Corrosion Inhibitors from China

Investigation Nos. 701-TA-638 and 731-TA-1473 (Final)

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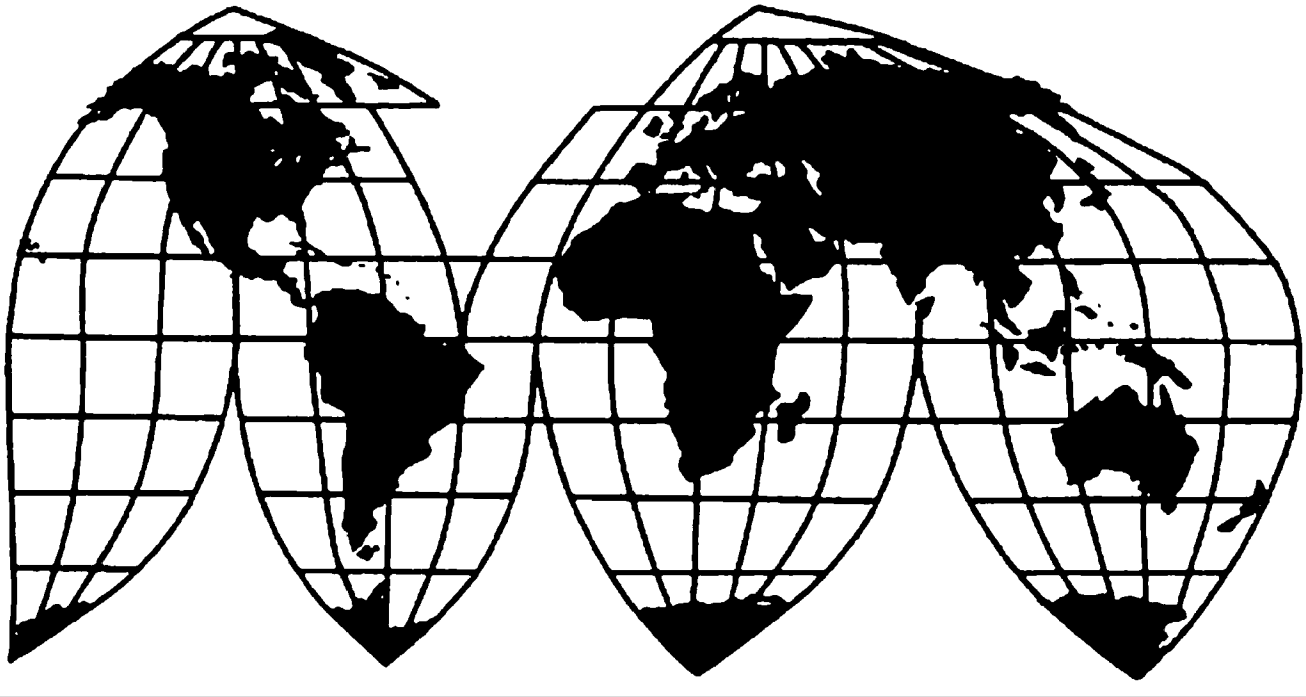
U.S. International Trade Commission



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Address all communications to
Secretary to the Commission
United States International Trade Commission
Washington, DC 20436

U.S. International Trade Commission

Washington, DC 20436
www.usitc.gov

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UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation Nos. 701-TA-638 and 731-TA-1473 (Final)

Corrosion Inhibitors from China

DETERMINATIONS

On the basis of the record[1] developed in the subject investigations, the United States International Trade Commission ("Commission") determines, pursuant to the Tariff Act of 1930 ("the Act"), that an industry in the United States is materially injured by reason of imports of corrosion inhibitors from China, provided for in subheading 2933.99.82 of the Harmonized Tariff Schedule of the United States, that have been found by the U.S. Department of Commerce ("Commerce") to be sold in the United States at less than fair value ("LTFV"), and to be subsidized by the government of China.

BACKGROUND

The Commission instituted these investigations effective February 5, 2020, following receipt of petitions filed with the Commission and Commerce by Wincom Incorporated, Blue Ash, Ohio. The final phase of the investigations was scheduled by the Commission following notification of a preliminary determinations by Commerce that imports of corrosion inhibitors from China were subsidized within the meaning of section 703(b) of the Act (19 U.S.C. 1671b(b)) and sold at LTFV within the meaning of 733(b) of the Act (19 U.S.C. 1673b(b)). Notice of the scheduling of the final phase of the Commission's investigations and of a public hearing to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the *Federal Register* on October 6, 2020 (85 FR 63139). In light of the restrictions on access to the Commission building due to the COVID–19 pandemic, the Commission conducted its hearing through written testimony and video conference on January 21, 2021. All persons who requested the opportunity were permitted to participate.

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

Views of the Commission

Based on the record in the final phase of these investigations, we determine that an industry in the United States is materially injured by reason of imports of corrosion inhibitors from China found by the U.S. Department of Commerce ("Commerce") to be sold in the United States at less than fair value and subsidized by the government of China.

I. Background

Wincom Inc. ("Wincom" or "Petitioner"), a U.S. producer of corrosion inhibitors, filed the petitions in these investigations on February 5, 2020.[1] Wincom appeared at the hearing and filed prehearing and posthearing briefs.[2] Wincom's toll producers, Texmark Chemical Inc. ("Texmark") and SantoLubes LLC ("SantoLubes"), appeared at the hearing in support of imposition of duties.[3]

Several entities opposing imposition of duties participated in these investigations. SUEZ WTS USA, Inc. ("Suez") and Nalco Company, LLC ("Nalco"), importers of corrosion inhibitors, appeared at the hearing and filed prehearing and posthearing briefs. Dober Chemical Corporation ("Dober"), a purchaser of corrosion inhibitors, and P.A.T. Products ("P.A.T."), an importer of corrosion inhibitors, also appeared at the hearing and filed posthearing non-party statements.[4] Old World Industries, an importer of corrosion inhibitors, filed a non-party posthearing statement, but did not appear at the hearing.

U.S. industry data are based on the questionnaire responses of three firms – Wincom and its tollers SantoLubes and Texmark – accounting for the vast majority of U.S. production of corrosion inhibitors in 2019.[5] Except as noted, U.S. import data are based on the questionnaire responses of 19 U.S. importers that are believed to have accounted for *** of all U.S. imports of corrosion inhibitors in 2019.[6] Foreign industry data and related information are based on the questionnaire response of Nantong Botao Chemical Co., Ltd. ("Nantong Botao"), which is

[1] Confidential Report, Memorandum INV-TT-021 (Feb. 11, 2021) ("CR") at I-1; Public Report ("PR") at I-1.

[2] In light of the restrictions on access to the Commission building due to the COVID-19 pandemic, the Commission conducted the hearing through written witness testimony and video conference, as set forth in procedures provided to the parties and announced on its website.

[3] The hearing testimony of toll producer SantoLubes was read by counsel, as the SantoLubes employee representative could not appear. *See* Hearing Transcript ("Tr."), EDIS Doc. 731477, at 28.

[4] Neither Dober nor P.A.T. filed an entry of appearance, and thus neither is a "party" as defined in 19 C.F.R. § 201.2.

[5] CR/PR at I-4-5. The Commission also received U.S. producer questionnaire responses from ***. *See* CR/PR at I-5 n.6. As discussed in Section III.A. below, we find that these *** entities do not engage in sufficient production-related activities to qualify as domestic producers.

[6] CR/PR at I-5.

estimated to have accounted for *** of all corrosion inhibitor production in China in 2019, and *** of all reported U.S. imports of corrosion inhibitors from China in 2019.[7]

II. Domestic Like Product

In determining whether 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."[8] Section 771(4)(A) of the Tariff Act of 1930, as amended ("the Tariff Act"), defines the relevant domestic industry as the "producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[9] 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."[10]

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.[11] 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."[12] The Commission then defines the domestic like product in light of the imported articles Commerce has identified.[13] 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

[7] CR/PR at I-5.

[8] 19 U.S.C. § 1677(4)(A).

[9] 19 U.S.C. § 1677(4)(A).

[10] 19 U.S.C. § 1677(10).

[11] 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).

[12] *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).

[13] *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.[14] No single factor is dispositive, and the Commission may consider other factors it deems relevant based on the facts of a particular investigation.[15] The Commission looks for clear dividing lines among possible like products and disregards minor variations.[16]

A. Scope Definition

In its final determinations, Commerce defined the imported merchandise within the scope of these investigations as:

The merchandise covered by this investigation is tolyltriazole and benzotriazole. This includes tolyltriazole and benzotriazole of all grades and forms, including their sodium salt forms. Tolyltriazole is technically known as Tolyltriazole IUPAC 4,5 methyl benzotriazole. It can also be identified as 4, 5 methyl benzotriazole, tolutriazole, TTA, and TTZ.

Benzotriazole is technically known as IUPAC 1,2,3-Benzotriazole. It can also be identified as 1,2,3-Benzotriazole, 1,2-Aminozophenylene, 1H-Benzotriazole, and BTA.

All forms of tolyltriazole and benzotriazole, including but not limited to flakes, granules, pellets, prills, needles, powder, or liquids, are included within the scope of this investigation.

The scope includes tolyltriazole/sodium tolyltriazole and benzotriazole/sodium benzotriazole that are combined or mixed with other products. For such combined products, only the tolyltriazole/sodium tolyltriazole and benzotriazole/sodium benzotriazole component is covered by the scope of this investigation. Tolyltriazole and sodium tolyltriazole that have been combined with other products is included within the scope, regardless of whether the combining occurs in third countries.

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[14] *See*, *e.g.*, *Cleo*, 501 F.3d at 1299; *NEC Corp. v. Dep't of Commerce*, 36 F. Supp. 2d 380, 383 (Ct. Int'l Trade 1998); *Nippon Steel Corp. v. United States*, 19 CIT 450, 455 (1995); *Torrington*, 747 F. Supp. at 749 n.3 ("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).

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

[16] *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.").

Tolyltriazole, sodium tolyltriazole, benzotriazole and sodium benzotriazole that is otherwise subject to this investigation is not excluded when commingled with tolyltriazole, sodium tolyltriazole, benzotriazole, or sodium benzotriazole from sources not subject to this investigation. Only the subject merchandise component of such commingled products is covered by the scope of this investigation.

A combination or mixture is excluded from this investigation if the total tolyltriazole or benzotriazole component of the combination or mixture (regardless of the source or sources) comprises less than 5 percent of the combination or mixture, on a dry weight basis.

Notwithstanding the foregoing language, a tolyltriazole or benzotriazole combination or mixture that is transformed through a chemical reaction into another product, such that, for example, the tolyltriazole or benzotriazole can no longer be separated from the other products through a distillation or other process is excluded from this investigation.

Tolyltriazole has the Chemical Abstracts Service ("CAS") registry number 299385-43-1. Tolyltriazole is classified under Harmonized Tariff Schedule of the United States ("HTSUS") subheading 2933.99.8220.

Sodium Tolyltriazole has the CAS registry number 64665-57-2 and is classified under HTSUS subheading 2933.99.8290.

Benzotriazole has the CAS registry number 95-14-7 and is classified under HTSUS subheading 2933.99.8210.

Sodium Benzotriazole has the CAS registry number 15217-42-2. Sodium Benzotriazole is classified under HTSUS subheading 2933.99.8290.[17]

[17] *Certain Corrosion Inhibitors from the People's Republic of China: Final Affirmative Determination of Sales at Less Than Fair Value*, 86 Fed. Reg. 7532, 7534 (Jan. 29, 2021)("AD Determination"); *Certain Corrosion Inhibitors from the People's Republic of China: Final Affirmative Countervailing Duty Determination*, 86 Fed. Reg. 7537, 7539 (Jan. 29, 2021) ("CVD Determination"). Staff determined that Commerce incorrectly transcribed one of the CAS registry numbers in its scope; the correct CAS number for tolyltriazole is 29385-43-1. *See* CR at I-9 n.11.

The scope encompasses solid tolyltriazole ("TTA"), sodium (*i.e.*, liquid) TTA, solid benzotriazole ("BTA"), and sodium (*i.e.*, liquid) BTA.[18] When solid or liquid BTA or TTA is combined or mixed with other products, only the BTA or TTA component is covered by the scope.[19] Collectively, solid and liquid BTA and TTA are referred to as corrosion inhibitors.[20]

Corrosion inhibitors are used to protect metals and elements – including copper, copper alloys, zinc, cobalt, silver, aluminum, and steel – from corrosion.[21] The two most important applications for corrosion inhibitors are in the water treatment and engine cooling industries, which together account for at least half of their total use.[22] Corrosion inhibitors are also used in metalworking fluids, aircraft and runway de-icers, lubricants, cleaners, direct treatment, circuit boards, inks and coatings, and in the treatment of metals and metal alloys.[23]

B. Domestic Like Product Analysis

In the preliminary determinations, the Commission defined a single domestic like product, coextensive with the scope.[24] It found that, notwithstanding some limitations on interchangeability and differences in price, the record did not indicate a clear dividing line between BTA and TTA in terms of physical properties, uses, production processes, and channels of distribution.[25] In particular, BTA and TTA overlapped in many end-use applications, the record indicated that BTA and TTA could be produced domestically using similar processes, and

[18] CR/PR at I-10. To produce BTA or TTA, first a crude version of these products, containing impurities, is created. *See* CR at I-14-16 (TTA) and I-19-20 (BTA). In the United States, this crude process is performed by Wincom's tollers, SantoLubes and Texmark. *See* CR/PR at I-16 and Figure I-2. These crude products are then purified for commercial sale. In the United States, this purification process is performed by Wincom, using a patented methodology. *See* CR/PR at I-16 and Figure I-2.

Certain domestic firms – *i.e.*, Dober, Nalco, and Suez – use purified BTA and TTA as their starting materials for downstream products. The activities of these firms include taking solid BTA or TTA and adding water with caustic to produce a liquid product, and taking solid BTA or TTA and mixing it with other chemicals. *See* CR/PR at I-14, I-14 n.36, and Figure I-3. This is discussed further in Section III.A. below.

[19] AD Determination at 7534 ("For such combined products, only the tolyltriazole/sodium tolyltriazole and benzotriazole/sodium benzotriazole component is covered by the scope of this investigation."); CVD Determination at 7539 (same).

[20] CR/PR at I-10.

[21] CR/PR at I-10.

[22] CR/PR at I-12.

[23] CR/PR at II-1.

[24] *Corrosion Inhibitors from China*, Inv. Nos. 701-TA-638 and 731-TA-1473 (Preliminary), USITC Pub. 5039 at 8 (Mar. 2020) ("Preliminary Determinations").

[25] Preliminary Determinations, USITC Pub. 5039 at 11.

most market participants indicated that BTA and TTA were sold using comparable channels of distribution.[26]

The record in the final phase of these investigations does not contain any information calling this analysis into question,[27] and the parties either agree with or do not contest the domestic like product definition from the preliminary phase.[28] Accordingly, for the same reasons set forth in the preliminary determinations, we define a single domestic like product, coextensive with the scope.

III. Domestic Industry

The domestic industry is defined as the domestic "producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[29] In defining the domestic industry, the Commission's general practice has been to include in the industry producers of all domestic production of the like product, whether toll-produced, captively consumed, or sold in the domestic merchant market.

These investigations raise two sets of domestic industry issues. The first concerns whether Dober, Nalco, and Suez engage in sufficient production-related activities to be considered members of the domestic industry. The second concerns whether appropriate circumstances exist to exclude any domestic producer from the domestic industry pursuant to the related parties provision.

[26] Preliminary Determinations, USITC Pub. 5039 at 9-10.

[27] *See generally* CR/PR at I-10-22.

[28] Petitioner argues that the Commission should define a single domestic like product, coextensive with the scope, as it did in the preliminary determinations. *See* Wincom's Prehearing Brief, EDIS Doc. 730625, at 3-6. Suez agrees with Petitioner. *See* Suez's Prehearing Brief, EDIS Doc. 730503, at 29. The other respondents do not address the issue.

[29] 19 U.S.C. § 1677(4)(A).

A. Sufficient Production-Related Activities

In deciding whether a firm qualifies as a domestic producer of the domestic like product, the Commission generally analyzes the overall nature of a firm's U.S. production-related activities, although production-related activity at minimum levels could be insufficient to constitute domestic production.[30]

In the preliminary determinations, the Commission found that Dober and Suez did not engage in sufficient production-related activities to qualify as domestic producers.[31] Because the information concerning the nature of each firm's U.S. production activities lacked uniformity, the Commission analyzed Dober and Suez's production-related activities individually.[32]

[30] The Commission generally considers six factors: (1) source and extent of the firm's capital investment; (2) technical expertise involved in U.S. production activities; (3) value added to the product in the United States; (4) employment levels; (5) quantity and type of parts sourced in the United States; and (6) any other costs and activities in the United States directly leading to production of the like product. No single factor is determinative and the Commission may consider any other factors it deems relevant in light of the specific facts of any investigation. *Crystalline Silicon Photovoltaic Cells and Modules from China*, Inv. Nos. 701-TA-481 and 731-TA-1190 (Final), USITC Pub. 4360 at 12-13 (Nov. 2012).

[31] Preliminary Determinations, USITC Pub. 5039 at 13-16. The Commission did not assess whether Nalco – which had not responded to the preliminary phase producer questionnaire – engaged in sufficient production-related activities to qualify as a domestic producer. It also provided an assessment for PMC Specialties Group ("PMC"), which no longer asserts that it engages in domestic production of corrosion inhibitors and did not respond to the final phase producer questionnaire. *Id*. at 14-15 (finding PMC was not a domestic producer); *see* CR/PR at E-3 n.2.

