with the import market. Purchaser \*\*\* reported that the reduction took place over the course of approximately 18 months from January 2022 through the middle of 2023. It reported that the disruptions in supply flow due to the COVID-19 pandemic and supply constraints led to price increases prior to 2022, and that U.S. domestic producers allocated volumes to customers, limiting purchases of available supply, which may have forced buyers to other import sources of material to fill the supply gap.

**Table 5.13 Lysine: U.S. purchasers' responses to U.S. producer price reductions, by firm**

Count in number of firms reporting; Price reductions in percent

| <b>Firm</b> | <b>Producers lowered prices</b> | <b>Price reduction</b> | <b>Narrative on producer price reductions</b> |
|-------------|---------------------------------|------------------------|-----------------------------------------------|
| ***         | ***                             | ***                    | ***                                           |
| ***         | ***                             | ***                    | ***                                           |
| ***         | ***                             | ***                    | ***                                           |
| ***         | ***                             | ***                    | ***                                           |
| ***         | ***                             | ***                    | ***                                           |
| ***         | ***                             | ***                    | ***                                           |
| ***         | ***                             | ***                    | ***                                           |
| ***         | ***                             | ***                    | ***                                           |
| ***         | ***                             | ***                    | ***                                           |
| ***         | ***                             | ***                    | ***                                           |
| ***         | ***                             | ***                    | ***                                           |
| ***         | ***                             | ***                    | ***                                           |
| All firms   | Yes: 2; No: 3                   | ***                    | NA                                            |

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



## Part 6: Financial experience of U.S. producers

### Background<sup>1</sup>

ADM, Evonik, and CJ Bio provided usable financial results on their lysine operations.<sup>2</sup> U.S. producers reported financial data based on a calendar year and in accordance with IFRS and GAAP.<sup>3</sup>

The industry's net sales are composed of commercial sales.<sup>4</sup> During the period examined (January 1, 2022, through March 31, 2025) commercial sales represented \*\*\* percent of total net sales quantity.<sup>5</sup> Figure 6.1 presents ADM, Evonik, and CJ Bio's share of the total reported net sales quantity in 2024.

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<sup>1</sup> The following abbreviations are used in the tables and/or text of this section: generally accepted accounting principles ("GAAP"), fiscal year ("FY"), net sales ("NS"), cost of goods sold ("COGS"), selling, general, and administrative expenses ("SG&A expenses"), average unit values ("AUVs"), research and development expenses ("R&D expenses"), and return on assets ("ROA").

<sup>2</sup> The trade and financial sections reconciled for the three U.S. producers. A fourth U.S. producer, \*\*\*. \*\*\* U.S. producer questionnaire response, section 3.9a.

<sup>3</sup> \*\*\*. U.S. producer questionnaire responses, section 3.2.

<sup>4</sup> \*\*\*. U.S. producer questionnaire responses, section 3.9a.

<sup>5</sup> ADM and Evonik produced in-scope lysine that accounted for \*\*\* of their net sales in 2024, while for CJ Bio, \*\*\*. U.S. producers' questionnaire responses to question 3.4.

**Figure 6.1 Lysine: U.S. producers’ share of net sales quantity in 2024, by firm**

\* \* \* \* \*

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

**Operations on lysine**

Table 6.1 presents data on the U.S. producers’ total operations in relation to lysine, while table 6.2 presents corresponding changes in AUVs for operations. Table 6.3 presents selected company-specific financial data.

**Table 6.1 Lysine: U.S. producers' results of operations, by item and period**

Quantity in short tons HCL equivalents; value in 1,000 dollars; ratios in percent; interim is January through March

| Item                       | Measure     | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|----------------------------|-------------|------|------|------|--------------|--------------|
| Total net sales            | Quantity    | ***  | ***  | ***  | ***          | ***          |
| Total net sales            | Value       | ***  | ***  | ***  | ***          | ***          |
| COGS: Raw materials        | Value       | ***  | ***  | ***  | ***          | ***          |
| COGS: Direct labor         | Value       | ***  | ***  | ***  | ***          | ***          |
| COGS: Other factory        | Value       | ***  | ***  | ***  | ***          | ***          |
| Less: by-product revenue   | Value       | ***  | ***  | ***  | ***          | ***          |
| COGS: Total                | Value       | ***  | ***  | ***  | ***          | ***          |
| Gross profit or (loss)     | Value       | ***  | ***  | ***  | ***          | ***          |
| SG&A expenses              | Value       | ***  | ***  | ***  | ***          | ***          |
| Operating income or (loss) | Value       | ***  | ***  | ***  | ***          | ***          |
| Interest expense           | Value       | ***  | ***  | ***  | ***          | ***          |
| All other expenses         | Value       | ***  | ***  | ***  | ***          | ***          |
| All other income           | Value       | ***  | ***  | ***  | ***          | ***          |
| Net income or (loss)       | Value       | ***  | ***  | ***  | ***          | ***          |
| Depreciation/amortization  | Value       | ***  | ***  | ***  | ***          | ***          |
| Cash flow                  | Value       | ***  | ***  | ***  | ***          | ***          |
| COGS: Raw materials        | Ratio to NS | ***  | ***  | ***  | ***          | ***          |
| COGS: Direct labor         | Ratio to NS | ***  | ***  | ***  | ***          | ***          |
| COGS: Other factory        | Ratio to NS | ***  | ***  | ***  | ***          | ***          |
| COGS: Total                | Ratio to NS | ***  | ***  | ***  | ***          | ***          |
| Gross profit               | Ratio to NS | ***  | ***  | ***  | ***          | ***          |
| SG&A expense               | Ratio to NS | ***  | ***  | ***  | ***          | ***          |
| Operating income or (loss) | Ratio to NS | ***  | ***  | ***  | ***          | ***          |
| Net income or (loss)       | Ratio to NS | ***  | ***  | ***  | ***          | ***          |

Table continued.

**Table 6.1 (Continued) Lysine: U.S. producers' results of operations, by item and period**

Shares in percent; unit values in dollars per short ton HCL equivalent; count in number of firms reporting;  
interim is January through March

| Item                       | Measure    | 2022  | 2023  | 2024  | Interim<br>2024 | Interim<br>2025 |
|----------------------------|------------|-------|-------|-------|-----------------|-----------------|
| COGS: Raw materials        | Share      | ***   | ***   | ***   | ***             | ***             |
| COGS: Direct labor         | Share      | ***   | ***   | ***   | ***             | ***             |
| COGS: Other factory        | Share      | ***   | ***   | ***   | ***             | ***             |
| COGS: Total                | Share      | 100.0 | 100.0 | 100.0 | 100.0           | 100.0           |
| Total net sales            | Unit value | ***   | ***   | ***   | ***             | ***             |
| COGS: Raw materials        | Unit value | ***   | ***   | ***   | ***             | ***             |
| COGS: Direct labor         | Unit value | ***   | ***   | ***   | ***             | ***             |
| COGS: Other factory        | Unit value | ***   | ***   | ***   | ***             | ***             |
| Less: by-product revenue   | Unit value | ***   | ***   | ***   | ***             | ***             |
| COGS: Total                | Unit value | ***   | ***   | ***   | ***             | ***             |
| Gross profit or (loss)     | Unit value | ***   | ***   | ***   | ***             | ***             |
| SG&A expenses              | Unit value | ***   | ***   | ***   | ***             | ***             |
| Operating income or (loss) | Unit value | ***   | ***   | ***   | ***             | ***             |
| Net income or (loss)       | Unit value | ***   | ***   | ***   | ***             | ***             |
| Operating losses           | Count      | ***   | ***   | ***   | ***             | ***             |
| Net losses                 | Count      | ***   | ***   | ***   | ***             | ***             |
| Data                       | Count      | 3     | 3     | 3     | 3               | 3               |

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

Note: Share represents the share of COGS.

**Table 6.2 Lysine: Changes in AUVs between comparison periods**

Changes in percent

| Item                     | 2022–24 | 2022–23 | 2023–24 | Interim<br>2024–25 |
|--------------------------|---------|---------|---------|--------------------|
| Total net sales          | ▼ ***   | ▼ ***   | ▼ ***   | ▼ ***              |
| COGS: Raw materials      | ▼ ***   | ▼ ***   | ▼ ***   | ▼ ***              |
| COGS: Direct labor       | ▲ ***   | ▲ ***   | ▲ ***   | ▼ ***              |
| COGS: Other factory      | ▲ ***   | ▲ ***   | ▲ ***   | ▼ ***              |
| Less: by-product revenue | ▼ ***   | ▼ ***   | ▼ ***   | ▼ ***              |
| COGS: Total              | ▼ ***   | ▼ ***   | ▼ ***   | ▼ ***              |

Table continued.

**Table 6.2 (Continued) Lysine: Changes in AUVs between comparison periods**

Changes in dollars per short ton HCL equivalent

| Item                       | 2022–24 | 2022–23 | 2023–24 | Interim<br>2024–25 |
|----------------------------|---------|---------|---------|--------------------|
| Total net sales            | ▼ ***   | ▼ ***   | ▼ ***   | ▼ ***              |
| COGS: Raw materials        | ▼ ***   | ▼ ***   | ▼ ***   | ▼ ***              |
| COGS: Direct labor         | ▲ ***   | ▲ ***   | ▲ ***   | ▼ ***              |
| COGS: Other factory        | ▲ ***   | ▲ ***   | ▲ ***   | ▼ ***              |
| Less: by-product revenue   | ▼ ***   | ▼ ***   | ▼ ***   | ▼ ***              |
| COGS: Total                | ▼ ***   | ▼ ***   | ▼ ***   | ▼ ***              |
| Gross profit or (loss)     | ▼ ***   | ▼ ***   | ▲ ***   | ▲ ***              |
| SG&A expense               | ▲ ***   | ▲ ***   | ▼ ***   | ▼ ***              |
| Operating income or (loss) | ▼ ***   | ▼ ***   | ▲ ***   | ▲ ***              |
| Net income or (loss)       | ▼ ***   | ▼ ***   | ▲ ***   | ▲ ***              |

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

Note: Period changes preceded by a “▲” represent an increase, while period changes preceded by a “▼” represent a decrease.