[32] The Commission observed that Dober's value added was low, that it did not appear to source its raw materials from the United States, and that, notwithstanding its reported employment and asset levels, its reported production was *** less than Petitioner's. *See* Confidential Preliminary Phase Views, EDIS Doc. 706649, at 22-23; Preliminary Determinations, USITC Pub. 5039 at 15-16.

Further, the Commission observed that Suez provided no information on its capital expenditures and total assets, and *** the Commission's instruction to report only those workers involved in the production of corrosion inhibitors. Moreover, the information that it did provide indicated that the technical expertise involved in its production activities appeared to be less than that involved in Wincom's production process, that its value added was modest, and that it did not appear to source its raw materials in the United States. *See* Confidential Preliminary Phase Views at 17-19; Preliminary Determinations, USITC Pub. 5039, at 13-14.

1. Arguments of the Parties

Petitioner. Petitioner argues that Dober, Nalco, and Suez perform minimal processing of ***, and thus do not engage in sufficient domestic production-related activities to qualify as domestic producers.[33]

Petitioner contends that *** does not source the corrosion inhibitors it uses in its processing activities from the United States, but rather from subject producers in China.[34] Petitioner further argues that the firm's processing activities add only a small amount of value to these subject imports,[35] that it produces a much smaller volume of corrosion inhibitors in the United States than Wincom,[36] and that it has failed to substantiate its claim that its U.S. production process is complex and sophisticated.[37]

Petitioner contends that *** sourced no corrosion inhibitors for its processing activities from the United States, but rather relied on subject imports.[38] It characterizes *** process for producing liquid TTA and BTA, which comprise at least half of the firm's sales, as simply adding caustic and water to these subject imports, which entails only minimal costs and adds only minimal value.[39]

Petitioner contends that *** sourced no corrosion inhibitors for its processing activities from the United States, but rather relied on imports,[40] and that the firm's corrosion inhibitor processing activities are limited to the blending of these imports.[41]

Respondents. Dober argues that its corrosion inhibitor production-related activities suffice to qualify it as a domestic producer.[42] It contends it has made capital investments in its facilities for over 30 years, including over the January 2017-September 2020 period of investigation ("POI").[43] Dober asserts that its U.S. production activities require significant technical expertise.[44] It indicates generally that its manufacture of its mixed products such as

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[33] Wincom's Prehearing Brief at 7 n.23; Exhibit 1 to Wincom's Posthearing Brief, EDIS Doc. 732271, at 12-23.

[34] Exhibit 1 to Wincom's Posthearing Brief at 13.

[35] Exhibit 1 to Wincom's Posthearing Brief at 13-14; Exhibit 13 to Wincom's Posthearing Brief.

[36] Exhibit 1 to Wincom's Posthearing Brief at 14.

[37] Exhibit 1 to Wincom's Posthearing Brief at 14.

[38] Exhibit 1 to Wincom's Posthearing Brief at 18.

[39] Exhibit 1 to Wincom's Posthearing Brief at 18-19.

[40] Exhibit 1 to Wincom's Posthearing Brief at 21.

[41] Exhibit 1 to Wincom's Posthearing Brief at 21.

[42] Dober's Posthearing Statement, EDIS Doc. 732320, at 8-11. Dober indicates that its corrosion inhibitor operations comprise: 1) processing solid TTA imports into liquid TTA by reacting the solid TTA with sodium hydroxide (*i.e.*, caustic); and 2) producing "mixed products" in the form of coolant additives and tablets by combining BTA or TTA with other chemicals. *See* Dober's Posthearing Statement at 2-8.

[43] Dober's Posthearing Statement at 8.

[44] Dober's Posthearing Statement at 9.

additives and tablets requires "manufacturing, technical, and formulation expertise."[45] Dober contends that it employs *** workers dedicated to the production of its mixed products.[46] It asserts that, over the POI, it sourced chemical purchases from U.S. companies.[47]

Nalco argues that its corrosion inhibitor production-related activities suffice to qualify it as a domestic producer.[48] It indicates that its capital investments include ***.[49] Nalco indicates that there is appreciable technical expertise involved in its U.S. production activities.[50] It asserts that its production process adds significant value to its products, and that it employs a large number of production related workers.[51] Nalco contends that because there is no domestic production of the solid BTA and TTA it processes, its foreign sourcing of inputs should not weigh against finding that it is a domestic producer.[52] Finally, Nalco contends that its research and development ("R&D") efforts are extensive.[53]

Suez argues that its production-related activities suffice to qualify it as a domestic producer.[54] It asserts that it has invested approximately $*** in its corrosion inhibitor business, including both R&D and machinery.[55] Suez contends that its U.S. production of corrosion inhibitor blends involves significant technical expertise.[56] It further argues that its corrosion inhibitor business employs numerous workers, sources certain of its material inputs and machinery in the United States, and adds significant value to the products it manufactures.[57]

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[45] Dober's Posthearing Statement at 9-10.

[46] Dober's Posthearing Statement at 11.

[47] Dober's Posthearing Statement at 11

[48] Nalco's Prehearing Brief, EDIS Doc. 730503, at 1-5. Nalco indicates that its corrosion inhibitor operations comprise: 1) processing solid BTA and TTA imports into liquid BTA and TTA; and 2) combining TTA and/or BTA into blends with other products. *See id*. at 1; Nalco's producer questionnaire response, EDIS Doc. 733656, at V-10.

[49] Nalco's Prehearing Brief at 4.

[50] Nalco's Prehearing Brief at 4.

[51] Nalco's Prehearing Brief at 4.

[52] Nalco's Prehearing Brief at 5.

[53] Nalco's Prehearing Brief at 2.

[54] Suez's Posthearing Brief, EDIS Doc. 732310, at 2-4. Suez indicates that its corrosion inhibitor operations comprise: 1) processing solid TTA imports into liquid TTA by reacting the solid TTA with caustic and water; and 2) producing blends that contain TTA and other products (or otherwise reacting TTA with other products, resulting in an out-scope-product). *See id*. at 2; Exhibit 1 to Suez's Posthearing Brief at I-4.

[55] Suez's Posthearing Brief at 3.

[56] Suez's Posthearing Brief at 3.

[57] Suez's Posthearing Brief at 3-4.

2. Sufficient Production-Related Activities Analysis

We discuss below whether Dober, Nalco, and Suez engage in sufficient production-related activities to qualify as domestic producers. Although each of these firms responded to the final phase producer questionnaire, the data *** submitted contained internal discrepancies that the firm failed to resolve meaningfully.[58] Consequently, these data were not included in the Commission's report,[59] and are likewise not considered in our analysis below.[60]

Dober, Nalco, and Suez each engage in two kinds of corrosion inhibitor operations: 1) further processing solid BTA or solid TTA by adding caustic and water to produce liquid BTA or liquid TTA; and 2) mixing or blending BTA or TTA with other products.[61] Only the former constitutes an activity pertaining to production of the domestic like product, as only the former results in a product (*i.e.*, liquid BTA or TTA) that constitutes a corrosion inhibitor as defined by the scope.[62] Conversely, the latter operation results in products – mixes or blends – in which the nature of the in-scope product does not change.[63]

Both *** data reflect blending activities, and are not specific to their BTA and TTA processing operations.[64] Thus, while the record does not indicate that these firms (in contrast to ***) failed to cooperate with Commission information requests, much of the empirical data that they did submit are overstated, and do not provide accurate measures of these firms'

[58] CR/PR at E-3 n.1. *See* EDIS Doc. 733453 (staff's December 16, 2020 request seeking revision of data). Moreover, we note that *** has acknowledged that 90 percent of its corrosion inhibitor purchases are used in the production of the out-of-scope product Halogen Resistant Azole ("HRA"). *See* Exhibit I to Suez's Posthearing Brief at I-4; *see also* CR/PR at I-21 n.76. This further indicates the data the firm submitted are largely not responsive to the Commission's questionnaire instructions.

[59] CR/PR at E-3 n.1. *** did not contest the exclusion of its data in either the Prehearing or Final report.

[60] *See generally* 19 U.S.C. § 1677e(a).

[61] CR/PR at I-14 and Figure I-3; Dober's Posthearing Statement at 2-8; Nalco's Prehearing Brief at 1; Nalco's producer questionnaire response at V-10; Suez's Posthearing Brief at 2; Exhibit 1 to Suez's Posthearing Brief at I-4.

[62] AD Determination at 7534 ("All forms of tolyltriazole and benzotriazole, including but not limited to … liquids, are included within the scope of this investigation."); CVD Determination at 7539 (same).

[63] As discussed in Section III.A. above, the scope only includes the BTA or TTA *components* of such blends, and not the blends themselves. *See* AD Determination at 7534 ("For such combined products, only the tolyltriazole/sodium tolyltriazole and benzotriazole/sodium benzotriazole component is covered by the scope of this investigation."); CVD Determination at 7539 (same). Thus, mixing or blending BTA or TTA with other products does not constitute the production of corrosion inhibitors, as it does not result in production of a different in-scope product.

[64] CR/PR at E-21 n.7 and n.8, E-28 n.10, and Table E-5 n.1, n.2, n.3, and n.6.

relevant production-related activities. Nalco's data *** in this respect.[65] While we do not disregard these firms' empirical data, we have accorded them limited weight in our analysis below because of their deficiencies, and have accorded greater weight to other information we perceive to be more directly pertinent to our inquiry.[66]

Source and Extent of Capital Investment. Dober reported annual net assets of *** over the POI; Nalco reported annual net assets of *** over the POI.[67] Each firm's assets ***, and are therefore overstated.[68] Nevertheless, each firm's assets, despite being overstated, ***.[69]

Technical Expertise Involved. Adding caustic and water to a solid product to yield a liquid product does not require complex technical expertise, and is a process commonly known to corrosion inhibitor companies.[70] In contrast, Wincom's purification process is patented, and its tollers' crude production process requires specialized knowledge, major investments in equipment, proper zoning, and compliance with complex safety standards.[71]

[65] For example, Nalco reported *** production and related workers ("PRWs"), more than *** the number of PRWs reported by all other firms combined. *See* CR/PR at Table E-5.

[66] These sources include narrative information the firms provided on their capital investments, technical expertise, value added, employment, sourcing of parts, and other costs and activities, as well as other empirical data in the record.

[67] CR/PR at Table E-5.

[68] CR/PR at E-28 n.10 and Table E-5 n.1. Nalco states that its capital investments ***. *See* CR/PR at Table E-6. Suez similarly states that its capital investments ***. *See* Suez's producer questionnaire response, EDIS Doc. 733653, at V-1b.

[69] CR/PR at Table E-5. Wincom's tollers reported ***, and Wincom reported ***. *Id*.

[70] CR/PR at I-20. *See also* Suez's Posthearing Brief at III-32 (distinguishing production of TTA solutions, which it describes as blending TTA with caustic and water from production of out-of-scope products, which entail reaction and mixing); Tr. at 99 ("So how does {adding caustic and water to solid TTA imports from China} differ with what we do on the domestic side? You know, these batches are done very simply." (Milawski)).

[71] CR/PR at I-16.

Dober reported annual R&D expenses of *** over the POI; Nalco reported annual R&D expenses of $*** over the POI.[72] While each firm's reported R&D expenses were *** than either Wincom's or its tollers',[73] these figures appear largely to pertain to activities unrelated to production of the domestic like product.[74] On a 1-5 scale, Dober and Nalco rated the complexity and importance of their corrosion inhibitor operations as a ***.[75] Suez indicates that its technical expertise ***" indicating that its technical expertise focuses on its blending operations.[76]

Value Added. Based on ***.[77] This reported value added ***.[78] Nalco's reported annual value added – which we find to be of limited reliability given the manner in which the firm reported its data – was ***.[79] Suez (without elaboration) indicates that it adds significant value to the products it manufactures in the United States.[80]

Employment Levels. Dober reported ***.[81] We estimate that if Nalco had properly reported the number of PRWs attributable to corrosion inhibitor production, its annual employment would be close to ***.[82] Suez asserts that its corrosion inhibitor business employs numerous production workers, scientists, sales and support staff.[83]

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[72] CR/PR at Table E-5. Both Dober's and Nalco's R&D expenses were ***. *Id*. at Table E-5 n.2.

[73] Wincom reported ***, and Wincom's tollers reported ***. *See* CR/PR at Table E-5.

[74] CR/PR at Table E-5. As discussed, both Dober's and Nalco's ***. Moreover, Dober has emphasized that ***, further indicating that its reported R&D expenses largely pertain to its out-of-scope blending activities. *See* CR/PR at Table E-6. This misunderstanding also likely affects *** assessment of the complexity of its production operations.

[75] CR/PR at Table E-4. As discussed, it is likely that Dober's assessment refers to its blending operations, and not to its pertinent in-scope production-related activities. Nalco's counsel testified at the hearing that the more complicated aspect of the operations it performs were the blending activities. *See* Tr. at 187-188 (Thompson).

[76] Suez's producer questionnaire response at V-1b (material in upper case brackets corrected).

[77] CR/PR at n.5 to Table E-5. ***. CR/PR at Table E-5.

[78] Wincom's ***, and Wincom's tollers' ***. CR/PR at Table E-5.

[79] CR/PR at Table E-5. As noted in the Report, ***. *Id*. at Table E-5 n.3.

[80] Suez's Posthearing Brief at 3.

[81] CR/PR at Table E-5. Wincom reported between ***, and Wincom's tollers reported between ***. *Id*.

[82] CR/PR at Table E-5 n.6. While Nalco has reported *** PRWs, this figure ***. *Id*. This figure is thus not an accurate measure of Nalco's employment levels with respect to its pertinent production-related activities.

[83] Suez's Posthearing Brief at 4.

Quantity and Type of Parts Sourced in the United States. Dober indicated that it sourced *** worth of parts and materials in the United States annually over the POI, and Nalco reported annual figures ***.[84] Each firm's annual expenses in this respect were ***.[85] It is undisputed that the solid BTA and solid TTA that Dober, Nalco, and Suez use as the starting point for their further processing into liquid BTA and liquid TTA is sourced abroad, as domestically produced solid corrosion inhibitors are not commercially available.[86]

Other Costs and Activities in the United States. Dober provides a graph charting its BTA and TTA costs since 2007.[87] However, given that it sources its corrosion inhibitors abroad, it is unclear how this graph is pertinent to Dober's other costs and activities in the United States. With respect to its other costs and activities, Nalco states that ***.[88] Suez contends that it conducts significant regulatory compliance and sales activities in the United States.[89]

Conclusion. We find that Dober, Nalco, and Suez do not engage in sufficient production-related activities to qualify as domestic producers. The record indicates that the relevant production-related activity that Dober, Nalco, and Suez perform does not require complex technical expertise,[90] and is less sophisticated than either Wincom's or its tollers' production processes.[91] While the firms' reported capital investments are comparable to those of ***, we believe these empirical data are overstated.[92] Suez and Nalco's descriptions of their capital investments appear to include or focus on ***.[93] The most probative data concerning employment tied to these three firms' relevant production-related activity – *i.e.*, *** – indicate that the employment levels of the firms in question were ***. The most probative data

[84] CR/PR at Table E-5.

[85] CR/PR at Table E-5. Wincom indicated that it sourced *** worth of parts and materials annually in the United States over the POI; Wincom's tollers indicated that they sourced *** worth of parts and materials annually in the United States over the POI. *Id*.

[86] CR/PR at II-17 and Figure I-3. *See also* Dober's Posthearing Statement at 3 ("Dober uses the solid (dry) TTA *imported from China* and reacts it with sodium hydroxide {*i.e.*, caustic}, which forms a new molecule Sodium Tolyltriazole 50%" (emphasis added)); Nalco's Prehearing Brief at 5 ("…the TTA and BTA that Nalco processes has foreign origin"); and Suez's Posthearing Brief at 4 ("{w}here inputs are not domestically available, such as solid TTA, SUEZ must import.").

[87] Dober's Posthearing Statement at 11 and Exhibit K.

[88] Nalco's Prehearing Brief at 2.

[89] Suez's Posthearing Brief at 4.

[90] CR/PR at I-19-20. Moreover, as discussed, the R&D costs reported by these firms appear largely to pertain to their activities unrelated to production of the domestic like product. *See* CR/PR at Table E-5 n.2 and Table E-6.

[91] CR/PR at I-16.

[92] As discussed, Dober and Nalco's assets ***, and are therefore overstated. CR/PR at E-28 n.10 and Table E-5 n.1.

[93] As discussed, Nalco states that its capital investments ***. CR/PR at Table E-6. Suez similarly states that its capital investments ***. Suez's producer questionnaire response at V-1b.

concerning the value added by the three firms' relevant production-related activity – *i.e.*, *** – indicate that the value added by the firms in the pertinent production activities was ***. Moreover, Dober and Nalco sourced ***.[94]

Accordingly, we find that Dober, Nalco, and Suez's production-related activities are insufficient to qualify these firms as domestic producers.

B. Related Parties

The Commission 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 domestic industry producers that are related to an exporter or importer of subject merchandise or which are themselves importers.[95] Exclusion of such a producer is within the Commission's discretion based upon the facts presented in each investigation.[96]

[94] It also is undisputed that Dober, Nalco, and Suez sourced their corrosion inhibitor inputs abroad. Nalco argues that when an input is unavailable domestically, a firm's sourcing of that input from abroad should not weigh against finding it a domestic producer. *See* Nalco's Prehearing Brief at 5. While we acknowledge the unavailability of domestically sourced inputs currently used in Nalco's and Dober's production of in-scope product, even weighing this factor as neutral, the available data as reviewed above indicate that the firms do not engage in sufficient domestic production-related activities.

[95] *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).