**Table 6.3 Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period****Net sales quantity**

Quantity in short tons HCL equivalents; interim is January through March

| Firm      | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-----------|------|------|------|--------------|--------------|
| ADM       | ***  | ***  | ***  | ***          | ***          |
| CJ Bio    | ***  | ***  | ***  | ***          | ***          |
| Evonik    | ***  | ***  | ***  | ***          | ***          |
| All firms | ***  | ***  | ***  | ***          | ***          |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period****Net sales value**

Value in 1,000 dollars; interim is January through March

| Firm      | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-----------|------|------|------|--------------|--------------|
| ADM       | ***  | ***  | ***  | ***          | ***          |
| CJ Bio    | ***  | ***  | ***  | ***          | ***          |
| Evonik    | ***  | ***  | ***  | ***          | ***          |
| All firms | ***  | ***  | ***  | ***          | ***          |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period****COGS**

Value in 1,000 dollars; interim is January through March

| Firm      | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-----------|------|------|------|--------------|--------------|
| ADM       | ***  | ***  | ***  | ***          | ***          |
| CJ Bio    | ***  | ***  | ***  | ***          | ***          |
| Evonik    | ***  | ***  | ***  | ***          | ***          |
| All firms | ***  | ***  | ***  | ***          | ***          |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period****Gross profit or (loss)**

Value in 1,000 dollars; interim is January through March

| Firm      | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-----------|------|------|------|--------------|--------------|
| ADM       | ***  | ***  | ***  | ***          | ***          |
| CJ Bio    | ***  | ***  | ***  | ***          | ***          |
| Evonik    | ***  | ***  | ***  | ***          | ***          |
| All firms | ***  | ***  | ***  | ***          | ***          |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**SG&A expenses**

Value in 1,000 dollars; interim is January through March

| Firm      | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-----------|------|------|------|--------------|--------------|
| ADM       | ***  | ***  | ***  | ***          | ***          |
| CJ Bio    | ***  | ***  | ***  | ***          | ***          |
| Evonik    | ***  | ***  | ***  | ***          | ***          |
| All firms | ***  | ***  | ***  | ***          | ***          |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**Operating income or (loss)**

Value in 1,000 dollars; interim is January through March

| Firm      | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-----------|------|------|------|--------------|--------------|
| ADM       | ***  | ***  | ***  | ***          | ***          |
| CJ Bio    | ***  | ***  | ***  | ***          | ***          |
| Evonik    | ***  | ***  | ***  | ***          | ***          |
| All firms | ***  | ***  | ***  | ***          | ***          |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**Net income or (loss)**

Value in 1,000 dollars; interim is January through March

| Firm      | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-----------|------|------|------|--------------|--------------|
| ADM       | ***  | ***  | ***  | ***          | ***          |
| CJ Bio    | ***  | ***  | ***  | ***          | ***          |
| Evonik    | ***  | ***  | ***  | ***          | ***          |
| All firms | ***  | ***  | ***  | ***          | ***          |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**COGS to net sales ratio**

Ratio in percent; interim is January through March

| Firm      | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-----------|------|------|------|--------------|--------------|
| ADM       | ***  | ***  | ***  | ***          | ***          |
| CJ Bio    | ***  | ***  | ***  | ***          | ***          |
| Evonik    | ***  | ***  | ***  | ***          | ***          |
| All firms | ***  | ***  | ***  | ***          | ***          |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**Gross profit or (loss) to net sales ratio**

Ratio in percent; interim is January through March

| Firm      | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-----------|------|------|------|--------------|--------------|
| ADM       | ***  | ***  | ***  | ***          | ***          |
| CJ Bio    | ***  | ***  | ***  | ***          | ***          |
| Evonik    | ***  | ***  | ***  | ***          | ***          |
| All firms | ***  | ***  | ***  | ***          | ***          |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**SG&A expenses to net sales ratio**

Ratio in percent; interim is January through March

| Firm      | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-----------|------|------|------|--------------|--------------|
| ADM       | ***  | ***  | ***  | ***          | ***          |
| CJ Bio    | ***  | ***  | ***  | ***          | ***          |
| Evonik    | ***  | ***  | ***  | ***          | ***          |
| All firms | ***  | ***  | ***  | ***          | ***          |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**Operating income or (loss) to net sales ratio**

Ratio in percent; interim is January through March

| Firm      | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-----------|------|------|------|--------------|--------------|
| ADM       | ***  | ***  | ***  | ***          | ***          |
| CJ Bio    | ***  | ***  | ***  | ***          | ***          |
| Evonik    | ***  | ***  | ***  | ***          | ***          |
| All firms | ***  | ***  | ***  | ***          | ***          |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**Net income or (loss) to net sales ratio**

Ratio in percent; interim is January through March

| Firm      | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-----------|------|------|------|--------------|--------------|
| ADM       | ***  | ***  | ***  | ***          | ***          |
| CJ Bio    | ***  | ***  | ***  | ***          | ***          |
| Evonik    | ***  | ***  | ***  | ***          | ***          |
| All firms | ***  | ***  | ***  | ***          | ***          |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**Unit net sales value**

Unit values in dollars per short ton HCL equivalent; interim is January through March

| <b>Firm</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>Interim 2024</b> | <b>Interim 2025</b> |
|-------------|-------------|-------------|-------------|---------------------|---------------------|
| ADM         | ***         | ***         | ***         | ***                 | ***                 |
| CJ Bio      | ***         | ***         | ***         | ***                 | ***                 |
| Evonik      | ***         | ***         | ***         | ***                 | ***                 |
| All firms   | ***         | ***         | ***         | ***                 | ***                 |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**Unit raw material costs**

Unit values in dollars per short ton HCL equivalent; interim is January through March

| <b>Firm</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>Interim 2024</b> | <b>Interim 2025</b> |
|-------------|-------------|-------------|-------------|---------------------|---------------------|
| ADM         | ***         | ***         | ***         | ***                 | ***                 |
| CJ Bio      | ***         | ***         | ***         | ***                 | ***                 |
| Evonik      | ***         | ***         | ***         | ***                 | ***                 |
| All firms   | ***         | ***         | ***         | ***                 | ***                 |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**Unit direct labor costs**

Unit values in dollars per short ton HCL equivalent; interim is January through March

| <b>Firm</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>Interim 2024</b> | <b>Interim 2025</b> |
|-------------|-------------|-------------|-------------|---------------------|---------------------|
| ADM         | ***         | ***         | ***         | ***                 | ***                 |
| CJ Bio      | ***         | ***         | ***         | ***                 | ***                 |
| Evonik      | ***         | ***         | ***         | ***                 | ***                 |
| All firms   | ***         | ***         | ***         | ***                 | ***                 |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**Unit other factory costs**

Unit values in dollars per short ton HCL equivalent; interim is January through March

| <b>Firm</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>Interim 2024</b> | <b>Interim 2025</b> |
|-------------|-------------|-------------|-------------|---------------------|---------------------|
| ADM         | ***         | ***         | ***         | ***                 | ***                 |
| CJ Bio      | ***         | ***         | ***         | ***                 | ***                 |
| Evonik      | ***         | ***         | ***         | ***                 | ***                 |
| All firms   | ***         | ***         | ***         | ***                 | ***                 |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**Unit COGS**

Unit values in dollars per short ton HCL equivalent; interim is January through March

| <b>Firm</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>Interim 2024</b> | <b>Interim 2025</b> |
|-------------|-------------|-------------|-------------|---------------------|---------------------|
| ADM         | ***         | ***         | ***         | ***                 | ***                 |
| CJ Bio      | ***         | ***         | ***         | ***                 | ***                 |
| Evonik      | ***         | ***         | ***         | ***                 | ***                 |
| All firms   | ***         | ***         | ***         | ***                 | ***                 |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**Unit gross profit or (loss)**

Unit values in dollars per short ton HCL equivalent; interim is January through March

| <b>Firm</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>Interim 2024</b> | <b>Interim 2025</b> |
|-------------|-------------|-------------|-------------|---------------------|---------------------|
| ADM         | ***         | ***         | ***         | ***                 | ***                 |
| CJ Bio      | ***         | ***         | ***         | ***                 | ***                 |
| Evonik      | ***         | ***         | ***         | ***                 | ***                 |
| All firms   | ***         | ***         | ***         | ***                 | ***                 |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**Unit SG&A expenses**

Unit values in dollars per short ton HCL equivalent; interim is January through March

| <b>Firm</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>Interim 2024</b> | <b>Interim 2025</b> |
|-------------|-------------|-------------|-------------|---------------------|---------------------|
| ADM         | ***         | ***         | ***         | ***                 | ***                 |
| CJ Bio      | ***         | ***         | ***         | ***                 | ***                 |
| Evonik      | ***         | ***         | ***         | ***                 | ***                 |
| All firms   | ***         | ***         | ***         | ***                 | ***                 |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**Unit operating income or (loss)**

Unit values in dollars per short ton HCL equivalent; interim is January through March

| <b>Firm</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>Interim 2024</b> | <b>Interim 2025</b> |
|-------------|-------------|-------------|-------------|---------------------|---------------------|
| ADM         | ***         | ***         | ***         | ***                 | ***                 |
| CJ Bio      | ***         | ***         | ***         | ***                 | ***                 |
| Evonik      | ***         | ***         | ***         | ***                 | ***                 |
| All firms   | ***         | ***         | ***         | ***                 | ***                 |

Table continued.

**Table 6.3 (Continued) Lysine: U.S. producers' sales, costs/expenses, and profitability, by firm and period**

**Unit net income or (loss)**

Unit values in dollars per short ton HCL equivalent; interim is January through March

| <b>Firm</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>Interim 2024</b> | <b>Interim 2025</b> |
|-------------|-------------|-------------|-------------|---------------------|---------------------|
| ADM         | ***         | ***         | ***         | ***                 | ***                 |
| CJ Bio      | ***         | ***         | ***         | ***                 | ***                 |
| Evonik      | ***         | ***         | ***         | ***                 | ***                 |
| All firms   | ***         | ***         | ***         | ***                 | ***                 |

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

Note: Shares represent the share of COGS.

## Net sales

As shown in table 6.1, the industry's total net sales quantity and value decreased consistently between 2022 and 2024 but were higher in January to March 2025 ("interim 2025") than in January to March 2024 ("interim 2024"). Net sales quantity and value decreased by \*\*\* percent and \*\*\* percent, respectively, between 2022 and 2024, but were \*\*\* percent higher in quantity and \*\*\* percent higher in value in interim 2025 than in interim 2024. All individual firms' net sales quantities consistently decreased from 2022 to 2024 but differed in the interim periods (\*\*\*).

The industry's total net sales AUVs decreased consistently from \$\*\*\* per short ton HCL equivalent in 2022 to \$\*\*\* per short ton HCL equivalent in 2024, and were lower in interim 2025, at \$\*\*\* per short ton equivalent, than in interim 2024, at \$\*\*\* per short ton equivalent. \*\*\*.

## Cost of goods sold and gross profit or loss

Table 6.1 shows that total raw material costs were the largest component of COGS from 2022 to 2024 and the interim periods, accounting for \*\*\* percent in 2022, \*\*\* percent in 2024, and \*\*\* percent in interim 2025. On a per-short ton HCL equivalent basis, raw material costs consistently decreased from \$\*\*\* in 2022 to \$\*\*\* in 2024 and were lower in interim 2025 at \$\*\*\* than interim 2024 at \$\*\*\*. As a ratio to total net sales, raw material costs increased from \*\*\* percent in 2022 to \*\*\* percent in 2024 and were lower in interim 2025, at \*\*\* percent, than in interim 2024, at \*\*\* percent.

Dextrose accounted for the majority of total raw material costs (\*\*\*) and the highest unit value, followed by fermentation media (\*\*\* percent of cost). Additional raw material items included lower cost items sugar beets and hydrochloric acid. Table 6.4 presents raw material costs in 2024, by type.<sup>6</sup>

During the process of making lysine, a biomass is produced that is included in the end product (co-product).<sup>7</sup> There are a small amount of byproducts of liquid fertilizer or ammonium sulfate sold to the fertilizer market.<sup>8</sup> Over the POI, the byproducts represented less than \*\*\* percent of sales values.<sup>9</sup>

**Table 6.4 Lysine: U.S. producers' raw material costs in 2024, by major material inputs**

Value in dollars; unit value in dollars per short ton HCL equivalent; share of value in percent

| Item                    | Value | Unit value | Share of value |
|-------------------------|-------|------------|----------------|
| Dextrose                | ***   | ***        | ***            |
| Fermentation media      | ***   | ***        | ***            |
| Sugar beets             | ***   | ***        | ***            |
| Hydrochloric acid (HCL) | ***   | ***        | ***            |
| Other material inputs   | ***   | ***        | ***            |
| All raw materials       | ***   | ***        | 100.0          |

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

The second largest component of COGS, other factory costs, ranged from \*\*\* to \*\*\* percent of total COGS from 2022 to interim 2025. On a per-short ton HCL equivalent basis, other factory costs increased consistently from \$\*\*\* in 2022 to \$\*\*\* in 2024 and were lower in interim 2025 at \$\*\*\* than in interim 2024 at \$\*\*\*. As a ratio to total net sales, other factory costs increased consistently from \*\*\* percent in 2022 to \*\*\* percent in 2024 but were lower in interim 2025 at \*\*\* percent than in interim 2024 at \*\*\* percent. Per unit other factory costs varied among U.S. producers \*\*\*.<sup>10</sup>

<sup>6</sup> \*\*\*. \*\*\* U.S. producer questionnaire responses, section 3.6.

<sup>7</sup> Conference transcript, pp. 13, 57, 73 (Benson). \*\*\*. \*\*\* U.S. producer questionnaire response, section 3.8.

<sup>8</sup> Conference transcript, p. 58 (Choi); pp. 58, 74 (Benson). \*\*\*. U.S. producer questionnaire responses, section 3.8.

<sup>9</sup> Table 6.1.

<sup>10</sup> \*\*\*. \*\*\* U.S. producer questionnaire response, section 3.10.

The smallest component of COGS, direct labor, ranged from \*\*\* to \*\*\* percent of total COGS from 2022 to interim 2025. As a ratio to total net sales, direct labor increased consistently from \*\*\* percent in 2022 to \*\*\* percent in 2024 but was lower in interim 2025, at \*\*\* percent, than in interim 2024, at \*\*\* percent. On a per-short ton HCL equivalent basis, direct labor costs increased consistently from \$\*\*\* in 2022 to \$\*\*\* in 2024 but were lower in interim 2025 at \$\*\*\* than in interim 2024 at \$\*\*\*. \*\*\*.

Total COGS decreased consistently from \$\*\*\* in 2022 to \$\*\*\* in 2024 and were lower in interim 2025 at \$\*\*\* than in interim 2024 at \$\*\*\*. \*\*\*. \*\*\* reported \*\*\* total COGS values in interim 2025 than in interim 2024, while \*\*\* reported \*\*\* values. Total unit COGS consistently decreased from \$\*\*\* in 2022 to \$\*\*\* in 2024 and were lower in interim 2025 at \$\*\*\* than in interim 2024 at \$\*\*\*. As a ratio to net sales, COGS irregularly increased from \*\*\* percent in 2022 to \*\*\* percent in 2024 but was lower in interim 2025, at \*\*\* percent, than in interim 2024, at \*\*\* percent.

As shown in table 6.1, the industry reported an irregular decline in gross profit from 2022 to 2024, \*\*\*. Gross profit was higher in interim 2025, at \*\*\*, than in interim 2024, at \*\*\*. As a ratio to net sales, gross profit irregularly decreased from \*\*\* percent in 2022 to \*\*\* percent in 2024 but was higher in interim 2025, at \*\*\* percent, than in interim 2024, at \*\*\* percent.

\*\*\* gross profit to sales ratios decreased from 2022 to 2024, with \*\*\* decreasing \*\*\* and \*\*\* decreasing \*\*\*; \*\*\* firms had higher ratios in interim 2025 than in interim 2024. \*\*\* ratio \*\*\* increased from 2022 to 2024 and was higher in interim 2025 than in interim 2024.

## SG&A expenses and operating income or loss

Table 6.1 shows that U.S. producers' SG&A expenses decreased consistently from \$\*\*\* in 2022 to \$\*\*\* in 2024 and were lower in interim 2025 at \$\*\*\* than in 2024, at \$\*\*\*. In absolute values, SG&A expenses for \*\*\* decreased overall from 2022 to 2024 (with \*\*\* decreasing \*\*\* and \*\*\* decreasing \*\*\*), and both reported lower SG&A expenses in interim 2025 than in interim 2024. \*\*\* SG&A expenses \*\*\* increased from 2022 to 2024 and were higher in interim 2025 than in interim 2024. The industry's SG&A expense ratio (SG&A expenses as a share of sales) increased from \*\*\* percent in 2022 to \*\*\* percent in 2023 then stayed the same in 2024 but were lower in interim 2025 at \*\*\* percent than in interim 2024 at \*\*\* percent.

Operating income declined consistently from \$\*\*\* in 2022 to \*\*\* in 2024 but were higher in interim 2025 at \$\*\*\* than in interim 2024 at \$\*\*\*. The operating income of \*\*\* decreased from 2022 to 2024, with \*\*\* decreasing and \*\*\* decreasing. All three firms reported higher operating income in 2025 than in interim 2024. U.S. producers' operating margin (operating income as a ratio to net sales) decreased consistently from \*\*\* percent in 2022 to \*\*\* percent in 2024 but were higher in interim 2025, at \*\*\* percent, than in interim 2024 at \*\*\* percent.

## All other expenses and net income or loss

Classified below the total market operating income level are interest expense, other expense, and other income, which are listed in table 6.1. Interest expenses decreased consistently from \$\*\*\* in 2022 to \$\*\*\* in 2024 and were lower in interim 2025 (\$\*\*\* ) than in interim 2024 (\$\*\*\*). All other expenses decreased irregularly from \$\*\*\* in 2022 to \$\*\*\* in 2024 but were higher in interim 2025 (\$\*\*\* ) than in interim 2024 (\$\*\*\*). All other income increased consistently from \$\*\*\* in 2022 to \$\*\*\* in 2024 and was higher in interim 2025 (\$\*\*\* ) than in interim 2024 (\$\*\*\*).

Net income declined overall from \$\*\*\* in 2022 to \*\*\* in 2024 but was higher in interim 2025 (\$\*\*\* ) than in interim 2024 (\$\*\*\*).<sup>11</sup>

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<sup>11</sup> A variance analysis is not presented due to \*\*\*.

## Capital expenditures and research and development expenses

Table 6.5 presents capital expenditures, by firm, and table 6.7 presents R&D expenses, by firm. Tables 6.6 and 6.8 present the firms' narrative explanations of the nature, focus, and significance of their capital expenditures and R&D expenses, respectively. For capital expenditures, there was an increase of \*\*\* percent from 2022 to 2024 and was \*\*\* percent higher in interim 2025 than in interim 2024. For R&D expenses, there was \*\*\* of \*\*\* percent from 2022 to 2024, but R&D expenses were higher by \*\*\* percent in interim 2025 than in interim 2024.