[96] 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. U.S. Int'l Trade Comm'n*, 100 F. Supp.3d 1314, 1326-31 (Ct. Int'l Trade 2015); *see also Torrington Co.*, 790 F. Supp. at 1168.

In its preliminary determinations, the Commission found that Wincom was a related party because it imported subject merchandise during the POI.[97] The Commission, however, found appropriate circumstances did not exist to exclude Wincom from the domestic industry.[98] Wincom is similarly subject to the related parties provision in the final phase investigations because it imported subject merchandise during the POI.[99] No party or entity has argued for its exclusion. We discuss below whether appropriate circumstances exist to exclude Wincom from the domestic industry under the related parties provision.

Wincom imported *** pounds dry weight ("pounds") of corrosion inhibitors from China in 2017 (the equivalent of *** percent of its domestic production), *** pounds of corrosion inhibitors from China in 2018 (the equivalent of *** percent of its domestic production), *** pounds of corrosion inhibitors from China in 2019 (the equivalent of *** percent of its domestic production), *** pounds of corrosion inhibitors from China in January-September ("interim") 2019 (the equivalent of *** percent of its domestic production), and *** pounds of corrosion inhibitors from China in interim 2020 (the equivalent of *** percent of its domestic production).[100] Wincom stated that it imported ***.[101] Wincom further stated that its ***.[102] Wincom is the only domestic producer engaged in merchant market sales.[103]

Wincom's ratio of subject imports to domestic production, although ***, declined over the POI. Moreover, Wincom has indicated that it needed to import from China ***. Further, Wincom's status as Petitioner indicates that its primary concern lies in domestic production, not importation. Finally, Wincom accounted for *** U.S. shipments of the domestic like product in the merchant market by domestic producers, and exclusion of its data would therefore provide an unrepresentative depiction of the domestic industry. In light of the above, and in the absence of any contrary argument, we find that appropriate circumstances do not exist to exclude Wincom from the domestic industry.

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[97] Preliminary Determinations, USITC Pub. 5039 at 17.

[98] Preliminary Determinations, USITC Pub. 5039 at 17-18. Specifically, the Commission observed that: Wincom accounted for the overwhelming majority (if not all) of U.S. shipments of the domestic like product in the merchant market by domestic producers, and that, consequently, exclusion of its data would provide an unrepresentative depiction of the domestic industry; Wincom had made significant investments in its domestic production throughout the POI; Wincom imported in order to compete with low priced subject imports; and that Wincom's ratio of subject imports to domestic production, although high, had declined throughout the POI. *Id*.

[99] CR/PR at Tables III-12 and IV-1.

[100] CR/PR at Table III-12.

[101] CR/PR at Table III-12.

[102] CR/PR at Table III-12.

[103] *See generally* CR/PR at VI-1, VI-8 n.5. *See also* CR/PR at I-6 (stating that the crude product produced by Wincom's tollers is not sold commercially in the merchant market).

We consequently define the domestic industry as all domestic producers of the domestic like product – *i.e.*, Wincom and its toll producers SantoLubes and Texmark.

IV. Material Injury by Reason of Subject Imports[104]

A. Legal Standard

In the final phase of antidumping and countervailing duty investigations, the Commission determines whether an industry in the United States is materially injured or threatened with material injury by reason of the imports under investigation.[105] 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.[106] The statute defines "material injury" as "harm which is not inconsequential, immaterial, or unimportant."[107] In assessing whether the domestic industry is materially injured by reason of subject imports, we consider all relevant economic factors that bear on the state of the industry in the United States.[108] 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."[109]

Although the statute requires the Commission to determine whether the domestic industry is "materially injured or threatened with material injury by reason of" unfairly traded imports,[110] it does not define the phrase "by reason of," indicating that this aspect of the injury

[104] 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 three percent of all such merchandise imported into the United States during the most recent 12 months for which data are available preceding the filing of the petition shall generally be deemed negligible. 19 U.S.C. §§ 1671b(a), 1673b(a), 1677(24)(A)(i), 1677(24)(B). The exceptions to this general rule are not pertinent here.

Subject imports from China during the most recent 12-month period preceding the filing of the petitions (February 2019 through January 2020) accounted for 98.1 percent of total imports by weight. *See* CR/PR at Table IV-3. Because this exceeds the statutory negligibility threshold, we find that subject imports from China are not negligible.

[105] 19 U.S.C. §§ 1671d(b), 1673d(b).

[106] 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).

[107] 19 U.S.C. § 1677(7)(A).

[108] 19 U.S.C. § 1677(7)(C)(iii).

[109] 19 U.S.C. § 1677(7)(C)(iii).

[110] 19 U.S.C. §§ 1671d(b), 1673d(b).

analysis is left to the Commission's reasonable exercise of its discretion.[111] 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.[112]

In many investigations, there are other economic factors at work, some or all of which may also be having adverse effects on the domestic industry. Such economic factors might include nonsubject imports; changes in technology, demand, or consumer tastes; competition among domestic producers; or management decisions by domestic producers. The legislative history explains that the Commission must examine factors other than subject imports to ensure that it is not attributing injury from other factors to the subject imports, thereby inflating an otherwise tangential cause of injury into one that satisfies the statutory material injury threshold.[113] In performing its examination, however, the Commission need not isolate

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

[112] 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. U.S. Int'l Trade Comm'n*, 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. U.S. Int'l Trade Comm'n*, 266 F.3d 1339, 1345 (Fed. Cir. 2001).

[113] Uruguay Round Agreements Act Statement of Administrative Action (SAA), H.R. Rep. 103-316, vol. I at 851-52 (1994) ("{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.

the injury caused by other factors from injury caused by unfairly traded imports.[114] 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.[115] It is clear that the existence of injury caused by other factors does not compel a negative determination.[116]

[114] 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.").

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

[116] *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."[117] 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."[118] The Federal Circuit has examined and affirmed various Commission methodologies and has disavowed "rigid adherence to a specific formula."[119]

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.[120] Congress has delegated this factual finding to the Commission because of the agency's institutional expertise in resolving injury issues.[121]

B. Conditions of Competition and the Business Cycle

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

1. Demand Conditions

U.S. demand for corrosion inhibitors depends on the demand for U.S.-produced downstream products or services.[122] The largest end uses for corrosion inhibitors are industrial

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[117] *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*.

[118] *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.

[119] *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.").

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

[121] *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.").

[122] CR/PR at II-7.

water treatment and automotive fluids.[123] Corrosion inhibitors typically account for a small share of the cost of the end-use products in which they are used.[124]

Most market participants reported that U.S. demand for corrosion inhibitors either was unchanged or fluctuated during the POI.[125] Apparent U.S. consumption of corrosion inhibitors increased overall by *** percent from 2017 to 2019, increasing from *** pounds in 2017 to *** pounds in 2018, before decreasing to *** pounds in 2019.[126] It was *** pounds in interim 2019, and higher, at *** pounds, in interim 2020.[127]

[123] CR/PR at I-12, II-1.
[124] CR/PR at II-7-8.
[125] CR/PR at II-9 and Table II-4.
[126] CR/PR at Tables IV-4 and C-1.
[127] CR/PR at Tables IV-4 and C-1.

2. Supply Conditions

The domestic industry was the second largest source of supply throughout the POI. Its share of apparent U.S. consumption was *** percent in 2017, *** percent in 2018, and *** percent in 2019; it was *** percent in interim 2019 and *** percent in interim 2020.[128]

Domestic producer Wincom is a relatively recent entrant into the corrosion inhibitor market, having begun production in 2011.[129] The domestic industry's composition changed during the POI, as toller Texmark began production operations in 2018 and ramped them up in 2019.[130] The capacity of both Wincom and its tollers increased during the POI.[131] Within the domestic industry, only Wincom supplies corrosion inhibitors commercially to the merchant market.[132] Wincom currently only supplies liquid TTA commercially.[133]

Subject imports were the largest source of supply in the U.S. market throughout the POI. Subject imports' share of apparent U.S. consumption was *** percent in 2017, *** percent in 2018, *** percent in 2019, *** percent in interim 2019, and *** percent in interim

[128] CR/PR at Tables IV-4 and C-1. The quantity of U.S. producers' U.S. shipments used to calculate the domestic industry's market share reflects the quantity of domestically manufactured corrosion inhibitors sold in the United States by U.S. producers from inputs other than subject merchandise, consistent with Commission practice. *See* Note to Table IV-4. We decline Wincom's request to treat a certain quantity of subject imports it has sold in 2017 in the United States after further processing in its U.S. facilities as domestically manufactured corrosion inhibitors for purposes of tabulating its U.S. shipments. *See* Wincom's Prehearing Brief at 18 and Exhibit 2.

[129] CR/PR at Table III-5; *see also id*. at Table III-6 (U.S. producers' reported changes in operations, since Jan. 1, 2017); Wincom's Prehearing Brief at 11 ("Wincom is a relatively new entrant into the market"); Wincom Posthearing Brief at 31 ("Wincom was a new entrant and was the sole U.S. producer … .").

[130] CR/PR at Tables III-6-7; *see also* Wincom's Prehearing Brief at 11 ("Wincom's … toll producers are relatively new market entrants". During the POI, Wincom ***. *See* CR/PR at VI-8; note to Table III-8; and Table III-10.

[131] CR/PR at Tables III-7-8.

[132] As discussed, the other members of the domestic industry, SantoLubes and Texmark, produce a crude form of the product for Wincom under a tolling arrangement, which Wincom then purifies for commercial sale. *See* CR/PR at I-16; Figure I-2. SantoLubes and Texmark do not sell the crude product they produce, which contains impurities, commercially in the merchant market. *See* CR/PR at I-16.

[133] CR/PR at note to Figure I-2; I-17; I-19; and Figure III-3. Wincom contends that it has ***. *See* Wincom's Prehearing Brief at 5 n.13 and 7 n.20; *see also id*., Exhibit 1 (Declaration of James Milawski, President, Wincom, at 2, para. 6 (***).

2020.[134] Subject producers supply both BTA and TTA in both liquid and solid forms to the U.S. market, although solid forms comprise most imports.[135]

Nonsubject imports were a small source of supply to the U.S. market throughout the POI. Nonsubject imports' share of apparent U.S. consumption was *** percent in 2017, *** percent in 2018, *** percent in 2019, *** percent in interim 2019, and *** percent in interim 2020.[136] The largest sources of nonsubject imports were Japan, Germany, and Kuwait.[137]

3. Substitutability and Other Conditions

We find that there is at least a moderate degree of substitutability between subject imports and the domestic like product.[138] Information in the record indicates that domestically produced corrosion inhibitors and subject imports, broadly speaking, are substitutable in many respects. Specifically, ***, eight of 14 responding importers, and 15 of 21 responding purchasers reported that subject imports and domestically produced corrosion inhibitors are "always" or "frequently" interchangeable.[139] Further, pluralities or majorities of purchasers considered subject imports and the domestic like product comparable in 21 of 22 purchasing factors.[140] Moreover, Wincom has provided communications indicating that purchasers have switched between domestically produced product and subject imports,[141] and that they view the two as substitutable.[142]

Other information in the record indicates some limits on substitutability, particularly between BTA and TTA. Just over half of responding purchasers (16 of 30) reported that

[134] CR/PR at Tables IV-4 and C-1. In compiling import data, the Commission has supplemented official import data with questionnaire data reflecting imports of liquid corrosion inhibitors. *See* CR/PR at IV-3 n.6; note to Table IV-2.

[135] CR/PR at I-18 (TTA), I-20 (BTA), IV-1, IV-3 n.6, Figure IV-2, and Table D-2.

[136] CR/PR at Tables IV-4 and C-1.

[137] CR/PR at II-6.

[138] As discussed below, the information in the record indicates that the degree of substitutability is greater when comparing the same type of corrosion inhibitor, and when comparing the same type of corrosion inhibitor in the same form.

[139] CR/PR at Table II-11. Nalco has suggested that these data are only probative as to the interchangeability of domestically produced corrosion inhibitors and imports of liquid TTA from China. *See* Nalco's Posthearing Brief, EDIS Doc. 732475, at 4. This hypothesis is not supported by any information from the record.

[140] CR/PR at Table II-10. A majority of purchasers reported that the domestic product was superior with respect to delivery time. *Id*.

[141] *See* "Example 1" of Exhibit 8A to Wincom's Posthearing Brief (in which *** (emphasis added)).

[142] *See* "Example 3" of Exhibit 8A to Wincom's Posthearing Brief (in which ***). *See also* "Example 4" (in which ***). *See also* "Example 3" (in which ***").

different types of corrosion inhibitors are not interchangeable.[143] However, a significant number of responding purchasers – 14 – reported that there are no limits on the substitutability between different types of corrosion inhibitors.[144] Moreover, Wincom has provided a communication indicating that a purchaser ***.[145]

While the record indicates disparate views on the substitutability of liquid and solid TTA, it also indicates that there is at least moderate substitutability between the two forms. On the one hand, several respondents have argued that they cannot substitute the liquid TTA produced domestically for the solid corrosion inhibitors from China they currently use in their production processes.[146] On the other hand, Wincom has provided contemporaneous documentation of a purchaser indicating that it can use either solid TTA or liquid TTA, whichever is more cost-effective.[147] Moreover, the process for transforming solid TTA to liquid TTA is not complex and is commonly known, which enhances the substitutability between solid TTA imports and domestically produced liquid TTA.[148]

We also find that price is an important factor in purchasing decisions. Nearly all responding purchasers (27 of 32) reported that price is a "very important" factor in their corrosion inhibitor purchasing decisions,[149] and more purchasers (30 firms) ranked "price" as among the top three factors they consider in their purchasing decisions for corrosion inhibitors

[143] CR/PR at II-18.

[144] *See* the purchaser questionnaire responses of *** at III-31.

[145] Exhibit 10 to Wincom's Posthearing Brief; *see also id*. at 5.

[146] Dober's Posthearing Statement at 13; Nalco's Posthearing Brief at 1-6 and 12; Suez's Prehearing Brief at 7; and P.A.T.'s Posthearing Statement, EDIS Doc. 732282, at 3-4. We further note that respondent Old World Industries has asserted that it cannot substitute the liquid TTA produced domestically for the liquid TTA from China it currently uses in its production processes. *See* Old World Industries' Non-Party Statement, EDIS Doc. 732287, at 2-5. We discuss this further below in Section IV.E.

[147] Exhibit 8B to Petitioner's Posthearing Brief (***). *See also* Tr. at 7 (Mr. Orava) ("The solid form is imported because it makes no sense to ship a container that's half full of water."); Tr. at 19 (Mr. Milawski) ("Because it is not efficient or cost-effective to ship a container that is half water, Chinese {TTA} is imported predominantly in the solid form, which is then converted to a liquid TTA product by adding water and caustic."); Tr. at 54-55 (Mr. Milawski) ("So, as we mentioned, Tolyltriazole solid, Benzotriazole solid, or the liquid forms, they are mostly, you know, dissolved within a liquid before it goes to its direct use or into a formulated product. So, you know, the use of the solid corrosion inhibitors without putting them in a liquid to, you know, do its duty, which is as a corrosion inhibitor, I'm not familiar with many applications to any that would utilize the solid and not be putting it into a liquid matrix.").

[148] CR/PR at I-20. Further, *** *Id*. at Table E-6.

[149] CR/PR at Table II-7

than any other factor.[150] Additionally, 19 of 32 purchasers reported that they usually purchase the lowest-priced product.[151]

TTA is produced domestically using ortho toluene diamine ("oTDA") and sodium nitrite.[152] The price of oTDA was *** and the price of sodium nitrite *** from 2017 to 2019.[153]

U.S. producers reported selling *** of their corrosion inhibitors under annual or short-term contracts.[154] Importers reported selling most of their corrosion inhibitors in spot sales or under short-term contracts.[155]

During the POI, the subject merchandise was not subject to additional duties pursuant to section 301 of the Trade Act of 1974.[156]

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."[157]

The quantity of subject imports was substantial throughout the POI. It rose from 2017 to 2019 and was higher in interim 2020 than in interim 2019. Subject import quantity was 10.6 million pounds in 2017, 14.0 million pounds in 2018, 11.9 million pounds in 2019, 8.4 million pounds in interim 2019, and 8.8 million pounds in interim 2020.[158]

Subject imports, as previously discussed, were the predominant source of supply to the U.S. market, and had very large market shares throughout the POI. Their share of apparent U.S. consumption declined from *** percent in 2017 to *** percent in 2018 and to *** percent in 2019. This share was *** percent in interim 2019 and higher, at *** percent, in interim 2020.[159]

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[150] CR/PR at Table II-6. "Price" was followed by "availability" and "quality," which were named as among the top three factors by 27 and 26 firms, respectively. *Id*.

[151] CR/PR at II-12.

[152] CR/PR at V-1.

[153] CR/PR at V-1.

[154] CR/PR at Table V-2.

[155] CR/PR at Table V-2.

[156] 19 U.S.C. § 2411. *See* CR/PR at I-9.

[157] 19 U.S.C. § 1677(7)(C)(i).

[158] CR/PR at Tables IV-4 and C-1.

[159] CR/PR at Tables IV-4 and C-1.

In light of the foregoing, we find the volume of subject imports to be significant in absolute terms and relative to domestic consumption.[160]

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.[161]

As addressed in Section VI.B.3 above, there is at least moderate degree of substitutability between subject imports and the domestic like product. Additionally, price is an important factor in purchasing decisions.