**Table 6.5 Lysine: U.S. producers' capital expenditures, by firm and period**

Value in 1,000 dollars

| Firm      | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-----------|------|------|------|--------------|--------------|
| ADM       | ***  | ***  | ***  | ***          | ***          |
| CJ Bio    | ***  | ***  | ***  | ***          | ***          |
| Evonik    | ***  | ***  | ***  | ***          | ***          |
| All firms | ***  | ***  | ***  | ***          | ***          |

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

**Table 6.6 Lysine: U.S. producers' narrative descriptions of their capital expenditures, by firm**

| Firm   | Narrative on capital expenditures |
|--------|-----------------------------------|
| ADM    | ***                               |
| CJ Bio | ***                               |
| Evonik | ***                               |

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

**Table 6.7 Lysine: U.S. producers' R&D expenses, by firm and period**

Value in 1,000 dollars

| <b>Firm</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>Interim 2024</b> | <b>Interim 2025</b> |
|-------------|-------------|-------------|-------------|---------------------|---------------------|
| ADM         | ***         | ***         | ***         | ***                 | ***                 |
| CJ Bio      | ***         | ***         | ***         | ***                 | ***                 |
| Evonik      | ***         | ***         | ***         | ***                 | ***                 |
| All firms   | ***         | ***         | ***         | ***                 | ***                 |

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

**Table 6.8 Lysine: U.S. producers' narrative descriptions of their R&D expenses, by firm**

| <b>Firm</b> | <b>Narrative on R&amp;D expenses</b> |
|-------------|--------------------------------------|
| ADM         | ***                                  |
| CJ Bio      | ***                                  |
| Evonik      | ***                                  |

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

## Assets and return on assets

Table 6.10 presents data on the U.S. producers' total assets while table 6.11 presents their operating ROA.<sup>12</sup> Table 6.12 presents U.S. producers' narrative responses explaining their major asset categories and any significant changes in asset levels over time. For assets in the industry, there was \*\*\* of \*\*\* percent from 2022 to 2024.

**Table 6.9 Lysine: U.S. producers' assets, by firm and period**

Value in 1,000 dollars

| Firm      | 2022 | 2023 | 2024 |
|-----------|------|------|------|
| ADM       | ***  | ***  | ***  |
| CJ Bio    | ***  | ***  | ***  |
| Evonik    | ***  | ***  | ***  |
| All firms | ***  | ***  | ***  |

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

**Table 6.10 Lysine: U.S. producers' ROA, by firm and period**

Ratio in percent

| Firm      | 2022 | 2023 | 2024 |
|-----------|------|------|------|
| ADM       | ***  | ***  | ***  |
| CJ Bio    | ***  | ***  | ***  |
| Evonik    | ***  | ***  | ***  |
| All firms | ***  | ***  | ***  |

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

**Table 6.11 Lysine: U.S. producers' narrative descriptions of their total net assets, by firm**

| Firm   | Narrative on assets |
|--------|---------------------|
| ADM    | ***                 |
| CJ Bio | ***                 |
| Evonik | ***                 |

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

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<sup>12</sup> The operating ROA is calculated as operating income divided by total assets. With respect to a firm's overall operations, the total asset value reflects an aggregation of a number of assets which are generally not product specific. Thus, high-level allocations are generally required in order to report a total asset value on a product-specific basis.

## Capital and investment

The Commission requested U.S. producers of lysine to describe any actual or potential negative effects of imports of lysine from China on their firms' growth, investment, ability to raise capital, development and production efforts, or the scale of capital investments. Table 6.12 presents the number of firms reporting an impact in each category and table 6.13 provides the U.S. producers' narrative responses.

**Table 6.12 Lysine: Count of firms indicating actual and anticipated negative effects of imports from subject sources on investment, growth, and development since January 1, 2022, by effect**

Number of firms reporting

| Effect                                                         | Category   | Count |
|----------------------------------------------------------------|------------|-------|
| Cancellation, postponement, or rejection of expansion projects | Investment | ***   |
| Denial or rejection of investment proposal                     | Investment | ***   |
| Reduction in the size of capital investments                   | Investment | ***   |
| Return on specific investments negatively impacted             | Investment | ***   |
| Other investment effects                                       | Investment | ***   |
| Any negative effects on investment                             | Investment | ***   |
| Rejection of bank loans                                        | Growth     | ***   |
| Lowering of credit rating                                      | Growth     | ***   |
| Problem related to the issue of stocks or bonds                | Growth     | ***   |
| Ability to service debt                                        | Growth     | ***   |
| Other growth and development effects                           | Growth     | ***   |
| Any negative effects on growth and development                 | Growth     | ***   |
| Anticipated negative effects of imports                        | Future     | ***   |

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

**Table 6.13 Lysine: U.S. producers' narratives relating to actual and anticipated negative effects of imports on investment, growth, and development, since January 1, 2022, by firm and effect**

| Item                                                           | Firm name and narrative on impact of imports |
|----------------------------------------------------------------|----------------------------------------------|
| Cancellation, postponement, or rejection of expansion projects | ***                                          |
| Denial or rejection of investment proposal                     | ***                                          |
| Reduction in the size of capital investments                   | ***                                          |
| Reduction in the size of capital investments                   | ***                                          |
| Return on specific investments negatively impacted             | ***                                          |
| Return on specific investments negatively impacted             | ***                                          |
| Other negative effects on investments                          | ***                                          |
| Other effects on growth and development                        | ***                                          |
| Other effects on growth and development                        | ***                                          |
| Other effects on growth and development                        | ***                                          |
| Anticipated effects of imports                                 | ***                                          |
| Anticipated effects of imports                                 | ***                                          |
| Anticipated effects of imports                                 | ***                                          |



## Part 7: 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<sup>1</sup>--

- (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,

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<sup>1</sup> 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).<sup>2</sup>

Information on the nature of the “alleged” subsidies was presented earlier in this report; information on the volume and pricing of imports of the subject merchandise is presented in Parts 4 and 5; and information on the effects of imports of the subject merchandise on U.S. producers’ existing development and production efforts is presented in Part 6. 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

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<sup>2</sup> 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 122 firms believed to produce and/or export lysine from China.<sup>3</sup> Usable responses to the Commission's questionnaire were received from five firms: Polifar Group Limited ("Polifar"), Hebei Huayang Biological Technology Co., Ltd. ("Hebei Huayang"), Shanghai Kyowa Amino Acid Co., Ltd. ("Kyowa"), Frich International Trade Co., Ltd. ("Frich"), and Qiqihar Longjiang Fufeng Biotechnologies Co., Ltd. ("Qiqihar"). These firms' exports to the United States accounted for approximately \*\*\* percent of U.S. imports of lysine from China in 2024. According to estimates requested of the responding producers in China, the production of lysine in China reported in questionnaires accounts for approximately \*\*\* percent of overall production of lysine in China. Tables 7.1 and 7.2 present information on the lysine operations of the responding producers and exporters in China.<sup>4</sup>

**Table 7.1 Lysine: Number of responding producers/exporters, approximate share of production, and exports to the United States as a share of U.S. imports, by subject foreign industry, 2024**

| Country | Number of responding firms | Approximate share of production (percent) | Exports as a share of U.S. imports from subject country (percent) |
|---------|----------------------------|-------------------------------------------|-------------------------------------------------------------------|
| China   | 5                          | ***                                       | ***                                                               |

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

<sup>3</sup> These firms were identified through a review of information submitted in the petition and presented in third-party sources.

<sup>4</sup> The following firms provided certified responses to the Commission that they are not foreign producers of lysine: \*\*\*, \*\*\*, \*\*\*, \*\*\*, \*\*\*, \*\*\*.

Table 7.2 presents information on the lysine operations of the responding producers in China (or the responding subject producers, by firm), and table 7.3 presents summary information on responding resellers of subject lysine products. Two firms reported being resellers of subject lysine during 2024.

**Table 7.2 Lysine: Summary data for subject producers in China, by firm, 2024**

| <b>Producer</b>             | <b>Production<br/>(short tons<br/>HCl<br/>equivalent)</b> | <b>Share of<br/>reported<br/>production<br/>(percent)</b> | <b>Exports to<br/>the United<br/>States<br/>(short tons<br/>HCl<br/>equivalent)</b> | <b>Share of<br/>reported<br/>exports to<br/>the United<br/>States<br/>(percent)</b> | <b>Total<br/>shipments<br/>(short tons<br/>HCl<br/>equivalent)</b> | <b>Share of<br/>firm's total<br/>shipments<br/>exported to<br/>the United<br/>States<br/>(percent)</b> |
|-----------------------------|-----------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Huayang                     | ***                                                       | ***                                                       | ***                                                                                 | ***                                                                                 | ***                                                                | ***                                                                                                    |
| Kyowa                       | ***                                                       | ***                                                       | ***                                                                                 | ***                                                                                 | ***                                                                | ***                                                                                                    |
| Longjiang<br>Fufeng         | ***                                                       | ***                                                       | ***                                                                                 | ***                                                                                 | ***                                                                | ***                                                                                                    |
| All individual<br>producers | ***                                                       | 100.0                                                     | ***                                                                                 | 100.0                                                                               | ***                                                                | ***                                                                                                    |

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

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

**Table 7.3 Lysine: Summary data for resellers in China, by firm, 2024**

| <b>Reseller</b>          | <b>Resales exported to the<br/>United States (short tons HCl<br/>equivalent)</b> | <b>Share of resales exported to the<br/>United States (percent)</b> |
|--------------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------------|
| Polifar                  | ***                                                                              | ***                                                                 |
| Frich                    | ***                                                                              | ***                                                                 |
| All individual resellers | ***                                                                              | ***                                                                 |

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

Table 7.4 presents events in the industry in China since January 1, 2022.

**Table 7.4 Lysine: Important industry events in China since January 1, 2022**

| Item           | Event                                                                                                                                                                                                                                                                                                                                                             |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Plant openings | Meihua Group: On December 9, 2021, Jilin Meihua opened a 300,000-ton lysine production facility in China with the capacity to process 2,200 tons of starch per day.                                                                                                                                                                                               |
| Expansions     | BBCA Biochemical: On an unspecified date, BBCA Biochemical announced that it had completed a project in the province of Anhui, China, allowing the company to produce 150,000 tons of lysine annually.                                                                                                                                                            |
| Expansions     | Meihua Group: In the December 2024 amino acid monthly report by VegaPharma, Meihua Group is said to halt the production of 100,000 tons of 98% lysine, switching to other amino acids. Meihua Group is also constructing a 600,000-ton production line for 80% lysine in Baicheng, China.                                                                         |
| Other          | Star Lake Bioscience Co. Inc.: On March 22, 2022, Star Lake Bioscience announced that it was going to purchase 99.22 percent equity of Eppen Biotech.                                                                                                                                                                                                             |
| Other          | Daesang Corp: On March 8, 2024, Daesang Corp. (South Korea) announced that it was retracting its bid to acquire a controlling stake in Heilongjiang Chengfu Food Group Co. (a Chinese lysine manufacturer).                                                                                                                                                       |
| Other          | Fufeng Group Ltd.: In the 2024 annual report, Fufeng Group reported that their lysine production reached full production capacity (380,000 tons).                                                                                                                                                                                                                 |
| Other          | CJ CheilJedang Corp. (CJ Group): On April 30, 2025, CJ CheilJedang pivoted from its planned sale of its bio business is for \$4.3 billion, which includes the division that produces amino acids such as lysine. Instead, the company has changed its focus to expansion due to the importance of its US production base in Iowa and the current tariff policies. |

Source: BBCA Biochemical, "Who We Are," accessed May 8, 2025, <https://en.bbcabiotech.com/who-we-are>; Aquafeed, "Meihua Opens 300,000-Ton Lysine Facility," December 9, 2021, <https://www.aquafeed.com/products/suppliers-news/meihua-opens-300000-ton-lysine-facility/>; The Korea Economic Daily, "CJ CheilJedang Scraps \$3.5 Bn Green Bio Sale, Shifts Gears to Expansion," April 30, 2025, <https://www.kedglobal.com/mergers-acquisitions/newsView/ked202504300005>; The Korea Economic Daily, "South Korea's Daesang Retracts Bid to Acquire China's Chengfu Food," March 8, 2024, <https://www.kedglobal.com/mergers-acquisitions/newsView/ked202403080016>; Petition, vol. 1, exh. Gen—11, p. 11; Fufeng Group, "Fufeng Group Limited Annual Report 2024," May 6, 2025, <http://www.fufeng-group.com/uploadfile/2025/0507/20250507084858255.pdf>; Vega Pharma, "Amino Acid Monthly Report of Dec 2024 Vega Group," January 24, 2025, <https://www.vegapharma.com/uploads/20250124/Amino%20Acid%20monthly%20report%20of%20Dec%202024%20Vega%20group.pdf>.

Changes in operations

Producers in China were asked to report any change in the character of their operations or organization relating to the production of lysine since 2024. One of five producers indicated in its questionnaire that it had experienced such changes. Table 7.5 presents the changes identified by this producer.

Table 7.5 Lysine: Reported changes in operations by subject producers in China since January 1, 2022, by reported change category and firm

| Item       | Firm name and accompanying narrative response regarding changes in operations |
|------------|-------------------------------------------------------------------------------|
| Expansions | ***                                                                           |

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

Installed and practical overall capacity

Table 7.6 presents data on producers’ installed capacity, practical overall capacity, and practical Lysine capacity and production on the same equipment in China. Between 2022 and 2024, installed overall, installed practical, and practical lysine capacity increased. Following a similar trend, practical overall, installed overall, and practical lysine production all increased from 2022 to 2024.<sup>5</sup> Installed overall capacity increased by \*\*\* percent from 2022 to 2024 and was \*\*\* percent lower in interim 2024 than in interim 2025. Installed overall production increased by \*\*\* percent from 2022 to 2024 and was \*\*\* percent lower in interim 2024 than in interim 2025. Installed overall utilization increased by \*\*\* percentage points from 2022 to 2024 and was \*\*\* percentage points lower in interim 2024 than in interim 2025.

Practical overall capacity increased by \*\*\* percent from 2022 to 2024 and was \*\*\* percent lower in interim 2024 than in interim 2025. Practical overall production increased by \*\*\* percent from 2022 to 2024 and was \*\*\* percent lower in interim 2024 than in interim 2025. Practical overall utilization increased by \*\*\* percentage points from 2022 to 2024 and was \*\*\* percentage points lower in interim 2024 than in interim 2025. Practical lysine capacity increased by \*\*\* percent from 2022 to 2024 and was \*\*\* percent lower in interim 2024 than in interim 2025. Practical lysine production increased by \*\*\* percent from 2022 to 2024 and was \*\*\* percent lower in interim 2024 than in interim 2025. Practical lysine utilization increased by \*\*\* percentage points from 2022 to 2024 and was \*\*\* percentage points lower in interim 2024 than in interim 2025.

<sup>5</sup> Investigator adjusted \*\*\* interims 2024 and 2025 capacity to reconcile practical lysine to not be greater than practical overall capacity.

**Table 7.6 Lysine: Subject producers' in China installed and practical capacity and production on the same equipment as subject production, by period**

Capacity and production in short tons HCl equivalent; utilization in percent; interim is January through March

| Item              | Measure     | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-------------------|-------------|------|------|------|--------------|--------------|
| Installed overall | Capacity    | ***  | ***  | ***  | ***          | ***          |
| Installed overall | Production  | ***  | ***  | ***  | ***          | ***          |
| Installed overall | Utilization | ***  | ***  | ***  | ***          | ***          |
| Practical overall | Capacity    | ***  | ***  | ***  | ***          | ***          |
| Practical overall | Production  | ***  | ***  | ***  | ***          | ***          |
| Practical overall | Utilization | ***  | ***  | ***  | ***          | ***          |
| Practical Lysine  | Capacity    | ***  | ***  | ***  | ***          | ***          |
| Practical Lysine  | Production  | ***  | ***  | ***  | ***          | ***          |
| Practical Lysine  | Utilization | ***  | ***  | ***  | ***          | ***          |

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

## Constraints on capacity

Table 7.7 presents the producers' reported capacity constraint in China since January 1, 2024.

**Table 7.7 Producers' in China reported constraints to practical overall capacity since January 1, 2022, by firm and practical constraint**

| Type of constraint     | Firm name, and narrative response on constraints to practical overall capacity |
|------------------------|--------------------------------------------------------------------------------|
| Production bottlenecks | ***                                                                            |

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

## Operations on lysine

Table 7.8 presents information on the lysine operations of the responding producers and exporters in China. Between 2022 and 2024, subject producers' combined capacity and production of lysine increased by \*\*\* and \*\*\* percent, respectively. Subject producers' capacity utilization increased by \*\*\* percentage points from 2022 to 2024. Exports to the United States, including exports of resales, decreased from 2022 to 2024 by \*\*\* percent while exports to all other markets increased by \*\*\* percent. From 2022 to 2024, end-of-period inventories decreased by \*\*\* percent while home market shipments increased by \*\*\* percent.

Projections for subject producers in 2025 and 2026 include projected increases in capacity and production. Exports to the United States, including exports of resales, are projected to increase in 2025, and then decrease in 2026 while exports to all other markets are projected to increase in 2025 and 2026.

**Table 7.8 Lysine: Data on industry in China, by period**

Quantity in short tons HCl equivalent; Interim period is January through March

| Item                                           | 2022 | 2023 | 2024 | Interim<br>2024 | Interim<br>2025 | Projection<br>2025 | Projection<br>2026 |
|------------------------------------------------|------|------|------|-----------------|-----------------|--------------------|--------------------|
| Capacity                                       | ***  | ***  | ***  | ***             | ***             | ***                | ***                |
| Production                                     | ***  | ***  | ***  | ***             | ***             | ***                | ***                |
| End-of-period<br>inventories                   | ***  | ***  | ***  | ***             | ***             | ***                | ***                |
| Internal<br>consumption                        | ***  | ***  | ***  | ***             | ***             | ***                | ***                |
| Commercial<br>home market<br>shipments         | ***  | ***  | ***  | ***             | ***             | ***                | ***                |
| Home market<br>shipments                       | ***  | ***  | ***  | ***             | ***             | ***                | ***                |
| Exports to<br>the United<br>States             | ***  | ***  | ***  | ***             | ***             | ***                | ***                |
| Exports to all<br>other<br>markets             | ***  | ***  | ***  | ***             | ***             | ***                | ***                |
| Export<br>shipments                            | ***  | ***  | ***  | ***             | ***             | ***                | ***                |
| Total<br>shipments                             | ***  | ***  | ***  | ***             | ***             | ***                | ***                |
| Resales<br>exported to<br>the United<br>States | ***  | ***  | ***  | ***             | ***             | ***                | ***                |
| Total exports<br>to the United<br>States       | ***  | ***  | ***  | ***             | ***             | ***                | ***                |

Table continued

**Table 7.8 (continued) Lysine: Data on subject producers in China, by item and period**

Shares and ratios in percent; interim is January through March

| Item                                                            | 2022  | 2023  | 2024  | Interim<br>2024 | Interim<br>2025 | Projection<br>2025 | Projection<br>2026 |
|-----------------------------------------------------------------|-------|-------|-------|-----------------|-----------------|--------------------|--------------------|
| Capacity utilization ratio                                      | ***   | ***   | ***   | ***             | ***             | ***                | ***                |
| Inventory ratio to production                                   | ***   | ***   | ***   | ***             | ***             | ***                | ***                |
| Inventory ratio to total shipments                              | ***   | ***   | ***   | ***             | ***             | ***                | ***                |
| Internal consumption share                                      | ***   | ***   | ***   | ***             | ***             | ***                | ***                |
| Commercial home market shipments share                          | ***   | ***   | ***   | ***             | ***             | ***                | ***                |
| Home market shipments share                                     | ***   | ***   | ***   | ***             | ***             | ***                | ***                |
| Exports to the United States share                              | ***   | ***   | ***   | ***             | ***             | ***                | ***                |
| Exports to all other markets share                              | ***   | ***   | ***   | ***             | ***             | ***                | ***                |
| Export shipments share                                          | ***   | ***   | ***   | ***             | ***             | ***                | ***                |
| Total shipments share                                           | 100.0 | 100.0 | 100.0 | 100.0           | 100.0           | 100.0              | 100.0              |
| Share of total exports to the United States by producers        | ***   | ***   | ***   | ***             | ***             | ***                | ***                |
| Share of total exports to the United States by resellers        | ***   | ***   | ***   | ***             | ***             | ***                | ***                |
| Adjusted share of total shipments exported to the United States | ***   | ***   | ***   | ***             | ***             | ***                | ***                |

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

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

## Alternative products

As shown in table 7.9, responding firms in China produced other products on the same equipment and machinery used to produce lysine. Lysine accounted for the majority of subject producers' overall production from 2022 to 2024. One responding producer/exporter (\*\*\*) reported producing other products such as \*\*\* from 2022 to 2024.