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[160] We are unpersuaded by Nalco's argument that the significance of the subject import volumes is mitigated because substantial shares of such imports are either imported by Wincom itself or lack domestically produced counterparts. *See* Nalco's Prehearing Brief at 15. *** of subject imports over the POI – *** percent in 2019 – were not imported by Wincom. *See* CR/PR at Tables III-12, IV-1, IV-2. Moreover, the record indicates that TTA constituted a majority of subject imports in each year and interim period of the POI. *Compare* CR/PR Tables IV-4 (showing quantities of total subject imports from China over the POI) and IV-6 (showing specifically the quantities of TTA imports from China over the POI). We acknowledge that most U.S. shipments of subject imports of TTA during the POI were in solid form. *See* CR/PR at Table D-2. Nevertheless, having found in Section IV.B.3. above that the liquid and solid forms of TTA are at least moderate substitutes, we disagree with Nalco that there is no domestic counterpart to imported solid TTA.

We are also unpersuaded by Suez's argument that, similar to *Glycine from Japan and Korea*, Inv. Nos. 731-TA-1112-1113 (Final), USITC Pub. 3980 (Jan. 2008), the subject imports in these investigations are not significant within the meaning of the statute. *See* Suez's Posthearing Brief at 7. *Glycine from Japan and Korea* is inapposite. The Commission in those investigations found subject import volumes not to be significant largely because of the domestic industry's continued inability to supply purchasers' demand on a reliable basis. *See Glycine from Japan and Korea*, Inv. Nos. 731-TA-1112-1113 (Final), USITC Pub. 3980 (Jan. 2008) at 24. Here, the domestic industry does not have similar supply problems. *See* CR/PR at II-6 ("*** … reported supply constraints. The majority of responding purchasers also did not report supply constraints.").

Finally, we are unpersuaded by respondents' argument that the volume of subject imports is not significant because subject imports' market share declined from 2017 to 2019. *See* Nalco's Prehearing Brief at 13; Suez's Posthearing Brief at 6-7. While we acknowledge the decline in subject imports' market penetration, this is not controlling on our analysis under the statute, which provides bases other than an increase in volume relative to domestic consumption for finding subject import volumes significant. *See* 19 U.S.C. § 1677(7)(C)(i).

[161] 19 U.S.C. § 1677(7)(C)(ii).

The Commission collected quarterly pricing data from U.S. producers and importers on two liquid TTA products shipped to unrelated U.S. customers during the POI.[162] One U.S. producer and three importers provided usable pricing data for sales of the requested products, although not all firms reported pricing for all products for all quarters.[163] Reported pricing data accounted for approximately *** percent of the U.S. producers' U.S. commercial shipments and *** percent of U.S. commercial shipments of subject imports in 2019.[164]

These data indicate that subject imports pervasively undersold the domestic like product throughout the POI by significant margins. Specifically, subject imports consisting of *** pounds undersold the domestic like product in all 18 quarterly comparisons at margins ranging from *** percent to *** percent, and with an average underselling margin of *** percent.[165]

The record further indicates that underselling by subject imports caused the domestic industry to lose sales. A majority of responding purchasers (17 of 31) reported that they had purchased subject imports instead of the domestic like product.[166] Thirteen of those 17 reported that subject import prices were lower than U.S.-produced product, and eight reported that price was a primary reason for their decision to purchase subject imports rather than the domestic like product.[167] These eight firms reported that they purchased *** pounds of subject imports instead of domestic like product.[168] The lost sales quantities are substantial in the context of this market, as they are equivalent to *** percent of the domestic industry's total

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[162] CR/PR at V-4. The two pricing products are:

Product 1. Liquid TTA in totes of 2,400 to 2,600 pounds net weight (include only refined liquid TTA).

Product 2. Liquid TTA in drums of 450 to 550 pounds net weight (include only refined liquid TTA).

[163] CR/PR at V-4.

[164] CR/PR at V-4. The import coverage is less than that of the domestically produced product because U.S. production was only of liquid TTA, and therefore no comparable import and U.S. data could be collected for other products. *See* CR/PR at V-4 n.15. We reject respondents' argument that the pricing data are of limited probative value because of what they characterize as small import coverage. *See* Nalco's Prehearing Brief at 16; Suez's Prehearing Brief at 33-34; Suez's Posthearing Brief at 8-9. Because they cover approximately *** percent of U.S. producers' U.S. shipments of corrosion inhibitors, these data provide a sufficient basis for determining price effects on the domestic industry. Moreover, in the circumstances of these investigations, we do not consider import coverage comprising at least *** pounds of subject imports of the same type as produced domestically insufficient for assessing the price effects of subject imports on the domestic industry. *See* CR/PR at Table V-6.

[165] CR/PR at V-9 and Table V-6.

[166] CR/PR at V-12, Table V-8.

[167] CR/PR at V-12, Table V-8.

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

production of processed corrosion inhibitors (those available for commercial sale) over the POI.[169]

In light of the pervasive underselling, the importance of price in purchasing decisions, and the substantial sales lost due to lower subject import prices, we find the underselling by subject imports to be significant.[170]

We have also considered price trends for the domestic like product and subject imports over the POI. Domestic prices for both pricing products declined between the first and most recent periods for which pricing data were reported.[171] Prices for the subject import pricing product for which comparisons were available throughout the POI – *i.e.*, product 1 – were lower in the third quarter of 2020 than in the first quarter of 2017.[172] Thus, the record indicates that prices for the domestic like product declined over the POI, following the same overall trend as subject import prices.[173] Further, subject import prices were generally *** than prices for the domestic like product in each quarter for which prices for both subject imports and the domestic like product were available.[174]

Moreover, the record does not indicate any factor other than low-priced subject imports that can explain the price declines for the domestically produced pricing products.

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[169] *Derived from* CR/PR Tables III-8 and V-8.

[170] We reject Suez's argument that this underselling is not significant because it was not accompanied by a market share shift from the domestic industry to subject imports. *See* Suez's Prehearing Brief at 33; Suez's Posthearing Brief at 8. As an initial point, we note that a market share shift is not required to find the underselling to be significant. In addition, the record shows that the underselling by subject imports resulted in a significant volume of lost sales, which deprived the domestic industry of additional production, shipments, and revenue. *See* CR/PR at Table V-8. This shows that the underselling was significant. We also note that subject imports did take market share from the domestic industry in the interim periods. *See* CR/PR at Table C-1. Subject import market share was *** percentage points higher in interim 2020 than in interim 2019, while the domestic industry's market share was *** percentage points lower in interim 2020 than in interim 2019. *Id*. Thus, underselling over the interim periods was accompanied by a market share shift.

[171] Prices for domestically produced product 1 were *** percent lower in the third quarter of 2020 than in the third quarter of 2017. *See* CR/PR at Tables V-3 and V-5. Prices for domestically produced product 2 were *** percent lower in the third quarter of 2020 than in the first quarter of 2017. *Id*. at Tables V-4-5.

[172] Prices for subject import pricing product 1 were *** percent lower in the third quarter of 2020 than in the first quarter of 2017. *See* CR/PR at Tables V-3 and V-5. While there were few quarterly observations of subject import product 2, the most recent reported observation reflected the lowest price. CR/PR at Table V-4.

[173] We reject Nalco's argument that prices for the domestic pricing products show no correlation with prices for the subject import pricing products. *See* Nalco's Posthearing Brief at 10-13. Prices for both peaked in the second or third quarter of 2018 before declining steadily through the first half of 2020, for an overall decline over the POI. *See* CR/PR at Tables V-3-4, Figures V-1-2.

[174] *See* Table V-3 (***).

Apparent U.S. consumption fluctuated but increased overall during the POI.[175] Costs were not declining. To the contrary, the domestic industry's average unit cost of goods sold ("COGS") increased overall from 2017 to 2019, and was higher in interim 2020 than in interim 2019:[176] it was $*** per pound in 2017, $*** per pound in 2018, and $*** per pound in 2019, $*** per pound in interim 2019, and $*** per pound in interim 2020.[177]

Other information in the record corroborates a finding that competition from subject imports caused prices for the domestic like product to decline. Three of 15 responding purchasers reported that U.S. producers had reduced prices in order to compete with subject imports.[178] The reported estimated price reduction ranged from *** percent.[179] Wincom has also submitted purchaser correspondence indicating that it has lowered or has been requested to lower its prices due to competition from subject imports.[180] We consequently find that the subject imports had significant price-depressing effects.

We have also considered whether subject imports have prevented price increases which otherwise would have occurred, to a significant degree. As discussed above, apparent U.S. consumption increased overall from 2017 to 2019, and was higher in interim 2020 than in interim 2019. This should have permitted the domestic industry to have raised its prices in a growing market sufficiently to cover its rising costs. This did not occur. Instead, as the

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[175] Apparent U.S. consumption increased by *** percent overall from 2017 to 2019, and was *** percent higher in interim 2020 than in interim 2019. *See* CR/PR at C-1. Moreover, prices for the two domestically produced products began declining after the second quarter of 2018, during a year when apparent U.S. consumption rose sharply. *See* CR/PR at Tables IV-4, V-3-4.

[176] We find that unit COGS are appropriate for measuring trends in the domestic industry's costs for purposes of our price effects analysis in these investigations in light of changes in domestic industry's production processes during the POI. In 2017, when Wincom ***. *See* CR/PR at VI-8-9 n.8. However, after 2017, when Wincom ***. *Id*. Thus, as a result of this change in cost structure, the domestic industry's raw material costs are not directly comparable over the POI. *Id*. at VI-9 n.9. By contrast, total unit COGS do provide a valid basis for comparisons between periods, as it is not impacted by shifts within individual COGS categories.

[177] CR/PR at VI-1. Suez has argued that the declines in prices for the domestic like product over the POI were due to declines in the domestic industry's raw material costs. *See* Suez's Prehearing Brief at 13-21 and 32. As explained above, because of changes in the industry's production processes during the POI, period-by-period comparisons of reported raw materials costs are not analytically probative. The other information in the record indicates that the domestic industry's raw material costs either *** (oTDA) or *** (sodium nitrite) during the POI. *See* CR/PR at V-1. Suez has not provided contrary information on the costs of these inputs, focusing instead on the costs of caustic soda and Toluene Diisocyanate ("TDI"). *See* Suez's Prehearing Brief at 13-21.

[178] CR/PR at Table V-9.

[179] CR/PR at Table V-9.

[180] Wincom placed evidence on the record of purchasers leveraging lower-priced offers on Chinese imports in correspondence with the domestic industry. *See* "Example 3" of Exhibit 8A to Wincom's Posthearing Brief (in which ***). *See also* "Example 4" (in which ***). *See also* "Example 5" of Exhibit 8a of Wincom's Posthearing Brief (*** (emphasis added)).

domestic industry's unit COGS rose overall from 2017 to 2019, and increased between interim 2019 and 2020, as discussed above, the unit value of its net sales fell.[181] This was in conjunction with the domestic prices for both pricing products declining over the POI, as also discussed above. The pricing pressure exerted by subject imports on the domestic industry resulted in a cost-price squeeze, with the domestic industry's COGS to net sales ratio increasing by *** percentage points from 2017 to 2019, and by *** percentage points between interim 2019 and interim 2020.[182] We thus find that competition from lower priced subject imports prevented price increases for the domestic like product which otherwise would have occurred to a significant degree.[183]

The record in these investigations indicates that the domestic industry lost a significant quantity of sales due to pervasive underselling by subject imports, that these imports depressed prices for domestically produced corrosion inhibitors to a significant degree, and that they prevented the domestic industry from obtaining price increases that otherwise would have occurred, to a significant degree. We consequently find that the subject imports have had significant price effects.

[181] The unit value of the domestic industry's net sales fell overall by *** percent from 2017 to 2019, and was *** percent lower in interim 2020 than in interim 2019. *See* CR/PR at Table C-1.

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

[183] We further observe that, although the cost-price squeeze experienced by the domestic industry is concentrated in 2019, which is also when apparent U.S. consumption decreased by *** percent from its 2018 level, any decrease in demand does not fully explain the *** percent decrease in the domestic industry's unit net sales value over this same period that occurred alongside a *** percent increase in unit COGS. As discussed above, subject imports pervasively undersold the domestic like product throughout the POI. Moreover, apparent U.S. consumption in 2019 remained above its 2017 level, while the domestic industry's unit net sales value was *** percent lower. *See* CR/PR at Table C-1. Further, while apparent U.S. consumption was *** percent higher in comparing interim periods, the domestic industry's unit net sales value was *** percent lower. *See* CR/PR at Table C-1. This indicates that a factor other than apparent U.S. consumption, *i.e.*, downward pricing pressure from subject imports' pervasive underselling, is responsible for the cost-price squeeze experienced by the domestic industry. Additionally, the record reflects that three of 15 responding purchasers reported that U.S. producers had reduced prices in order to compete with subject imports at estimated price reductions ranging from *** percent. *See* CR/PR at Table V-9.

E. Impact of the Subject Imports[184]

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, R&D, 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."[185]

As previously discussed, U.S. demand for corrosion inhibitors, as measured by apparent U.S. consumption, grew overall over the POI.[186] There was also some growth in the domestic industry's operations and output, although these trends were not uniformly positive throughout the POI. Several of the domestic industry's financial indicators declined, particularly during the latter portion of the period.

The domestic industry's output-related indicators generally increased over the POI. Wincom, which began operations in 2011, expanded them during the POI as its production capacity increased from *** pounds in 2017 to *** pounds in 2018, and *** pounds in 2019; it was *** pounds in both interim 2019 and 2020.[187] The toll producers' capacity increased from *** pounds in 2017 to *** pounds in 2018 and *** pounds in 2019; it was *** pounds in both interim 2019 and interim 2020.[188] The tollers' increase in capacity can be attributed to Texmark's initiation of TTA production during the POI.[189] Wincom's production increased from *** pounds in 2017 to *** pounds in 2018 and then declined to *** pounds in 2019; it was ***

[184] The statute instructs the Commission to consider the "magnitude of the dumping margin" in an antidumping proceeding as part of its consideration of the impact of imports. 19 U.S.C. § 1677(7)(C)(iii)(V). In its final determination of sales at less than fair value, Commerce found dumping margins of 130.52 percent to 277.90 percent for imports of corrosion inhibitors from China. *Certain Corrosion Inhibitors from the People's Republic of China: Final Affirmative Determination of Sales at Less-Than-Fair-Value Investigation*, 86 Fed. Reg. 7532, 7533 (Jan. 29, 2021). We take into account in our analysis the fact that Commerce has made final findings that all subject producers in China are selling subject imports in the United States at less than fair value. In addition to this consideration, our impact analysis has considered other factors affecting domestic prices. Our analysis of the significant underselling and price effects of subject imports, described in both the price effects discussion and below, is particularly probative to an assessment of the impact of the subject imports.

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

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

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

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

[189] CR/PR at III-9, III-18 and Table III-6.

pounds in interim 2019 and higher, at *** pounds, in interim 2020.[190] The toll producers' production increased from *** pounds in 2017 to *** pounds in 2018, and declined to *** pounds in 2019; it was *** pounds in interim 2019 and higher, at *** pounds, in interim 2020.[191] Wincom's capacity utilization declined from *** percent in 2017 to *** percent in 2018, and *** percent in 2019; it was *** percent in interim 2019 and higher, at *** percent, in interim 2020.[192] The toll producers' capacity utilization increased from *** percent in 2017 to *** percent in 2018, and declined to *** percent in 2019; it was *** percent in interim 2019 and higher, at *** percent, in interim 2020.[193] The domestic industry's U.S. shipments increased from *** pounds in 2017 to *** pounds in 2018, and declined to *** pounds in 2019; they were *** pounds in interim 2019 and interim 2020.[194] The domestic industry's share of apparent U.S. consumption increased from *** percent in 2017 to *** percent in 2018 and *** percent in 2020; it was *** percent in interim 2019 and lower, at *** percent, in interim 2020.[195] The domestic industry's ending inventories increased from *** pounds in 2017 to *** pounds in 2018 and *** pounds in 2019; they were *** pounds in interim 2019 and lower, at *** pounds, in interim 2020.[196]

The domestic industry's employment indicators generally increased over the POI, reflecting that Texmark began production in 2018.[197] The number of PRWs increased from *** in 2017 to *** in 2018, and declined to *** in 2019; it was *** in interim 2019 and higher, at ***, in interim 2020.[198] Total hours worked increased from *** in 2017 to *** in both 2018 and 2019; they were *** in interim 2019 and lower, at ***, in interim 2020.[199] Wages paid increased from $*** in 2017 to $*** in 2018 and $*** in 2019; they were $*** in interim 2019 and higher, at $***, in interim 2020.[200] Hourly wages rose from $*** in 2017 to $*** in 2018 and $*** in 2019; they were $*** in interim 2019 and higher, at $***, in interim 2020.[201] Wincom's productivity rose from *** pounds per hour in 2017 to *** pounds per hour in 2018, and declined to *** pounds per hour in 2019; it was *** pounds per hour in interim 2019 and greater, at *** pounds per hour, in interim 2020.[202] The tollers' productivity increased from

[190] CR/PR at Table C-1.
[191] CR/PR at Table C-1.
[192] CR/PR at Table C-1.
[193] CR/PR at Table C-1.
[194] CR/PR at Table C-1.
[195] CR/PR at Table C-1.
[196] CR/PR at Table C-1.
[197] CR/PR at Table III-6.
[198] CR/PR at Table C-1.
[199] CR/PR at Table C-1.
[200] CR/PR at Table C-1.
[201] CR/PR at Table C-1.
[202] CR/PR at Table C-1.