**Table 7.9 Lysine: Producers' overall production on the same equipment as in-scope production in China, by period**

Quantity in short tons HCl equivalent; share and ratios in percent; interim is January through March

| Product type   | Measure  | 2022  | 2023  | 2024  | Interim 2024 | Interim 2025 |
|----------------|----------|-------|-------|-------|--------------|--------------|
| Lysine         | Quantity | ***   | ***   | ***   | ***          | ***          |
| Other products | Quantity | ***   | ***   | ***   | ***          | ***          |
| All products   | Quantity | ***   | ***   | ***   | ***          | ***          |
| Lysine         | Share    | ***   | ***   | ***   | ***          | ***          |
| Other products | Share    | ***   | ***   | ***   | ***          | ***          |
| All products   | Share    | 100.0 | 100.0 | 100.0 | 100.0        | 100.0        |

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

## Exports

According to the Global Trade Atlas ("GTA"), the leading export markets for lysine and its esters (salts thereof) from China by quantity and value are the Netherlands, Thailand, and the United States (table 7.10). During 2024, the Netherlands accounted for 12.7 percent of total exports from China, followed by Thailand, accounting for 6.5 percent, and the United States, accounting for 6.4 percent.

**Table 7.10 Lysine and its esters (salts thereof): Exports from China, by destination market and period**

Quantity in short tons; value in 1,000 dollars

| Destination market            | Measure  | 2022      | 2023      | 2024      |
|-------------------------------|----------|-----------|-----------|-----------|
| United States                 | Quantity | 39,611    | 71,015    | 79,219    |
| Netherlands                   | Quantity | 120,010   | 110,137   | 156,611   |
| Thailand                      | Quantity | 41,239    | 63,065    | 79,683    |
| India                         | Quantity | 49,618    | 70,733    | 64,857    |
| Vietnam                       | Quantity | 52,300    | 46,721    | 54,512    |
| Canada                        | Quantity | 37,581    | 44,998    | 54,459    |
| Brazil                        | Quantity | 31,227    | 53,105    | 38,860    |
| Japan                         | Quantity | 25,580    | 32,651    | 34,933    |
| Poland                        | Quantity | 26,640    | 26,656    | 33,372    |
| All other destination markets | Quantity | 598,236   | 540,479   | 637,246   |
| Non-U.S. destination markets  | Quantity | 982,431   | 988,545   | 1,154,533 |
| All destination markets       | Quantity | 1,022,042 | 1,059,560 | 1,233,752 |
| United States                 | Value    | 57,640    | 78,093    | 91,159    |
| Netherlands                   | Value    | 158,300   | 114,994   | 179,418   |
| Thailand                      | Value    | 53,225    | 66,922    | 91,852    |
| India                         | Value    | 60,169    | 74,235    | 74,783    |
| Vietnam                       | Value    | 60,628    | 48,070    | 62,311    |
| Canada                        | Value    | 52,967    | 48,305    | 62,538    |
| Brazil                        | Value    | 39,772    | 55,733    | 43,966    |
| Japan                         | Value    | 35,111    | 36,152    | 41,475    |
| Poland                        | Value    | 35,375    | 27,799    | 37,742    |
| All other destination markets | Value    | 781,012   | 580,175   | 737,383   |
| Non-U.S. destination markets  | Value    | 1,276,560 | 1,052,385 | 1,331,468 |
| All destination markets       | Value    | 1,334,200 | 1,130,479 | 1,422,627 |

Table continued.

**Table 7.10 (continued) Lysine and its esters (salts thereof): Exports from China, by destination market and period**

Unit values in dollars per short tons HCl equivalent; share in percent

| Destination market            | Measure           | 2022  | 2023  | 2024  |
|-------------------------------|-------------------|-------|-------|-------|
| United States                 | Unit value        | 1,455 | 1,100 | 1,151 |
| Netherlands                   | Unit value        | 1,319 | 1,044 | 1,146 |
| Thailand                      | Unit value        | 1,291 | 1,061 | 1,153 |
| India                         | Unit value        | 1,213 | 1,050 | 1,153 |
| Vietnam                       | Unit value        | 1,159 | 1,029 | 1,143 |
| Canada                        | Unit value        | 1,409 | 1,074 | 1,148 |
| Brazil                        | Unit value        | 1,274 | 1,049 | 1,131 |
| Japan                         | Unit value        | 1,373 | 1,107 | 1,187 |
| Poland                        | Unit value        | 1,328 | 1,043 | 1,131 |
| All other destination markets | Unit value        | 1,306 | 1,073 | 1,157 |
| Non-U.S. destination markets  | Unit value        | 1,299 | 1,065 | 1,153 |
| All destination markets       | Unit value        | 1,305 | 1,067 | 1,153 |
| United States                 | Share of quantity | 3.9   | 6.7   | 6.4   |
| Netherlands                   | Share of quantity | 11.7  | 10.4  | 12.7  |
| Thailand                      | Share of quantity | 4.0   | 6.0   | 6.5   |
| India                         | Share of quantity | 4.9   | 6.7   | 5.3   |
| Vietnam                       | Share of quantity | 5.1   | 4.4   | 4.4   |
| Canada                        | Share of quantity | 3.7   | 4.2   | 4.4   |
| Brazil                        | Share of quantity | 3.1   | 5.0   | 3.1   |
| Japan                         | Share of quantity | 2.5   | 3.1   | 2.8   |
| Poland                        | Share of quantity | 2.6   | 2.5   | 2.7   |
| All other destination markets | Share of quantity | 58.5  | 51.0  | 51.7  |
| Non-U.S. destination markets  | Share of quantity | 96.1  | 93.3  | 93.6  |
| All destination markets       | Share of quantity | 100.0 | 100.0 | 100.0 |

Source: Official exports statistics under HS subheading 2922.41 as reported by China Customs in the Global Trade Atlas Suite database, accessed June 4, 2025.

## U.S. inventories of imported merchandise

Table 7.11 presents data on U.S. importers' reported inventories of lysine. U.S. importers' inventories of imports from China decreased by \*\*\* percent from 2022 to 2024 but was \*\*\* percent higher in interim 2025 than in interim 2024. There were no inventories of imports from nonsubject sources during the period for which data were collected.

**Table 7.11 Lysine: U.S. importers' inventories and their ratio to select items, by source and period**

Quantity in short tons HCl equivalent; ratio in percent; interim period is January through March

| Measure                             | Source             | 2022 | 2023 | 2024 | Interim 2024 | Interim 2025 |
|-------------------------------------|--------------------|------|------|------|--------------|--------------|
| Inventories quantity                | China              | ***  | ***  | ***  | ***          | ***          |
| Ratio to imports                    | China              | ***  | ***  | ***  | ***          | ***          |
| Ratio to U.S. shipments of imports  | China              | ***  | ***  | ***  | ***          | ***          |
| Ratio to total shipments of imports | China              | ***  | ***  | ***  | ***          | ***          |
| Inventories quantity                | Nonsubject sources | ***  | ***  | ***  | ***          | ***          |
| Ratio to imports                    | Nonsubject sources | ***  | ***  | ***  | ***          | ***          |
| Ratio to U.S. shipments of imports  | Nonsubject sources | ***  | ***  | ***  | ***          | ***          |
| Ratio to total shipments of imports | Nonsubject sources | ***  | ***  | ***  | ***          | ***          |
| Inventories quantity                | All import sources | ***  | ***  | ***  | ***          | ***          |
| Ratio to imports                    | All import sources | ***  | ***  | ***  | ***          | ***          |
| Ratio to U.S. shipments of imports  | All import sources | ***  | ***  | ***  | ***          | ***          |
| Ratio to total shipments of imports | All import sources | ***  | ***  | ***  | ***          | ***          |

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

Note: Zeroes, null values, and undefined calculations are suppressed and shown as "—".

## U.S. importers' outstanding orders

The Commission requested importers to indicate whether they imported or arranged for the importation of Lysine from China after March 31, 2025. Their reported data are presented in table 7.12. China accounted for the majority of U.S. importers' arranged imports of lysine. The leading individual sources of U.S. importers' total arranged imports from China were \*\*\*, which accounted for \*\*\* percent of the arranged imports of lysine from China.

**Table 7.12 Lysine: U.S. importers' arranged imports, by source and period**

Quantity in short tons HCl equivalent

| Source             | Q2 2025 | Q3 2025 | Q4 2025 | Q1 2026 | Total |
|--------------------|---------|---------|---------|---------|-------|
| China              | ***     | ***     | ***     | ***     | ***   |
| Nonsubject sources | ***     | ***     | ***     | ***     | ***   |
| All import sources | ***     | ***     | ***     | ***     | ***   |

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

Note: Zeroes, null values, and undefined calculations are suppressed and shown as “—”.