*** pounds per hour in 2017 to *** pounds per hour in 2018 and *** pounds per hour in 2019; it was *** pounds per hour in interim 2019 and higher, at *** pounds per hour, in interim 2020.[203]

The domestic industry's financial performance generally declined overall from 2017 to 2019, particularly between 2018 and 2019, and was worse in interim 2020 than in interim 2019. The domestic industry's net sales revenues rose from $*** in 2017 to $*** in 2018, and declined to $*** in 2019; they were $*** in interim 2019 and lower, at $***, in interim 2020.[204] The domestic industry's gross profits increased from $*** in 2017 to $*** in 2018, and declined to $*** in 2019; they were $*** in interim 2019 and lower, at $***, in interim 2020.[205] The domestic industry's operating income increased from $*** in 2017 to $*** in 2018, and declined to a $*** in 2019; it was a $*** in interim 2019 and lower, a $***, in interim 2020.[206] Its operating income margin increased from *** percent in 2017 to *** percent in 2018, and declined to *** percent in 2019; it was *** percent in interim 2019 and lower, at *** percent, in interim 2020.[207] The domestic industry's net income increased from $*** in 2017 to $*** in 2018, and declined to a $*** in 2019; net income was a $*** in interim 2019 and was worse, at a $***, in interim 2020.[208]

The domestic industry's capital expenditures rose from $*** in 2017 to $*** in 2018, and declined to $*** in 2019; they were $*** in interim 2019 and lower, at $***, in interim 2020.[209] The domestic industry's net assets increased from $*** in 2017 to $*** in 2018, and then declined to $*** in 2019.[210] The *** increase in capital expenditures and net assets in 2018 is attributable to ***.[211] The domestic industry's return on assets decreased each year of the POI, going from ***.[212] All three domestic producers reported that subject imports had actual and potential negative effects on their firms' investment, growth, and development.[213]

We find that subject imports had a significant impact on the domestic industry during the POI. Lower-priced subject imports captured sales that the domestic industry, which expanded capacity and had excess capacity throughout the POI, could readily have supplied. As a result, notwithstanding growth between 2017 and 2019, the domestic industry's output

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

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

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

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

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

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

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

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

[211] CR/PR at VI-12; VI-12 n.16.

[212] CR/PR at Table VI-5. The domestic industry's return on assets decreased from *** percent in 2017 to *** percent in 2018 and *** percent in 2019. *Id.*

[213] CR/PR at Tables VI-6-7.

was lower than it would have been otherwise, particularly in light of its expanded operations and capacity.[214] Moreover, because of their significant price depressing and suppressing effects, subject imports deprived the domestic industry of additional revenues it otherwise would have received. Indeed, notwithstanding generally increasing apparent U.S. consumption, the domestic industry's sales revenues declined during the POI, its profitability deteriorated *** after 2018 as prices fell, and it experienced operating and net *** in 2019 and interim 2020.

Respondents argue that the competition between subject imports and the domestic like product is attenuated because of differences in product range, and therefore that subject imports have not had a significant impact on the domestic industry.[215] However, as discussed, the record indicates that the domestic like product and subject imports are at least moderately substitutable, notwithstanding the acknowledged differences in domestic and subject import product ranges. Moreover, the large volume of subject imports purchased instead of the domestic like product primarily because of lower prices indicates substantial direct competition between the two.[216]

[214] We also note that the domestic industry's output was lower in interim 2020 than interim 2019 despite increasing apparent consumption, and that the domestic industry lost some market share to the subject imports when interim periods are compared. *See* CR/PR at Table C-1.

[215] *See*, *e.g.*, Nalco's Prehearing Brief at 17; Suez's Prehearing Brief at 12-13. Specifically, respondents argue that there is limited substitutability and competition between domestically produced liquid TTA and subject imports, the majority of which are in forms other than liquid TTA (*i.e.*, solid TTA, liquid BTA, or solid TTA). *Id*.

[216] Moreover, seven firms purchased both subject imports and the domestic like product during the POI. *See* CR/PR at Table V-7.

Further, there is information in the record indicating that respondents may be overstating their difficulties in substituting domestically produced liquid TTA for the corrosion inhibitors of other types they import from China. For example, ***.[217] Likewise, Nalco indicates that it ***.[218] Moreover, even if respondents have encountered difficulties in substituting the domestic like product for subject imports of other types, their experiences are not necessarily representative of all purchasers.[219] As previously discussed, purchasers as a whole generally reported that the subject imports and domestic like product were generally interchangeable and comparable in most characteristics.[220]

Suez has further argued that Wincom's financial results are largely explained not by subject import competition, but by Wincom's decision to ***.[221] The record does not support this contention; Wincom's unit tolling fees to ***, and its unit tolling fees to ***.[222] We also reject respondents' arguments that the domestic industry was not materially injured because its output, market share, and employment improved during the POI.[223] Improvements in industry performance do not compel a negative determination,[224] and we have explained how the subject imports caused the industry's output and revenues to be lower than they would have been otherwise. Moreover, the domestic industry's financial condition deteriorated.

Finally, we have also considered the role of nonsubject imports. They maintained a small presence in the U.S. market during the POI and were sold at much higher average unit

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[217] *See* Suez's Prehearing Brief at 21.

[218] *See* Nalco's Posthearing Brief at 2 (citing Tr. at 142-143 (Meier)).

[219] We note that Suez and Dober, the two entities submitting statements concerning lack of substitutability of subject imports with the domestic product that also submitted purchasers' questionnaires, jointly represented *** of total reported purchases. *See* CR/PR at Table V-7.

[220] Suez has also argued that, even within the same product range – *i.e.*, liquid TTA – competition between the domestic like product and subject imports is attenuated. *See* Suez's Final Comments, EDIS Doc. 734619, at 13. This argument is based on an analysis completed by Old World Industries purporting to show that a sample of Wincom's domestically produced liquid TTA does not meet Old World's stated quality requirements while liquid TTA imports from China do. Old World Industries Non-Party Statement at 3-5. We accord little probative value to the material Old World submitted. Old World failed to provide spectra or other testing data to show that subject liquid TTA imports meet its stated quality standards. *See* CR/PR at I-19. Additionally, Wincom produces a variety of liquid TTA products of different purities – *see*, *e.g.*, notes from Wincom, SantoLubes, and Nalco's Virtual Plant Tours, EDIS Doc. 731703 – and there is no indication that Old World selected a Wincom product for testing that was marketed as having appropriate quality for Old World's purposes. In any event, even if Old World's quality concerns are legitimate, the record indicates that they are not typical; the vast majority of responding purchasers (21 of 24) reported that domestically produced corrosion inhibitors always met minimum quality specifications. *See* CR/PR at Table II-12.

[221] Suez's Prehearing Brief at 7-8.

[222] CR/PR at Table VI-3.

[223] *See*, *e.g.*, Suez's Prehearing Brief at 34-38; Suez's Posthearing Brief at 10.

[224] 19 U.S.C. § 1677(7)(J).

value ("AUVs") than subject imports. Their market share ranged from *** percent to *** percent,[225] and their AUVs ranged from $*** per pound to $*** per pound.[226] Nonsubject imports, therefore, cannot explain the adverse price effects and impact that we have attributed to the subject imports.

V. Conclusion

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

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

[226] CR/PR at Table C-1. Subject import AUVs ranged from $*** per pound to $*** per pound. *Id.* We acknowledge that differences in product mix may affect AUV comparisons.

Part I: Introduction

Background

These investigations result from petitions filed with the U.S. Department of Commerce ("Commerce") and the U.S. International Trade Commission ("USITC" or "Commission") by Wincom Incorporated ("Wincom"), Blue Ash, Ohio, on February 5, 2020, 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 corrosion inhibitors[1] from China. The following tabulation provides information relating to the background of these investigations.[2] [3]

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

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

[3] A list of witnesses that appeared at the hearing is presented in appendix B of this report.

Effective date	Action
February 5, 2020	Petitions filed with Commerce and the Commission; institution of Commission investigations (85 FR 7784, February 11, 2020)
February 25, 2020	Commerce's notice of initiation of LTFV investigation (85 FR 12506, March 3, 2020) and Commerce's notice of initiation of countervailing duty investigation (85 FR 12502, March 3, 2020)
March 23,2020	Commission's preliminary determinations (85 FR 17364, March 27, 2020)
July 6, 2020	Commerce's preliminary CVD determination, and Alignment of Final Determination with Final Antidumping Duty Determination (85 FR 41960, July 13, 2020)
September 10, 2020	Commerce's preliminary AD determination, postponement of final determination, and extension of provisional measures (85 FR 55825, September 10, 2020)
September 10, 2020	Scheduling of final phase of Commission investigations (85 FR 63139, October 6, 2020)
January 29, 2021	Commerce's final AD and CVD determinations (86 FR 7532 and 86 FR 7537, January 29, 2021)
January 21, 2021	Commission's hearing
February 23, 2021	Commission's vote
March 12, 2021	Commission's views

Statutory criteria

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

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

determination regarding whether there is material injury by reason of imports.

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

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

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

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

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

Organization of report

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

Market summary

Corrosion inhibitors are generally used for corrosion protection in a variety of applications, such as industrial water treatment, automotive fluids, metalworking fluids, and for many other lubricants and fluids. The three U.S. producers (tollee and toll producers) of corrosion inhibitors are Wincom, SantoLubes LLC ("SantoLubes"), and Texmark Chemicals, Inc. ("Texmark"). The leading U.S. importers of corrosion inhibitors from China are ***. Nonsubject imports of corrosion inhibitors accounted for *** of all imports during 2017-19. U.S. purchasers of corrosion inhibitors are firms that distribute, process, and use corrosion inhibitors for a variety of purposes; leading purchasers include ***.

Apparent U.S. consumption of corrosion inhibitors totaled approximately *** in 2019. Currently, *** firms are known to produce corrosion inhibitors in the United States. U.S. producers' U.S. shipments of corrosion inhibitors totaled *** in 2019 and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value. U.S. imports from subject sources totaled 11.9 million pounds ($19.8 million) in 2019 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, tables C-1 through C-4. Except as noted, U.S. industry data are based on questionnaire responses of three firms, consisting of two groups. The first group includes tolling processor firms (tollees) that provide raw materials to the producer/toll producer, retain title to the product produced, and ultimately sell the corrosion inhibitors to their customers. This group consists of the petitioner, Wincom. The second group includes toll producers (tollers) that either produce

corrosion inhibitors for their own account or process the product for the account of other firms under a toll agreement. This group consists of SantoLubes and Texmark. The three firms that either toll produce or (toll) processes corrosion inhibitors accounted for the vast majority of U.S. production of corrosion inhibitors during 2019.[6] Except as noted, U.S. import data are based on the questionnaire responses of 19 U.S. importers that are believed to have accounted for *** of all U.S. imports of corrosion inhibitors in 2019.[7] Foreign industry data and related information is based on the questionnaire response of Nantong Botao Chemical Co., Ltd. ("Nantong Botao") which is estimated to account for *** of all corrosion inhibitors produced in China in 2019. Nantong Botao's exports of corrosion inhibitors to the United States were equivalent to *** of all reported U.S. imports of corrosion inhibitors from China in 2019.

Previous and related investigations

Corrosion inhibitors have not been the subject of prior countervailing or antidumping duty investigations in the United States.

Nature and extent of subsidies and sales at LTFV

Subsidies

On January 29, 2021, Commerce published a notice in the *Federal Register* of its final determination of countervailable subsidies for producers and exporters of product from China.[8] Table I-1 presents Commerce's findings of subsidization of corrosion inhibitors in China.

[6] The Commission also received U.S. producer questionnaire responses from ***. Additional U.S. producer data is presented in appendix E of this report.

[7] The 19 U.S. importers reported importing *** pounds of in-scope corrosion inhibitors in 2019. In-scope corrosion inhibitors were imported under two HTS statistical reporting numbers 2933.99.8210, 2933.99.8220 (dry corrosion inhibitors, BTA and TTA). Liquid corrosion inhibitors were reported in responses based on the Commission's questionnaires. Staff estimates that the U.S. import data based on the two HTS statistical reporting numbers and the questionnaire responses that included liquid BTA and TTA represent at least *** percent of the corrosion inhibitors that arrived in the United States during 2019.

[8] 86 FR 7537, January 29, 2021.

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

Company	Subsidy rate (percent)
Jiangyin Delian Chemical Co., Ltd	93.05
Nantong Botao Chemical Co., Ltd	61.62
CAC Shanghai Chemical Co., Ltd.,	239.21
Jiangyin Gold Fuda Chemical Co., Ltd	239.21
Xinji Xi Chen Re Neng Co., Ltd	239.21
All Others	77.34

Source: 86 FR 7537, January 29, 2021.

Sales at LTFV

On January 29, 2021, Commerce published a notice in the *Federal Register* of its final determination of sales at LTFV with respect to imports from China.[9] Table I-2 presents Commerce's dumping margins with respect to imports of product from China.

[9] 86 FR 7532, January 29, 2021.

Table I-2
Corrosion Inhibitors: Commerce's final weighted-average LTFV margins with respect to imports from China

Producer	Exporter	Final dumping margin (percent)	Cash deposit rate (adjusted for subsidy offsets) (percent)
Nantong Botao Chemical Co., Ltd	Jiangyin Delian Chemical Co., Ltd	130.52	72.50
Nantong Kanghua Chemical Co., Ltd	Jiangyin Delian Chemical Co., Ltd	130.52	72.50
Nantong Botao Chemical Co., Ltd	Nantong Botao Chemical Co., Ltd	139.41	101.71
Anhui Trust Chem Co., Ltd	Anhui Trust Chem Co., Ltd	134.97	87.11
Gold Chemical Limited	Gold Chemical Limited	134.97	87.11
Jiangsu Bohan Industry Trade Co., Ltd	Gold Chemical Limited	134.97	87.11
Jiangyin Gold Fuda Chemical Co., Ltd	Gold Chemical Limited	134.97	87.11
Ningxia Ruitai Technology Co., Ltd	Gold Chemical Limited	134.97	87.11
Shanghai suntech biochemical Co., Ltd	Gold Chemical Limited	134.97	87.11
Nantong Kanghua Chemical Co., Ltd	Nantong Kanghua Chemical Co., Ltd	134.97	87.11
Anhui Trust Chem Co., Ltd	Nanjing Trust Chem Co., Ltd	134.97	87.11
China-Wide Entity	N/A	277.90	241.02

Source: 86 FR 7532, January 29, 2021.

The subject merchandise

Commerce's scope

In the current proceeding, Commerce has defined the scope as follows:[10]

> *The merchandise covered by this petition is tolyltriazole and benzotriazole. This includes tolyltriazole and benzotriazole of all grades and forms, including their sodium salt forms. Tolyltriazole is technically known as Tolyltriazole IUPAC 4,5 methyl benzotriazole. It can also be identified as 4,5 methyl benzotriazole, tolutriazole, TTA, and TTZ.*
>
> *Benzotriazole is technically known as IUPAC 1,2,3-Benzotriazole. It can also be identified as 1,2,3-Benzotriazole, 1,2- Aminozophenylene, 1H-Benzotriazole, and BTA.*
>
> *All forms of tolyltriazole and benzotriazole, including but not limited to flakes, granules, pellets, prills, needles; powder, or liquids, are included within the scope of this investigation.*
>
> *The scope includes tolyltriazole/sodium tolyltriazole and benzotriazole/sodium benzotriazole that are combined or mixed with other products. For such combined products, only the tolyltriazole/sodium tolyltriazole and benzotriazole/sodium benzotriazole component is covered by the scope of these investigations. Tolyltriazole and sodium tolyltriazole that have been combined with other products is included within the scope, regardless of whether the combining occurs in third countries.*
>
> *Tolyltriazole, sodium tolyltriazole, benzotriazole and sodium benzotriazole that is otherwise subject to these investigations is not excluded when commingled with tolyltriazole, sodium tolyltriazole, benzotriazole, or sodium benzotriazole from sources not subject to these investigations. Only the subject merchandise component of such commingled products is covered by the scope of this investigation.*
>
> *A combination or mixture is excluded from this investigation if the total tolyltriazole or benzotriazole component of the combination or mixture (regardless of the source or sources) comprises less than 5 percent of the combination or mixture, on a dry weight basis.*

[10] 86 FR 7537, January 29, 2021.

Notwithstanding the foregoing language, a tolyltriazole or benzotriazole combination or mixture that is transformed through a chemical reaction into another product, such that, for example, the tolyltriazole or benzotriazole can no longer be separated from the other products through a distillation or other process is excluded from this investigation.

Tolyltriazole has the Chemical Abstracts Service ("CAS") registry number 299385-43-1. Tolyltriazole is classified under Harmonized Tariff Schedule of the United States ("HTSUS") subheading 2933.99.8220.[11]

Sodium Tolyltriazole has the CAS registry number 64665-57-2 and is classified under HTSUS subheading 2933.99.8290.

Benzotriazole has the CAS registry number 95-14-7 and is classified under HTSUS subheading 2933.99.8210.

Sodium Benzotriazole has the CAS registry number 15217-42-2. Sodium Benzotriazole is classified under HTSUS subheading 2933.99.8290.

Although the HTSUS subheadings and CAS registry numbers are provided for convenience and customs purposes, the written description of the scope of these investigations is dispositive.

Tariff treatment

Based upon the scope set forth by Commerce, information available to the Commission indicates that the merchandise subject to this investigation are currently imported under statistical reporting numbers 2933.99.82.10, 2933.99.82.20, and 2933.99.82.90. The 2021 general rate of duty is 6.5 percent *ad valorem* for HTSUS subheading 2933.99.82, a "basket" tariff line for a variety of heterocyclic aromatic or modified aromatic compounds.[12] There are currently no Section 301 duties on products of China provided for in this subheading.[13] Decisions on the tariff classification and treatment of imported goods are within the authority of U.S. Customs and Border Protection.

[11] Staff determined that one of the CAS registry numbers was reported incorrectly by Commerce in its scope. The correct CAS number for tolyltriazole is 29385-43-1.

[12] Harmonized Tariff Schedule of the United States, Revision 2, Chapter 29, January 2021, USITC Publication 5156.

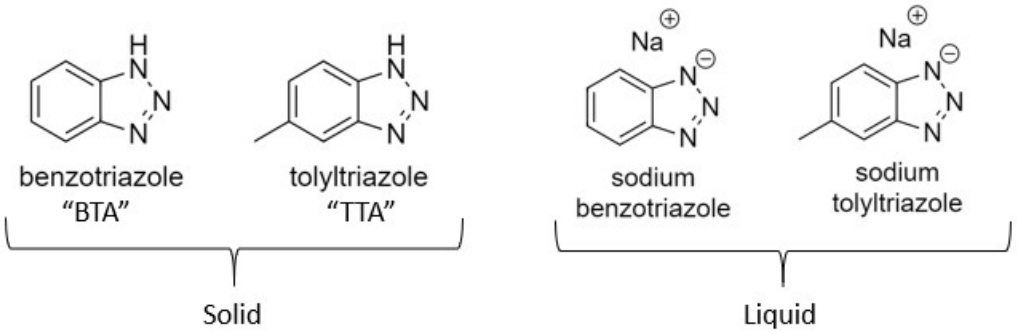
[13] Harmonized Tariff Schedule of the United States, Revision 2, Chapter 99, January 2021, USITC Publication 5156; Conference transcript, pp. 8,62 (Orava).

The product

Description and applications

The imported products subject to these investigations are collectively referred to as corrosion[14] inhibitors—the solids benzotriazole ("BTA") and tolyltriazole ("TTA")[15] and their liquid forms sodium BTA and sodium TTA (figure 1). These products are imported under different HTSUS statistical reporting numbers but have similar applications.[16] They are used to provide corrosion protection of metals and elements of copper, copper alloys, zinc, cobalt, silver, aluminum, and steel.[17]

Figure I-1: Chemical structures and phases of subject products.



Source: Petition, Exhibit I-3.

Structurally, the difference between BTA ($C_6H_4N_3$) and TTA ($C_7H_7N_3$) is that the latter has a methyl group on its benzene ring.[18] The chemical formulas of both liquids BTA and TTA are the sodium salts: $Na(C_6H_4N_3)$ and $Na(CH_3C_6H_4N_3)$, and in the liquid form, the anions of BTA and TTA are active (as denoted by the negative symbol "-" in figure I-1).

[14] Corrosion is a natural process that converts a refined metal into a more chemically stable form such as oxide, hydroxide, or sulfide. The Electrochemical Society, "What Is Corrosion?" www.electrochem.org/corrosion-science, retrieved January 29, 2021.

[15] BTA (CAS No. 95-14-7) and TTA (CAS No. 29385-43-1) are members of the triazole family of chemicals. Petition, p. 4. There are on the order of dozens of compounds that are in the class of these corrosion inhibitors; however, due to their lower price, TTA and BTA are pragmatic choices. Conference transcript, p. 99 (Zibrida), pp. 100-101 (Reynolds); Petitioner's postconference brief, p. 20.

[16] Petition, p. 5.

[17] Hearing transcript, p. 18 (Milawski).

[18] Petition, p. 4; Conference transcript, p. 15 (Milawski).

Both BTA and TTA can be produced and sold as powder, flakes, granules, or crystals.[19] The color of solid BTA ranges from white to light tan in color, and solid TTA ranges from white to light brown.[20] Domestically produced sodium BTA and sodium TTA (e.g., the liquid forms) are both solubilized for use in a 40-50 percent concentration.[21] Sodium BTA can range from colorless to a pale yellow solution, and sodium TTA's color can range from pale yellow to amber.[22]

According to the petitioner, BTA and TTA make up the majority of subject imports because the solid form is easier to transport than the liquid forms due to freight costs.[23] However, the majority of end users actually require sodium TTA or sodium BTA as the corrosion inhibitor input for their applications as they are aqueous formulations.[24] The petitioner surmises that many purchasers purchase and import solid BTA and solid TTA and make their own sodium BTA and sodium TTA solutions as it is cost effective compared to purchasing the liquid forms.[25] BTA, sodium BTA, TTA and sodium TTA are used in a variety of corrosion inhibitor applications and are used in many different industries as shown in Table I-3.

[19] Conference transcript, p. 15 (Milawski).
[20] Petition, p. 4.
[21] Conference transcript, p. 15 (Milawski).
[22] Petition, p. 4.
[23] Hearing transcript, p. 7 (Orava).
[24] Hearing transcript, pp. 54-55 (Milawski).
[25] Adding sodium hydroxide (NaOH), referred to as "caustic soda" or "caustic," to a solution of TTA or BTA in water- yields sodium BTA and sodium TTA. Petitioner's postconference brief, p. 6. The terms "sodium hydroxide" and "caustic" are used interchangeably. Hearing transcript, p. 228 (Dobrez); Suez posthearing statement, Exhibit I, p. III-31.

Table I-3: Corrosion Inhibitors: Illustrative applications in industries which utilize BTA, TTA, sodium BTA, and sodium TTA[1]

Application	BTA (solid form)	TTA (solid form)	Sodium BTA (liquid form)	Sodium TTA (liquid form)
Industrial water treatment	X	X	X	X
Automotive fluids	X	X	X	X
Metalworking fluids	X	X	X	X
De-icer (aircraft and runway)	X	X	X	X
Lubricants[2]	X	X		
Cleaners	X	X	X	X
Direct treatment	X	X	X	X
Circuit boards	X	X	X	X
Inks and coatings	X	X	X	X
Blends[3]	X	X	X	X

1. There is a distinction between the industries which utilize the products and whether the end user ultimately uses the solid or liquid in the specific application. The final state of matter used in industries is mostly in the liquid form. It is estimated that solid products make up less than 10 percent of the market {compared to products that are in liquid form}. Petitioner's posthearing brief, Declaration of James Milawski, Exhibit 2, p. 2.
2. It is far less common to use the liquid sodium salt forms of TTA and BTA in lubricants, and thus the boxes do not have an "X." Lubricants primarily consist of a solvent which are categorized as a base oil. These formulas are hydrocarbon. TTA/BTA in their solid acid form would be preferred in lubricants due to the absence of water. Lubricants are used at high temperatures and having water in a formula which evaporates at 100 degrees Celsius is typically unwanted. There are, however, aqueous based lubricants that can utilize the solid and liquid forms of TTA or BTA. For example, some lubricant formulas use a liquid modified benzotriazole, which is a liquid product compatible with hydrocarbon formulas (Written communication, USITC staff and petitioner, March 16, 2020).
3. Blends are for applications such as engine coolants, water treatment products, and metal working products. Conference transcript, p. 15 (Milawski). There are firms that mix BTA and TTA together. Conference transcript, p 120 (Milawski). There are firms that use BTA and TTA interchangeably in certain blends. Hearing transcript, p. 18 (Milawski).

Source: Petition, pp. 5, 12; Conference transcript p. 92; Petitioner's postconference brief, p. 5; Exhibit I, pp. 6, 16; Hearing transcript, p. 18 (Milawski); Petitioner's posthearing brief, Exhibit 2, p. 2.

The two most important applications for corrosion inhibitors are in the water treatment industry and the engine cooling industry, which together account for at least half of the total use.[26] BTA and TTA (solid forms) are largely viewed as inputs in the production of sodium BTA and sodium TTA, which are the liquid forms ultimately used for most final applications.[27] BTA and TTA are used as corrosion inhibitors in lubricants[28] and in the production of corrosion

[26] Conference transcript, p. 81-82 (Milawski).

[27] It is estimated that less than 10 percent of the market is a solid form, as compared to the liquid forms. Petitioner's posthearing brief, Declaration of James Milawski, Exhibit 2, p. 2.

[28] Hearing transcript, pp. 18, 52 (Milawski); Petitioner's posthearing brief, Exhibit I, p. 2.

inhibitor blends.[29] In the solid form, granular and flake forms are sometimes used in blending applications because they are free-flowing and low-dusting. Other users prefer the powder or crystal form because they believe the product dissolves more quickly.[30] The properties of BTA are such that it can be used in the end application as a vapor phase corrosion inhibitor, while TTA does not work well in the vapor phase.[31] There are firms that mix BTA and TTA together.[32]

In 2017, Wincom sold three types of TTA – Wintrol CT produced entirely with domestic production, Wintrol T50NA produced entirely with imported solid TTA converted to liquid TTA, and Wintrol CT produced from domestic production with imported solid TTA added ***.[33]

According to the respondent, even where BTA and TTA can be used interchangeably in application, they are not interchangeable due to regulatory requirements.[34] They state the two chemicals have different health and environmental safety concerns internationally. The industry must use different safety data sheets, labels, and hazards for the two chemicals in order to meet the regulatory requirements.[35]

[29] Hearing transcript, p. 18 (Milawski)

[30] Petitioner's postconference brief, Exhibit I, p. 6.

[31] Hearing transcript, pp. 51-52 (Milawsi); Conference transcript, p. 92 (Milawski).

[32] Conference transcript, p 120 (Milawski).

[33] Petitioner's posthearing brief, Exhibit I, pp. 12-13. The petitioner originally mixed domestically produced sodium TTA and imported Chinese TTA because ***. Staff field trip report, Wincom, SantoLubes, and Nalco, January 15, 2020 and January 19, 2020.

[34] Dober's posthearing statement, pp. 23-24.

[35] Dober's posthearing statement, pp. 23-24.

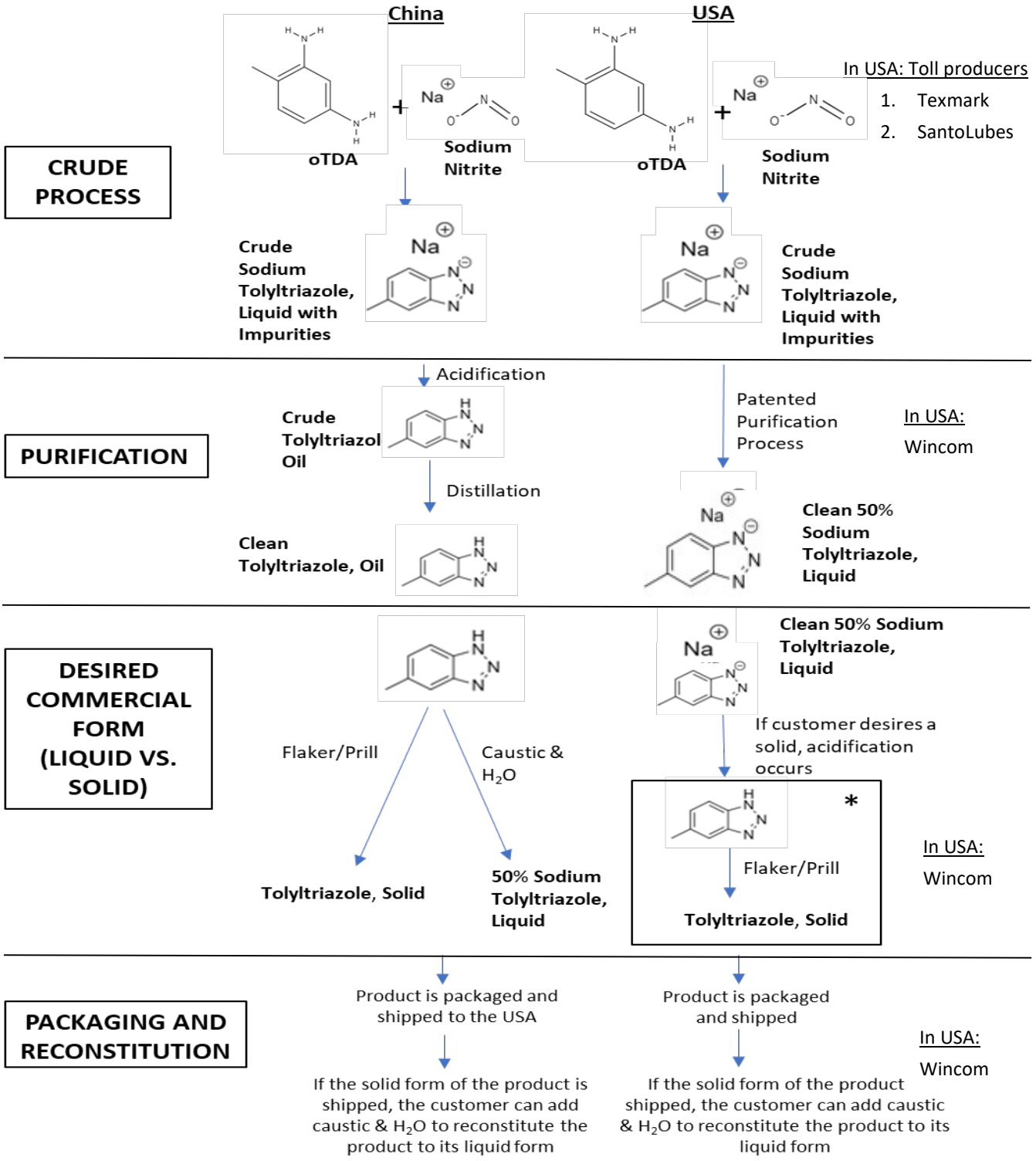
Manufacturing processes

In general, the capitally intensive production process of BTA and sodium BTA has four phases: 1) “Crude Process” or synthesis to produce a crude sodium salt solution that has impurities; 2) “Purification” of the crude product to reduce or eliminate impurities; 3) “Production of the desired commercial form,” which is either the solid or liquid phase; and 4) “Packaging and reconstitution,” as outlined in figure I-2 for China and the United States.

There are companies that use BTA and/or TTA shown in the final phase of figure 1-2 as the starting material for downstream products. The activities include the following: 1) Taking dry BTA or TTA and adding water with caustic to produce a liquid product; 2) Taking dry BTA or TTA and mixing it with other chemicals to make a dry tablet; 3) Taking dry BTA or TTA and mixing it with other chemicals to form a blend.[36]

[36] These activities were carried out by Nalco, Suez, and Dober.

Figure I-2: Corrosion Inhibitors: Tolyltriazole and Sodium Tolyltriazole Manufacturing Process in China and the United States



*TTA (solid form) is not currently commercially produced by Wincom as they produce the liquid form, sodium TTA. The figure illustrates what the production of TTA (solid) would be if they were to transform the liquid, sodium TTA, into a solid form of TTA. Source: Petition, pp. 6-7, Exhibit I-3; Conference transcript, pp. 16-17, 112 (Milawski).

The first part of the production process for TTA or sodium TTA is combining raw materials ortho toluene diamine ("oTDA") and sodium nitrite in a pressure reactor to produce crude sodium TTA.[37] The petitioner does not perform this part of the manufacturing process, as it requires specialized knowledge, major investment in equipment, proper zoning, and compliance with complex safety standards.[38] In the United States, production of crude is completed by domestic toll manufacturers. The crude product has impurities and is not sold commercially in the merchant market.[39] The petitioner starts with crude for downstream processing.

The second part of the production process is purification, which is carried out by the petitioner, who uses a patented *** process.[40] The purification process reduces or eliminates

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[37] ***"Crude TTA in liquid form"*** is the form of TTA that is produced when ortho toluene diamine and sodium nitrite are reacted under the requisite pressure and temperature conditions and subsequently cooled. Crude TTA in liquid form typically has a Gardner color value > 18 or is not otherwise capable of being rated using the Gardner color scale. Color impurities present within this product intermediate are not removed.
"Crude TTA in solid form" is the form of TTA that is produced when ortho toluene diamine and sodium nitrite are reacted under the requisite pressure and temperature conditions and subsequently cooled. It is then subjected to an acidification process and processed into the solid form. Crude TTA in solid form is brown to black in color. It can be made into a sodium salt solution that can be analyzed on the Gardner color scale. If analyzed as a liquid, Crude TTA in solid form typically has a Gardner color value > 18 or is not otherwise capable of being rated using the Gardner color scale.
"Purified TTA in liquid form" is the form of TTA that is produced by processing crude TTA in a purification process that greatly reduces impurities in the crude TTA and increases the purity level of the liquid TTA. Purified TTA in liquid form typically has a Gardner color scale value lower than or equal to 12.
"Purified TTA in solid form" is the form of TTA that is produced by processing crude TTA in a purification process that greatly reduces the impurities in the crude TTA and increases the purity level of the TTA. It is then subjected to a process that produces the solid form of the product. The purified solid TTA is typically light tan/yellow to off-white in color. If processed into a liquid form, it typically would have a Gardner color scale rating lower than or equal to 12. USITC final phase questionnaires.

[38] The petitioner is located in Cincinnati, Ohio. The use of a high pressure and temperature reactor requires specialized skills, capital, and regulatory compliance (Environmental Protection Agency and Occupational Safety and Health Administration). Conference transcript, pp. 105-107 (Milawski); p. 108 (Spore). A new high-pressure reactor would cost about $***; however, the reaction is highly exothermic (gives off heat) and requires cooling towers and other infrastructure. There must also be large volume holding tanks for the raw materials. Staff field trip report, Wincom, SantoLubes, and Nalco, January 15, 2020 and January 19, 2020.

[39] Suez postconference brief, p. 3.