## Third-country trade actions

Lysine exported from China is the subject of three trade actions in third-country markets: Indonesia, the EU, and Brazil. On April 20, 2022, Indonesia imposed the following definitive antidumping duty rates:<sup>6</sup>

**Table 7.13 Lysine: Definitive antidumping duties instituted in Indonesia**

| Company                                                                                                                                              | Definitive antidumping duty rate (percent) |
|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| —Changchun Dahe Bio Technology Development Co., Ltd.<br>—Changchun Dacheng Industrial Group Huicheng International Co., Ltd.                         | 24.61                                      |
| Inner Mongolia Eppen Biotech Co., Ltd.                                                                                                               | 14.65                                      |
| Meihua Group:<br>—Meihua Group International Trading (Hong Kong) Ltd.<br>—Xinjiang Meihua Amino Acid Co., Ltd.<br>—Jilin Meihua Amino Acid Co., Ltd. | 6.02                                       |
| All other companies                                                                                                                                  | 33.20                                      |

Source: Komite Anti Dumping Indonesia, “Lysine, Esters and Salts for Animal Feed (Feed Grade),” April 20, 2022, <https://kadi.kemendag.go.id/pengenaan-bmad/lisin>.

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<sup>6</sup> Komite Anti Dumping Indonesia, “Lysine, Esters and Salts for Animal Feed (Feed Grade),” April 20, 2022, <https://kadi.kemendag.go.id/pengenaan-bmad/lisin>; Conference transcript, p. 32 (Rosenthal).

On May 23, 2024, the EU initiated an antidumping investigation on lysine from China; on January 13, 2025, the EU instituted the following provisional antidumping duty rates:<sup>7</sup>

**Table 7.14 Lysine: Provisional antidumping duties instituted in the European Union**

| Company                                                                                                                                                                         | Provisional antidumping duty rate (percent) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Meihua Group:<br>—Jilin Meihua Amino Acid Co., Ltd.<br>—Xinjiang Meihua Amino Acid Co., Ltd.<br>—Meihua Holdings Group., Ltd.<br>—Meihua International Trading (Hong Kong) Ltd. | 84.8                                        |
| Eppen Group:<br>—Heilongjiang Eppen Biotech Co., Ltd.<br>—Eppen Asia Pte. Ltd.                                                                                                  | 58.3                                        |
| Other cooperating companies listed in the Annex                                                                                                                                 | 71.6                                        |
| All other imports originating in the People's Republic of China                                                                                                                 | 84.8                                        |

Source: European Union, "Consolidated Text: Commission Implementing Regulation (EU) 2025/74 of 13 January 2025 Imposing a Provisional Anti-dumping Duty on Imports of Lysine Originating in the People's Republic of China," January 13, 2025. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02025R0074-20250114>.

On December 27, 2024, Brazil initiated an antidumping investigation on lysine (feed grade) from China; the preliminary ruling is scheduled for July or August 2025.<sup>8</sup>

<sup>7</sup> The EU investigation is scheduled to conclude in July 2025. European Union, "Consolidated text: Commission Implementing Regulation (EU) 2025/74 of 13 January 2025 imposing a provisional anti-dumping duty on imports of lysine originating in the People's Republic of China," January 13, 2025. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02025R0074-20250114>; Conference transcript, p. 32 (Rosenthal).

<sup>8</sup> EFFAMALL, "Brazil's Anti-Dumping Investigation into China-Made Lysine Increases Market Complications," January 8, 2025, <https://www.legisweb.com.br/legislacao/?id=471155>; Conference transcript, p. 23 (Nel), p. 32 (Rosenthal).

## Information on nonsubject countries

From 2022 to 2024, China was overwhelmingly the largest exporter of lysine and its esters (salts thereof) with exports by quantity increasing 20.7 percent during this time and accounting for 73.0 percent of global exports in 2024. In contrast, the quantity of U.S. exports of lysine and its esters (salts thereof) decreased 52.8 percent from 2022 to 2024. From 2022 to 2024, the United States' share of global exports from decreased from 8.5 percent to 4.2 percent.

**Table 7.15 Lysine and its esters, salts thereof: Global exports by exporter and period**

Quantity in short tons HCl equivalent; value in 1,000 dollars

| Exporting country       | Measure  | 2022      | 2023      | 2024      |
|-------------------------|----------|-----------|-----------|-----------|
| United States           | Quantity | 148,702   | 96,965    | 70,230    |
| China                   | Quantity | 1,022,042 | 1,059,560 | 1,233,752 |
| Netherlands             | Quantity | 135,452   | 116,367   | 126,561   |
| South Korea             | Quantity | 116,937   | 55,672    | 83,639    |
| Brazil                  | Quantity | 43,386    | 31,212    | 31,789    |
| Lithuania               | Quantity | 19,642    | 25,604    | 24,116    |
| Indonesia               | Quantity | 128,749   | 67,499    | 24,050    |
| France                  | Quantity | 42,846    | 9,053     | 18,781    |
| Germany                 | Quantity | 29,807    | 16,090    | 18,272    |
| Belgium                 | Quantity | 20,112    | 10,828    | 9,460     |
| Poland                  | Quantity | 11,572    | 10,234    | 7,992     |
| Canada                  | Quantity | 1,879     | 2,947     | 7,669     |
| All other exporters     | Quantity | 26,366    | 23,586    | 33,933    |
| All reporting exporters | Quantity | 1,747,492 | 1,525,617 | 1,690,244 |
| United States           | Value    | 159,804   | 97,033    | 87,202    |
| China                   | Value    | 1,334,200 | 1,130,479 | 1,422,627 |
| Netherlands             | Value    | 220,515   | 153,451   | 170,491   |
| South Korea             | Value    | 158,243   | 57,614    | 86,088    |
| Brazil                  | Value    | 61,666    | 30,554    | 32,641    |
| Lithuania               | Value    | 36,951    | 34,337    | 35,756    |
| Indonesia               | Value    | 141,117   | 61,174    | 24,910    |
| France                  | Value    | 73,624    | 29,704    | 40,939    |
| Germany                 | Value    | 62,463    | 32,794    | 35,816    |
| Belgium                 | Value    | 38,195    | 16,414    | 14,603    |
| Poland                  | Value    | 24,828    | 14,502    | 12,403    |
| Canada                  | Value    | 3,061     | 4,380     | 9,872     |
| All other exporters     | Value    | 63,036    | 42,722    | 61,624    |
| All reporting exporters | Value    | 2,377,704 | 1,705,157 | 2,034,971 |

Table continued.

**Table 7.15 Lysine and its esters, salts thereof (continued): Global exports by exporter and period**

Unit value in dollar per short ton HCl equivalent; share in percent

| Exporting country       | Measure           | 2022  | 2023  | 2024  |
|-------------------------|-------------------|-------|-------|-------|
| United States           | Unit value        | 1,075 | 1,001 | 1,242 |
| China                   | Unit value        | 1,305 | 1,067 | 1,153 |
| Netherlands             | Unit value        | 1,628 | 1,319 | 1,347 |
| South Korea             | Unit value        | 1,353 | 1,035 | 1,029 |
| Brazil                  | Unit value        | 1,421 | 979   | 1,027 |
| Lithuania               | Unit value        | 1,881 | 1,341 | 1,483 |
| Indonesia               | Unit value        | 1,096 | 906   | 1,036 |
| France                  | Unit value        | 1,718 | 3,281 | 2,180 |
| Germany                 | Unit value        | 2,096 | 2,038 | 1,960 |
| Belgium                 | Unit value        | 1,899 | 1,516 | 1,544 |
| Poland                  | Unit value        | 2,146 | 1,417 | 1,552 |
| Canada                  | Unit value        | 1,629 | 1,486 | 1,287 |
| All other exporters     | Unit value        | 2,391 | 1,811 | 1,816 |
| All reporting exporters | Unit value        | 1,361 | 1,118 | 1,204 |
| United States           | Share of quantity | 8.5   | 6.4   | 4.2   |
| China                   | Share of quantity | 58.5  | 69.5  | 73.0  |
| Netherlands             | Share of quantity | 7.8   | 7.6   | 7.5   |
| South Korea             | Share of quantity | 6.7   | 3.6   | 4.9   |
| Brazil                  | Share of quantity | 2.5   | 2.0   | 1.9   |
| Lithuania               | Share of quantity | 1.1   | 1.7   | 1.4   |
| Indonesia               | Share of quantity | 7.4   | 4.4   | 1.4   |
| France                  | Share of quantity | 2.5   | 0.6   | 1.1   |
| Germany                 | Share of quantity | 1.7   | 1.1   | 1.1   |
| Belgium                 | Share of quantity | 1.2   | 0.7   | 0.6   |
| Poland                  | Share of quantity | 0.7   | 0.7   | 0.5   |
| Canada                  | Share of quantity | 0.1   | 0.2   | 0.5   |
| All other exporters     | Share of quantity | 1.5   | 1.5   | 2.0   |
| All reporting exporters | Share of quantity | 100.0 | 100.0 | 100.0 |

Source: Official exports statistics under HS subheading 2922.41 as reported by various national statistical authorities in the Global Trade Atlas Suite database, accessed June 2, 2025.

Note: United States is shown at the top followed by China, the country under investigation, and all remaining top exporting countries are in descending order of 2024 data.