[40] The patent is currently in effect and has about 10 years until expiration. Conference transcript, p. 66 (Milawski). The process is described in U.S. Patent No. ***. Petitioner's postconference brief, Exhibit 1, p. 17.

impurities.[41] Crude product is purified to yield sodium TTA, which is one of the two desired commercial forms of TTA.[42] This patented purification process reduces the amount of chemical waste during the process and lessens its environmental impact.[43]

The third part in the production process involves manufacturing the product in the customers' desired form.[44] The petitioner's patented purification process produces sodium TTA, one of the two desired forms.[45] Currently, the petitioner does not sell TTA, which is the solid form.[46] However, they report that they have the ability to produce TTA by acidifying and flaking and/or prilling the sodium TTA (liquid) to TTA (solid).[47]

The last step in the production process involves packaging. The petitioner provides its domestic product, sodium TTA, in tank trucks, totes, and drums.[48]

As denoted in figure I-2, the Chinese manufacturing process begins the same way as in the United States. The same raw materials, oTDA and sodium nitrite, are used to produce crude sodium TTA.[49]

The Chinese purification process involves the acidification and distillation of the crude TTA to produce a purified (clean) TTA oil. It is different from the patented process in the United States. To purify TTA, the Chinese use sulfuric acid for the acidification step, which results in a waste solution of sodium sulfate. The purification process generates a voluminous amount of waste that must be disposed of, which is approximately one pound of sodium sulfate waste for every pound of TTA product.[50] The U.S. process is more efficient in that it does not generate the sodium sulfate waste. The petitioner states that their patented process has fewer steps and is less costly than the Chinese process.[51]

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[41] Impurities in this process are ***. Petitioner's postconference brief, Exhibit I, p. 19.

[42] Petition, Exhibit I, p. 4.

[43] This also reduces the costs associated with the disposal of hazardous waste. Conference transcript, p. 16, 94 (Milawski).

[44] ***.

[45] Petition, Exhibit I, p. 4.

[46] Conference transcript, p. 112 (Milawski).

[47] Conference transcript, p. 112 (Milawski); Petition, Exhibit I, p. 4.

[48] Staff field trip report, Wincom, SantoLubes, and Nalco, January 15, 2020 and January 19, 2020; Conference transcript, p. 112 (Milawski).

[49] Petition, Exhibit 1, p. 4.

[50] Conference transcript, pp. 104-105 (Milawski).

[51] Conference transcript, pp. 66, 94 (Milawski).

The Chinese produce both desired commercial forms of TTA—TTA (solid) and sodium TTA (liquid). Sodium TTA is produced by adding sodium hydroxide (caustic) and water to the purified TTA oil. The Chinese also produce TTA by flaking and/or prilling the purified TTA oil.[52] The Chinese usually ship their product to the United States as a solid form in paper and woven bags or sacks.[53] If the manufacturer ships TTA (solid form), the customer can add sodium hydroxide (caustic) and H_2O to reconstitute the product to its liquid form.[54]

In the manufacturing process, Wincom notes that the process impurities are ***, which it removes with its purification process.[55] Wincom has technical ability to control the purity of its product, and notes there are some customers who would prefer less purity if it costs less.[56] Dober and others assert that they cannot use Wincom's product due to its impurities. The following evidence is submitted for the record: 1) Fourier transform infrared spectra (FTIR) of Wincom's Wintrol CT and Dober's NaTT 50 percent [57]; 2) Metal analysis by inductively coupled plasma (ICP) of Wincom's Wintrol CT and Dober's NaTT 50 percent[58]; 3) Gas chromatography (GC) spectra of Wincom's Wintrol CT and Dober's NaTT 50 percent[59]; 4) Level 7 exhaustive coolant analysis, physical and chemical concentration data by various ASTM methods of Wincom's Wintrol CT only.[60] The FTIR and GC spectra show that Wincom's Wintrol CT and Dober's NaTT 50 percent are very similar. In terms of completed metals testing, Wincom's Wintrol CT sample had ***, while Dober's imported sample from China had ***.

[52] Petition, Exhibit I, p. 4.

[53] Staff field trip report, Wincom, SantoLubes, and Nalco, January 15, 2020 and January 19, 2020; Conference transcript, p. 112 (Milawski).

[54] Petition, Exhibit 1, p. 4.

[55] Petitioner's postconference brief, Exhibit I, p. 19.

[56] Staff field trip report, Wincom, SantoLubes, and Nalco, January 15, 2020 and January 19, 2020; Conference transcript, p. 112 (Milawski).

[57] Dober posthearing statement, Exhibits A and B. Exhibit A sample date is January 4, 2021; Exhibit B sample date is December 15, 2020. Dober's sample is the solid TTA imported from China, reconstituted with caustic and water to get a liquid form of product at 50 percent concentration.

[58] Dober posthearing statement, Exhibits A and B. Exhibit A sample date is January 4, 2021; Exhibit B sample date is December 15, 2020. The metals tested were cadmium, copper, iron, lead, and zinc, all in the aqueous phase.

[59] Dober posthearing statement, Exhibit C. Sample date acquired December 29, 2020.

[60] Old World Industries, posthearing statement, Exhibit A. Chemical analysis report date is November 12, 2020.

[61] [62] The level 7 exhaustive coolant analysis metals data for Wintrol CT shows ***.[63] Old World states that Wintrol CT does not meet its specifications; however, it does not submit spectra or other data to show that the imported Chinese or other countries' product could meet specifications.[64]

The petitioner currently does not commercially produce BTA[65] for the merchant market.[66] It reports it has the ability to produce BTA using the same or similar manufacturing equipment and employees that are now used to produce TTA.[67] The patented process techniques for production of TTA can be applied to BTA.

The Chinese currently produce BTA and sodium BTA. This manufacturing process is similar to the manufacturing process for TTA and sodium TTA. In production of BTA and sodium BTA, orthophenylene diamine ("OPD") is used as an input in place of oTDA for raw materials

[61] Dober's submitted metals analysis data shows Wintrol CT has *** while Dober's imported TTA with caustic and water added has ***.

[62] There is ***.

[63] The Old World Industries data for Wincom's Wintrol CT shows ***, while the ICP metals data submitted by Dober shows ***.

[64] Old World Industries, posthearing statement, Exhibits A, B, and C. ***.

[65] ***"Crude BTA in liquid form"*** is the form of BTA that is produced when orthophenylene diamine and sodium nitrite are reacted under the requisite pressure and temperature conditions and subsequently cooled. Crude BTA in liquid form is dark in color. Color impurities present within this prospective product intermediate are not removed.
"Crude BTA in solid form" is the form of BTA that is produced when orthophenylene diamine and sodium nitrite are reacted under the requisite pressure and temperature conditions and subsequently cooled. It is then subjected to an acidification process and processed into the solid form. Crude BTA in solid form is tan to dark in color.
"Purified BTA in liquid form" is the form of BTA that is produced by processing crude BTA in a purification process that greatly reduces the impurities in the crude BTA and increases the purity level of the BTA. Purified BTA in liquid form typically has a Gardner color scale value lower than 12.
"Purified BTA in solid form" is the form of BTA that is produced by processing crude BTA in a purification process that greatly reduces the impurities in the crude BTA and increases the purity level of the BTA. It is then subjected to a process that produces the solid form of the product. The purified solid BTA is typically light tan/yellow to off-white in color and, if put in a liquid form, would typically have a Gardner color scale rating lower than or equal to 12. USITC final phase questionnaires.

[66] Conference transcript, p. 47 (Milawski). The petitioner ***. Petition, p. 9.

[67] Petition, p. 7.

during the production of crude.[68] The OPD and sodium nitrite produce crude sodium BTA in liquid form. The crude is then acidified and distilled to a clean BTA oil. The oil is then used to produce BTA or sodium BTA. Sodium BTA is produced by adding sodium hydroxide (caustic) and water. BTA is produced by flaking and/or prilling the clean BTA oil.[69] The desired commercial form is then packaged and shipped to the United States. If the solid form of the product is shipped, the customer can add caustic and water to reconstitute the product to its liquid form.[70] Adding caustic and water to a solid product to yield a liquid product does not require complex technical expertise and is commonly known to corrosion inhibitor companies.[71] The petitioner states that the product solid to liquid transformation (reconstitution) costs a small percentage of overall sales of *** percent.[72]

A summary of chemistry activities is shown in figure I-3.

[68] Conference transcript, p. 16 (Milawski).
[69] Petition, Exhibit I, p. 4.
[70] Petition, Exhibit I, p. 4.
[71] Dober Chemical Corporation's postconference statement, p. 8.
[72] Petitioner's postconference brief, p. 10: Caustic is stated as cheap. Hearing transcript, p. 99 (Milawski).

Figure I-3: Corrosion inhibitors: Chemistry activities of firms in the United States

Firm	Crude Process/Synthesis: React ortho toluene diamine (oTDA) and sodium nitrite	Purification of crude sodium TTA (liquid form)	Start with TTA (solid) or BTA (solid) then add caustic and water	Start with TTA (solid) and/or BTA (solid) then make a blend
Texmark	yes	no	no	no
SantoLubes	yes[73]	no	no	no
Wincom	no	yes	yes	no
Suez	no	no[74]	yes[75]	yes[76]
Nalco	no	no	unknown	yes[77]
Dober	no	no	yes[78]	yes[79]

Domestic like product issues

The Commission's decision regarding the appropriate domestic product(s) that are "like" the subject imported product is based on a number of factors including: (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) common manufacturing facilities, production processes, and production employees; (5) customer and producer perceptions; and (6) price.

The petitioner proposes a single like product, co-extensive with the scope that includes both tolytriazole and benzotriazole.[80] In the preliminary phase investigations, the respondents

[73] Staff field trip report, Wincom, SantoLubes, and Nalco, January 15, 2020 and January 19, 2020.

[74] Suez posthearing statement, Exhibit I, p. IV-33. The firm does not import crude TTA or crude BTA. Suez posthearing statement, Exhibit I, pp. 3-4.

[75] Suez purchases solid TTA and adds caustic and water to make a liquid TTA solution. Suez posthearing statement, Exhibit I, p. 4.

[76] The majority, approximately *** percent of the solid TTA purchased goes into making its Halogen Resistant Azole (HRA) corrosion inhibitor product. TTA is added to sodium hypochlorite and other components are added. The remaining percentage goes into liquid TTA products and blends. Suez posthearing statement, Exhibit I, pp. 1, 6; Suez purchases less than *** percent solid BTA, and it does not purchase liquid TTA or liquid TTA. The firm does not import crude TTA or crude BTA. Suez posthearing statement, Exhibit I, pp. 3-4.

[77] Nalco posthearing statement, p. 4; Staff field trip report, Wincom, SantoLubes, and Nalco, January 15, 2020 and January 19, 2020, pp. 5-6; Hearing transcript, p. 33 (Reynolds).

[78] Dober starts with solid TTA and adds NaOH (caustic). Hearing transcript, p. 149 (Dobrez).

[79] Dober's has three product types that have components of BTA and/or TTA. The first is its Smart Release® tablet, which is a dry blend of up to 5 different chemicals comprising *** percent in-scope products. The second type is its supplemental cooling additives dry tablets, which are dry blends comprised of 10-18 different chemicals. The third is its coolant additives liquid products, which are comprised of 10-20 different chemicals comprising *** percent in-scope products. Hearing transcript, pp. 151-152 (Dobrez); ITC staff communication with Dober, January 26, 2021; Dober's posthearing statement, p. 6, Exhibits I and J. The dry tablets are placed in liquid as the end use.

did not contest the petitioner's definition of the domestic like product, however, they argued that TTA and BTA are not interchangeable, furthermore, Dober contended that "the scope of the petition" improperly includes BTA.[81]

In the final phase investigations, the petitioner continues to propose a single like product, co-extensive with the scope that includes both tolytriazole and benzotriazole, while the respondents did not contend that there should be a separate like product.[82]

(…continued)

[80] Petition, p. 9.

[81] Dober's postconference brief, pp. 4-5; Nalco's postconference brief, pp. 1-2; Suez postconference brief, p. 7.

[82] Hearing transcript, p. 31 (Reynolds).

Part II: Conditions of competition in the U.S. market[1]

U.S. market characteristics

The largest end uses for corrosion inhibitors (TTA and BTA) are industrial water treatment and automotive fluids.[2] Corrosion inhibitors are also used in treatment of metals and metal alloys, metalworking fluids, aircraft and runway de-icers, lubricants, cleaners, direct treatment, circuit boards, inks and coatings.[3] TTA and BTA mainly prevent corrosion of copper and brass and may be combined in some formulas to better inhibit corrosion of metal surfaces.[4] [5] In industrial water treatment applications, a combination of water and TTA and/or BTA (and possibly other ingredients) is used in a circulating system for heating or cooling. In end uses such as automobile engines with multiple metals, TTA and/or BTA may be used with chemicals that inhibit corrosion of other metals resulting in "multi-metal corrosion" inhibitors.[6] In metal working, corrosion inhibitors are used to prevent corrosion of metal components during production and assembly.[7]

Apparent U.S. consumption of corrosion inhibitors increased by *** percent between 2017 and 2019.

U.S. purchasers

The Commission received 34 usable questionnaire responses from firms that had purchased corrosion inhibitors during 2017-19.[8] [9] Seventeen of 34 responding purchasers are

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[1] Wincom provided ***.

[2] Conference transcript p. 81. (Milawski).

[3] Petition, p. 1.

[4] Conference transcript pp. 87-88, 90-91 (Zibrida, Milawski).

[5] Petitioners' postconference brief, Answers to Staff Questions, p. 21.

[6] Conference transcript p. 99 (Zibrida).

[7] Conference transcript pp. 99-100 (Zibrida).

[8] The following firms provided purchaser questionnaire responses: ***.

[9] Of the 34 responding purchasers, 13 purchased domestic corrosion inhibitors, 25 purchased and imported corrosion inhibitors from China, 2 purchased/imported imports of corrosion inhibitors from nonsubject sources, and 5 reported purchases from unknown sources. The number of firms that purchased Chinese material, and the amount of such material purchased, may be understated because ***. In addition, purchased/imported corrosion inhibitors from nonsubject sources may include Chinese product. Purchasers reporting nonsubject imports include *** and ***). Finally, much of the product purchased from unknown sources is probably either U.S.-produced product or Chinese product. Purchasers of corrosion inhibitors from unknown sources include ***.

processors, 13 are end users (producing ***), 6 are distributors, and 4 responded "other" (they produced blends that include corrosion inhibitors or ***, and 1 was a ***).[10] Responding U.S. purchasers were located in all regions of the continental United States. Large purchasers of corrosion inhibitors (in order of size of purchases and imports) were ***.[11]

[10] There is no clear distinction between purchasers that reported they were processors and those that reported they were end users. Two purchasers reported that they were both. Half of the purchasers that reported they were processors (17 of 34) and all purchasers that identified themselves as end users reported producing downstream product.

[11] *** percent of all purchases and imports reported by the purchasers in 2019. ***, combined, represented *** percent of all purchases and imports reported by responding purchasers in 2019.

Channels of distribution

U.S. producers/tollers sold *** to processors, while the U.S. processor/tollee sold most of its product to ***.[12] Importers of Chinese product sold mainly to processors/end users, as shown in table II-1.

Table II-1
Corrosion inhibitors: U.S. producers' and importers' U.S. commercial shipments, by sources and channels of distribution, January 2017- June 2020

Item	Period				
	Calendar year			January-June	
	2017	2018	2019	2019	2020
	Share of reported shipments (percent)				
U.S. producers/tollers: to Distributors	***	***	***	***	***
to Processors	***	***	***	***	***
to End users	***	***	***	***	***
U.S. processors/tollees: to Distributors	***	***	***	***	***
to Processors	***	***	***	***	***
to End users	***	***	***	***	***
U.S. importers: China to Distributors	***	***	***	***	***
to Processors	***	***	***	***	***
to End users	***	***	***	***	***
U.S. importers: Nonsubject to Distributors	***	***	***	***	***
to Processors	***	***	***	***	***
to End users	***	***	***	***	***
U.S. importers: All import sources to Distributors	***	***	***	***	***
to Processors	***	***	***	***	***
to End users	***	***	***	***	***

Note: Partial year data is incomplete for Chinese imports.

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

[12] The Commission collected these data for distributors, end users, and processors. However, the difference between end users and processors was not defined in the questionnaire and it is not clear if different firms included the same types of firms as end users and processors.

Geographic distribution[13]

*** importers reported selling corrosion inhibitors to all regions in the contiguous United States (table II-2). Wincom reported that *** percent of its commercial shipments were within 100 miles of its production, *** percent of its commercial shipments 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 II-2
Corrosion inhibitors: Geographic market areas in the United States served by U.S. producers and importers

Region	U.S. producers	Importers
Northeast	***	11
Midwest	***	11
Southeast	***	8
Central Southwest	***	6
Mountain	***	3
Pacific Coast	***	9
Other	***	---
All regions (except Other)	***	3
Reporting firms	1	12

Note: All other U.S. markets, including AK, HI, PR, and VI.

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

Supply and demand considerations

U.S. supply

Table II-3 provides a summary of the supply factors regarding corrosion inhibitors from U.S. producers and from China. U.S. capacity and other factors are reported separately for producer/tollers and processors/tollees. U.S. producers currently produce only TTA. Chinese producers are reported to produce both TTA and BTA. U.S. producers reported that BTA is produced using a similar production process to that of TTA, and while they have been planning

[13] Only Wincom's responses for geographic distribution and shipping distances are reported because the U.S. producers that toll produce corrosion inhibitors do not compete directly with imports.

to produce BTA, they are unable to do so because of Chinese imports.[14] Chinese capacity is much larger than U.S. capacity.

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

	Capacity (1,000 pounds)		Capacity utilization (percent)		Ratio of inventories to total shipments (percent)		Shipments by market, 2019 (percent)		Able to shift to alternate products
Country	2017	2019	2017	2019	2017	2019	Home market shipments	Exports to non-U.S. markets	No. of firms reporting "yes"
United States: Producers/ Tollers	***	***	***	***	***	***	***	***	0 of 3
United States: Processors/ Tollees	***	***	***	***	***	***	***	***	
China	***	***	***	***	***	***	***	***	0 of 1

Note: Responding U.S. producers accounted for all of U.S. production of corrosion inhibitors in 2019. Responding foreign producer/exporter firms accounted for less than half of U.S. imports of corrosion inhibitors from China during 2019. 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 Part I, "Summary Data and Data Sources."