**APPENDIX A**

**FEDERAL REGISTER NOTICES**



The Commission makes available notices relevant to its investigations and reviews on its website, [www.usitc.gov](http://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                                                                                                                                                    |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 90 FR 23565,<br>June 3, 2025  | L-lysine from China; Institution of Antidumping and Countervailing Duty Investigations; Scheduling of Preliminary Phase Investigations | <a href="https://www.govinfo.gov/content/pkg/FR-2025-06-03/pdf/2025-10047.pdf">https://www.govinfo.gov/content/pkg/FR-2025-06-03/pdf/2025-10047.pdf</a> |
| 90 FR 26782,<br>June 24, 2025 | L-Lysine from the People's Republic of China: Initiation of Less-Than-Fair-Value Investigation                                         | <a href="https://www.govinfo.gov/content/pkg/FR-2025-06-24/pdf/2025-11536.pdf">https://www.govinfo.gov/content/pkg/FR-2025-06-24/pdf/2025-11536.pdf</a> |
| 90 FR 26799,<br>June 24, 2025 | L-Lysine from the People's Republic of China: Initiation of Countervailing Duty Investigation                                          | <a href="https://www.govinfo.gov/content/pkg/FR-2025-06-24/pdf/2025-11537.pdf">https://www.govinfo.gov/content/pkg/FR-2025-06-24/pdf/2025-11537.pdf</a> |



## **APPENDIX B**

### **LIST OF STAFF CONFERENCE WITNESSES**

## CALENDAR OF PUBLIC PRELIMINARY CONFERENCE

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

**Subject:** L-lysine from China

**Inv. Nos.:** 701-TA-767 and 731-TA-1750 (Preliminary)

**Date and Time:** June 18, 2025 – 9:30 a.m.

Sessions were held in connection with these preliminary phase investigations in the Main Hearing Room (Room 101), 500 E Street, SW., Washington, D.C.

### **OPENING REMARKS:**

In Support of Imposition (**Paul C. Rosenthal**, Kelley Drye & Warren LLP)

### **In Support of the Imposition of the Antidumping and Countervailing Duty Orders:**

Kelley Drye & Warren LLP  
Washington, DC  
on behalf of

Lysine Fair Trade Coalition

**Simon Walley**, President - Animal Nutrition North America, Archer Daniels  
Midland Company

**Zack Benson**, Commercial Director, Amino Acids, Archer Daniels Midland  
Company

**Lance Haeryong Choi**, Vice President, CJ Bio America, Inc.

**Joseph Lucas**, Vice President and General Manager of Animal Nutrition  
CJ Bio America, Inc.

**Tertio Nel**, Regional Business and Marketing Director North America  
Evonik Corporation

**Gina E. Beck**, Senior Trade Analyst, Georgetown Economic Services, LLC

**In Support of the Imposition of the  
Antidumping and Countervailing Duty Orders (continued):**

**Nereus A. Joubert**, Trade Analyst, Georgetown Economic Services, LLC

|                          |   |              |
|--------------------------|---|--------------|
| <b>Paul C. Rosenthal</b> | ) |              |
| <b>John M. Herrmann</b>  | ) |              |
|                          | ) | – OF COUNSEL |
| <b>Melissa M. Brewer</b> | ) |              |
| <b>Matthew T. Martin</b> | ) |              |

**CLOSING REMARKS:**

In Support of Imposition (**Paul C. Rosenthal and John M. Herrmann**, Kelley Drye & Warren LLP)



**APPENDIX C**

**SUMMARY DATA**



Table C.1

**Lysine: Summary data concerning the U.S. market, by item and period**

Quantity=short tons HCL equivalent; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per short ton HCL equivalent; Period changes=percent--exceptions noted; Interim period is January through March

| Item                                                     | Reported data |      |      |         |      | Period change comparisons |         |         |         |
|----------------------------------------------------------|---------------|------|------|---------|------|---------------------------|---------|---------|---------|
|                                                          | Calendar year |      | 2024 | Interim | 2025 | Calendar year             |         | Interim | 2024–25 |
|                                                          | 2022          | 2023 |      |         |      | 2022–24                   | 2022–23 |         |         |
| U.S. consumption quantity:                               |               |      |      |         |      |                           |         |         |         |
| Amount.....                                              | ***           | ***  | ***  | ***     | ***  | ▲***                      | ▲***    | ▲***    | ▲***    |
| Producers' share (fn1).....                              | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ▼***    |
| Importers' share (fn1):                                  |               |      |      |         |      |                           |         |         |         |
| China.....                                               | ***           | ***  | ***  | ***     | ***  | ▲***                      | ▲***    | ▲***    | ▲***    |
| Nonsubject sources.....                                  | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ▼***    |
| All import sources.....                                  | ***           | ***  | ***  | ***     | ***  | ▲***                      | ▲***    | ▲***    | ▲***    |
| U.S. consumption value:                                  |               |      |      |         |      |                           |         |         |         |
| Amount.....                                              | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ▲***    |
| Producers' share (fn1).....                              | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ▼***    |
| Importers' share (fn1):                                  |               |      |      |         |      |                           |         |         |         |
| China.....                                               | ***           | ***  | ***  | ***     | ***  | ▲***                      | ▲***    | ▲***    | ▲***    |
| Nonsubject sources.....                                  | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ▼***    |
| All import sources.....                                  | ***           | ***  | ***  | ***     | ***  | ▲***                      | ▲***    | ▲***    | ▲***    |
| U.S. imports from:                                       |               |      |      |         |      |                           |         |         |         |
| China:                                                   |               |      |      |         |      |                           |         |         |         |
| Quantity.....                                            | ***           | ***  | ***  | ***     | ***  | ▲***                      | ▲***    | ▲***    | ▲***    |
| Value.....                                               | ***           | ***  | ***  | ***     | ***  | ▲***                      | ▲***    | ▲***    | ▲***    |
| Unit value.....                                          | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▲***    | ▲***    |
| Ending inventory quantity.....                           | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ▲***    |
| Nonsubject sources:                                      |               |      |      |         |      |                           |         |         |         |
| Quantity.....                                            | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ▼***    |
| Value.....                                               | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ▼***    |
| Unit value.....                                          | ***           | ***  | ***  | ***     | ***  | ▲***                      | ▼***    | ▲***    | ▼***    |
| Ending inventory quantity.....                           | ***           | ***  | ***  | ***     | ***  | ***                       | ***     | ***     | ***     |
| All import sources:                                      |               |      |      |         |      |                           |         |         |         |
| Quantity.....                                            | ***           | ***  | ***  | ***     | ***  | ▲***                      | ▲***    | ▲***    | ▲***    |
| Value.....                                               | ***           | ***  | ***  | ***     | ***  | ▲***                      | ▲***    | ▲***    | ▲***    |
| Unit value.....                                          | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▲***    | ▲***    |
| Ending inventory quantity.....                           | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ▲***    |
| U.S. producers':                                         |               |      |      |         |      |                           |         |         |         |
| Practical 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 (short tons HCL equivalent per 1,000 hours) | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▲***    | ▼***    |
| Unit labor costs.....                                    | ***           | ***  | ***  | ***     | ***  | ▲***                      | ▲***    | ▼***    | ▲***    |

Table continued.

Table C.1 Continued

**Lysine: Summary data concerning the U.S. market, by item and period**

Quantity=short tons HCL equivalent; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per short ton HCL equivalent; Period changes=percent--exceptions noted; Interim period is January through March

| Item                                        | Reported data |      |      |         |      | Period change comparisons |         |         |         |
|---------------------------------------------|---------------|------|------|---------|------|---------------------------|---------|---------|---------|
|                                             | Calendar year |      | 2024 | Interim |      | Calendar year             |         | 2023–24 | Interim |
|                                             | 2022          | 2023 |      | 2024    | 2025 | 2022–24                   | 2022–23 |         |         |
| U.S. producers': Continued                  |               |      |      |         |      |                           |         |         |         |
| Net sales:                                  |               |      |      |         |      |                           |         |         |         |
| Quantity.....                               | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ▲***    |
| Value.....                                  | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ▲***    |
| Unit value.....                             | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ▼***    |
| Cost of goods sold (COGS).....              | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ▼***    |
| Gross profit or (loss) (fn2).....           | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▲***    | ▲***    |
| SG&A expenses.....                          | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ▼***    |
| Operating income or (loss) (fn2).....       | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▲***    | ▲***    |
| Net income or (loss) (fn2).....             | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▲***    | ▲***    |
| Unit COGS.....                              | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ▼***    |
| Unit SG&A expenses.....                     | ***           | ***  | ***  | ***     | ***  | ▲***                      | ▲***    | ▼***    | ▼***    |
| Unit operating income or (loss) (fn2).....  | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▲***    | ▲***    |
| Unit net income or (loss) (fn2).....        | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▲***    | ▲***    |
| COGS/sales (fn1).....                       | ***           | ***  | ***  | ***     | ***  | ▲***                      | ▲***    | ▼***    | ▼***    |
| Operating income or (loss)/sales (fn1)..... | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▲***    | ▲***    |
| Net income or (loss)/sales (fn1).....       | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▲***    | ▲***    |
| Capital expenditures.....                   | ***           | ***  | ***  | ***     | ***  | ▲***                      | ▲***    | ▲***    | ▲***    |
| Research and development expenses.....      | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ▲***    |
| Total assets.....                           | ***           | ***  | ***  | ***     | ***  | ▼***                      | ▼***    | ▼***    | ***     |

Source: Compiled from data submitted in response to Commission questionnaires and compiled from official U.S. imports statistics of the U.S. Department of Commerce Census Bureau using HTS statistical reporting number 2922.41.0090, accessed January 24, 2025. Official U.S. import statistics were adjusted to: (1) remove out-of-scope imports under the primary HTS number using proprietary, Census-edited Customs records for firms that certified they do not import Lysine; (2) add in imports of Lysine entered in under other HTS numbers using responses to Commission questionnaires; (3) remove imports of out-of-scope products imported under the primary HTS numbers using responses to Commission questionnaires; (4) remove certain imports under the primary HTS number whose average unit value were anomalously high (>7,250 dollars per short ton), many of those entries were reported by importers whose firm names indicated that the merchandise was likely related to pharmaceutical or nutraceutical grade lysine. Imports are based on the imports for consumption data series. Value data reflect landed duty-paid values. 508-compliant tables for these data are contained in parts 3, 4, 6, and 7 of this report.

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

fn2.--Percent changes only calculated when both comparison values represent profits; The directional change in profitability provided when one or both comparison values represent a loss.

Note.--Shares and ratios shown as "0.0" percent represent non-zero values less than "0.05" percent (if positive) and greater than "(0.05)" percent (if negative). Zeroes, null values, and undefined calculations are suppressed and shown as "—". Period changes preceded by a "▲" represent an increase, while period changes preceded by a "▼" represent a decrease.