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

Domestic production

Based on available information, U.S. producers of corrosion inhibitors have the ability to respond to changes in demand with large changes in the quantity of shipments of U.S.-produced corrosion inhibitors to the U.S. market. The main contributing factors to this degree of responsiveness of supply is the availability of unused capacity and some inventories held by the processors. Factors mitigating responsiveness of supply include limited ability to shift shipments from inventories of the toll producers, limited ability to shift shipments from alternate markets, and limited ability to shift production to or from alternate products.[15] [16] [17]

[14] Conference transcript, pp. 19-20 (Milawski), p. 32 (Reynolds).
[15] ***.
[16] Nalco asserts that ***. Nalco's prehearing brief p. 11.
[17] Petitioner asserts that "***." Petitioner prehearing brief, exhibit 1, p. 2.

Both production and production capacity increased between 2017 and 2019 leading to an overall increase in capacity utilization for the producers/tollers and a reduction in capacity utilization by the processor/tollee. Producers reported that they cannot produce other products on the same equipment as corrosion inhibitors. Factors that limit U.S. producers' capacity are ***.

Subject imports from China

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

The responding Chinese producer's production decreased while its capacity was unchanged, resulting in decreased capacity utilization during 2017-19. The responding Chinese producer reported it cannot produce other products on the same equipment as corrosion inhibitors.

Imports from nonsubject sources

Nonsubject imports accounted for 1.6 percent of the quantity of U.S. imports of TTA and BTA, in dry form, in 2019.[18] The largest sources of nonsubject imports during 2017-19 were Japan, Germany, and Kuwait. Combined, these countries accounted for 79.3 percent of nonsubject imports in 2019.[19]

Supply constraints

***, and only one importers reported supply constraints. The majority of responding purchasers also did not report supply constraints. Three purchasers reported supply constraints including shortages of the key raw material Ortho

[18] Based on official U.S. import statistics for HTS statistical reporting numbers 2933.99.8210 and 2933.99.8220. HTS 2933.99.8290 was not included because it is a basket category that includes additional products.

[19] P.A.T. Products states that "solid or dry form of TTA and BTA are only produced in China and not anywhere else in the world." P.A.T. Products' posthearing brief, p. 3.

Toluenediamine (oTDA), and back orders, and ***.[20] Respondent P.A.T. Products stated that the limited supply of key input, oTDA caused by the COVID-19 pandemic, will limit the supply of TTA.[21]

New suppliers

Four of 34 purchasers indicated that new suppliers entered the U.S. market since January 1, 2017. Purchasers cited new suppliers including: Chinese suppliers; Nantong Kanghua Chemical Co. (a Chinese producer); importers entering and exiting the U.S. market; and Wincom.

U.S. demand

Based on available information, the overall demand for corrosion inhibitors is likely to experience small changes in response to changes in price. The main contributing factors are the limited range of substitute products, the small cost share of corrosion inhibitors in most of its end-use products, and the high cost of not using proper corrosion inhibitors in the production of end use products. If proper corrosion inhibitors are not used in systems, the system may stop working and the equipment may deteriorate more rapidly. These costs may be much greater than savings from using less effective corrosion inhibitors.

End uses and cost share

U.S. demand for corrosion inhibitors depends on the demand for U.S.-produced downstream products or services. Reported end uses include its use in ingredients in industrial water treatment, automotive fluids, metalworking fluids, aircraft and runway de-icers, lubricants, cleaners, direct treatment, circuit boards, inks and coatings.

Corrosion inhibitors account for a small share of the cost of the end-use products in which they are used. Reported cost shares for some end uses provided by importers and purchasers were as follows:[22]

- liquid BTA – *** percent;
- liquid TTA – *** percent;
- industrial water treatment products – 5 to14 percent

[20] In addition, while one purchaser reported that there were no supply constraints, it reported shortages in late 2019 and early 2020 from its normal supplier.

[21] P.A.T. Products' posthearing brief, pp. 8-9.

[22] None of the U.S. producers were able to report cost shares in downstream products.

- semiconductors and electronics – *** percent;
- lubricants used in metal working – *** percent;
- diesel engine coolant additives – *** percent;
- closed loop treatments – *** percent;
- pressure wash soaps – *** percent;
- cleaner and degreaser – *** percent;
- metal cleaners and tarnish preventors – *** percent;
- locomotive cooling corrosion inhibitors – *** percent; and
- anticorrosion solutions for offshore drilling – *** percent.

Purchasers typically reported that corrosion inhibitors were a small share of the cost of products they produced. Most purchasers' responses were for specific formulations of the products they produced and were so specific that it was difficult to characterize most responses under a particular end use for the tabulation above. Purchasers listed 59 products or end uses. In most of these products (37), the cost share of the corrosion inhibitors was less than 5 percent of total costs. For nine products, purchasers listed the cost share of corrosion inhibitors ranging from 5 percent to 10 percent, and for nine products the listed cost shares of corrosion inhibitors ranged from 10 to 15 percent. The cost shares of corrosion inhibitors for the remaining five products ranged from 33 to 83 percent.

Business cycles

***, 7 of 17 importers, and 10 of 30 purchasers indicated that the market for corrosion inhibitors is subject to business cycles or distinctive conditions of competition. Specifically, firms reported that demand is seasonal due to higher demand for industrial water treatment in the spring/summer for summer cooling and for corrosion inhibitors used in antifreeze during the fall and winter. Firms also mentioned that the input for TTA, oTDA, is a by-product in the production of Toluene diisocyanate (TDI). Supply of and demand for TDI influences the availability and price of TTA. oTDA is used in polyurethane production (used in construction insulation). The construction boom in China increased demand for (and the price of) oTDA but construction declines cause the prices of oTDA and TTA to decrease. oTDA is also used in computer chip manufacturing which affects its availability for other uses. New capacity to produce oTDA has reduced the price of oTDA causing TTA prices to decline. When asked if there had been changes in the cycles or conditions of competition since 2017, a number of firms reported that the price for Chinese corrosion inhibitors had fallen.

Demand trends

Most firms reported U.S. demand for corrosion inhibitors had fluctuated or demand for corrosion inhibitors had not changed since January 1, 2017 (table II-4).

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

Item	Increase	No change	Decrease	Fluctuate
Demand in the United States				
U.S. producers	***	***	***	***
Importers	---	6	2	6
Purchasers	4	10	2	10
Demand outside the United States				
U.S. producers	***	***	***	***
Importers	---	5	1	3
Purchasers	2	7	3	5
Demand for end use products				
Purchasers	5	8	1	12

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

Substitute products

Most responding firms reported that there were no substitutes for corrosion inhibitors. ***, 3 of 15 responding importers, and 4 of 33 responding purchasers reported that there were substitutes. Substitutes for corrosion inhibitors are limited; reported substitutes include mercantoBTA (MBT) which was a substitute for BTA (MBT was reported to be less effective when used in water treatment), chlorinated TTA (only used in water treatment), and THT (hydrogenated TTA)/BBT (butyl BTA) (products derived from TTA and BTA and much more expensive than TTA or BTA). No firm reported that the price of substitutes affects the price of corrosion inhibitors.

Substitutability issues[23]

The degree of substitution between domestic and imported corrosion inhibitors depends upon such factors as relative prices (e.g., price discounts/rebates), type of product (solid TTA, solid BTA, liquid TTA, liquid BTA, and blends including TTA, BTA, or both), quality (e.g., purity and type of chemical impurities, etc.), and conditions of sale (e.g., lead times between order and delivery dates, reliability of supply, product services, etc.). Based on

[23] This section does not examine either crude TTA or crude BTA since no firm reported purchasing these on the open market.

available data, staff believes that there is moderate[24] degree of substitutability between domestically produced corrosion inhibitors and corrosion inhibitors imported from China.

Substitution is reduced for a number of reasons. First, some U.S. purchasers' systems require solid TTA but only liquid TTA is currently available from domestic producers. Neither solid or liquid BTA or solid TTA are currently available from U.S. producers.[25] Relatively little liquid TTA is imported. The manufacturing processes for using solid and liquid TTA differ, so even users that could use either dry or liquid TTA would have to make changes to their production processes to make the switch. Second, there are other difficulties in changing from solid to liquid TTA in certain end uses. Third, the end uses of BTA differ somewhat from the uses of TTA and there are costs associated with any change from BTA to TTA, or from solid TTA to liquid TTA. Since BTA is more expensive, it is likely that firms choosing to use BTA have chosen to do so because it is more effective than the same amount of TTA would be.[26] Thus while BTA and TTA may be easily interchangeable in some uses, most firms will already use TTA in these types of end uses. Fourth, when BTA is combined with TTA, BTA enhances the effectiveness of the combined product, showing that in these cases, BTA and TTA are not one-to-one substitutes.[27] These differences are discussed in greater detail below under the heading "Differences between types of corrosion inhibitors."

Lead times

Corrosion inhibitors are primarily sold from inventory. ***.[28] Importers reported that 60.9 percent of their commercial shipments came from U.S. inventories, with lead times averaging 4 days; 26.6 percent was produced-to-order in the United States from imported product, with average lead time of 27 days; 7.7 percent was from overseas inventories with lead times averaging 58 days.[29]

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[24] In the prehearing report the substitution elasticity was estimated to be from moderate to high. This has changed in this report due to the evidence at the hearing and in the posthearing briefs of the differences between solid and liquid TTA. Also see Suez's posthearing brief, exhibit 1, pp. I21-I22.

[25] Petitioners claim that they could produce BTA in the United States if the price were high enough to make this profitable. Petition, p. 7.

[26] Petitioners' postconference brief, Answers to Staff Questions, p. 18.

[27] Petitioners' postconference brief, Answers to Staff Questions, p. 21.

[28] Tollers ***.

[29] ***.

Knowledge of country sources

Twenty-five purchasers indicated they had marketing/pricing knowledge of domestic product, 21 of Chinese product, and 2 of product imported from nonsubject countries (India).

As shown in table II-5, most purchasers and their customers never make purchasing decisions based on the producer or country of origin. Of the five purchasers that reported that they or their customers always make decisions based the producer/manufacturer or country of origin, firms cited: preference for a domestic producer; suppliers are approved based on material specifications, service, total cost and meeting quality requirements; Chinese manufacturers are preferred because of consistent quality, reliability of supply, availability in solid form ***, and specific particle size; and to meet requirements.

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

Purchaser/customer decision	Always	Usually	Sometimes	Never
Purchaser makes decision based on producer	4	7	4	18
Purchaser's customers make decision based on producer	1	1	4	19
Purchaser makes decision based on country	3	1	10	19
Purchaser's customers make decision based on country	---	1	7	17

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

Factors affecting purchasing decisions

The most often cited top three factors firms consider in their purchasing decisions for corrosion inhibitors were price (30 firms), availability (27 firms),[30] and quality (26 firms), as shown in table II-6. Quality was the most frequently cited first-most important factor (cited by 16 firms), followed by price (12 firms); price was the most frequently reported second-most important factor (13 firms); and availability was the most frequently reported third-most important factor (13 firms).

[30] This factor is for overall availability. In addition, because only a limited range of corrosion inhibitors were available from the U.S. producer, purchasers were also asked to respond for the importance of the availability of a number of different forms of corrosion inhibitors.

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

Factor	First	Second	Third	Total
Price/cost	12	13	5	30
Availability/reliability of supply	3	11	13	27
Quality/meets specifications/qualifications	16	7	3	26
Domestic source	2	---	1	3
Product range	---	---	3	3
Lead time/delivery date	---	1	1	2
Service	---	1	1	2
Freight costs/logistics	---	---	2	2
Other	1	1	4	NA

Note: Other factors include familiarity with product for first factor; ease of purchasing for second factor; and contract, supplier history, particle size, and meet regulatory requirements for third factors.

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

The majority of purchasers (19 of 32) reported that they usually purchase the lowest-priced product. Eight reported that they sometimes purchase the lowest priced product. Three reported always purchasing the lowest priced product and two never purchased the lowest priced product.

Importance of specified purchase factors

Purchasers were asked to rate the importance of 22 factors in their purchasing decisions (table II-7). Factors rated as very important by more than half of responding purchasers were availability (32 firms); product consistency (31); quality meets industry standards (30); availability of TTA (28); price and reliability of supply (27 each); delivery time (21); availability of purified corrosion inhibitors (19); availability in liquid form (17); availability of BTA (16); and requirements of product formula (15). In contrast, almost all responding purchasers reported that the availability of crude corrosion inhibitors was not important.

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

Factor	Very important	Somewhat important	Not important
Availability	32	---	---
Availability of BTA	16	4	10
Availability of TTA	28	1	2
Availability of dry form corrosion inhibitors	13	6	12
Availability of liquid form corrosion inhibitors	17	2	9
Availability of crude corrosion inhibitors	1	---	25
Availability of purified corrosion inhibitors	19	3	8
Delivery terms	12	19	---
Delivery time	21	11	---
Discounts offered	9	15	7
Minimum quantity requirements	8	19	5
Packaging	8	20	3
Payment terms	11	21	---
Price	27	4	1
Product consistency	31	1	---
Product range	8	15	7
Quality meets industry standards	30	3	---
Quality exceeds industry standards	14	13	4
Reliability of supply	27	4	---
Requirements of product formula	15	7	7
Technical support/service	11	15	6
U.S. transportation costs	8	21	2

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

Purchasers were asked what factors determined the quality of corrosion inhibitors. A number reported that either a certificate of analysis or consistency determined quality. Other factors reported were chemical makeup (purity, assay, no impurities on EPA priority pollution list, no heavy metals, chloride content, pH value, percent active, ash, and moisture); meets specifications/industry standards; performance (works in application, functionality in production process, formulation compatibility, inhibits rust, does not attach to metals, and humidity resistance); appearance (color); odor; particle size; and melting point.

Supplier certification

Most purchasers (19 of 33) required that their suppliers to become certified or qualified to sell corrosion inhibitors to their firm. Purchasers reported that the time to qualify a new supplier ranged from five days to one year. Qualification tended to be based on quality (lab tests, ISO certification, chemical makeup, and performance when used); price (terms and credit); availability (reliability of supply); and review of the producer (management system and financial health). None of the purchasers reported that any domestic or foreign supplier had failed in its attempt to qualify corrosion inhibitors or had lost its approved status since 2017.

Nalco clamed that "after a product has been formulated … no other form of corrosion inhibitor is interchangeable with the one already in the product" and the type of inhibitor used depends on the initial formulation of the product.[31]

Changes in purchasing patterns

Purchasers were asked about changes in their purchasing patterns from different sources since 2017 (table II-8). Four purchasers reported decreasing purchases of U.S. product; reasons given included price, changes in product mix, and switching to solid corrosion inhibitors. Four reported increased purchases of U.S. product; reasons given included stable price, preference for U.S. product, and switching to purchase solely from the U.S. producer. Five purchasers reported that their U.S. purchases fluctuated mainly due to fluctuations in demand for the products they produce. Purchasers that reported increasing purchases of Chinese product cited changes to solid corrosion inhibitors, buying from Chinese producers rather than from a U.S. firm reselling Chinese material, price, and anticipating a shortage. Six purchasers reported decreasing purchases of Chinese corrosion inhibitors because of changes in demand for the product, although one reported that because price had increased, it has used less expensive alternatives.

Table II-8
Corrosion inhibitors: Changes in purchase patterns from U.S., subject, and nonsubject countries

Source of purchases	Did not purchase	Decreased	Increased	Constant	Fluctuated
United States	9	4	4	5	5
China	6	6	4	5	7
Nonsubject sources	16	---	---	---	1
Sources unknown	15	1	1	1	1

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

Most purchasers (27 of 33) had not changed suppliers since January 1, 2017. Of the six purchasers reporting that they had changed suppliers since January 1, 2017, ***, ***,[32] ***

[31] Nalco prehearing brief, p. 7.
[32] ***.

***,[33] and *** reported changing suppliers due to price, but reported changing between different Chinese suppliers.

Importance of purchasing domestic product

Most purchasers (31 of 34) reported that all of their purchases did not require U.S.-produced product. One purchaser reported that domestic product was required by law (for *** percent of its purchases) and was required by customers (for *** percent of its purchases). Two purchasers reported preferences for domestic product for all their purchases. One of these (***) purchased only from Wincom but reported purchasing corrosion inhibitors produced both in the United States and in China. It reported preferring U.S. product for "strategic" reasons. The other (***) actually purchased from importers of Chinese product, rather than purchasing U.S. product despite its stated preferences.[34]

Differences between types of corrosion inhibitors

The following sections examine the differences between different types of corrosion inhibitors. The first part analyzes the differences between TTA and BTA and the barriers to purchasers switching between BTA and TTA. The second part examines barriers to purchasers switching between liquid TTA (in the form of sodium TTA) and the solid TTA. The third part summerizes purchaser responses if they reported that different types of corrosion inhibitors were not interchangeable.

TTA vs BTA

U.S. producers produce only TTA, while Chinese imports include both TTA and BTA. Therefore the difference between TTA and BTA reduces interchangeability between U.S.-produced corrosion inhibitors (TTA) and Chinese corrosion inhibitors that are BTA. Staff estimates that Chinese BTA accounted for *** percent U.S. apparent consumption of corrosion inhibitors in 2019.[35] Petitioners stated that BTA is more expensive to produce than TTA and that

[33] ***.

[34] Staff has requested that *** clarify its response.

[35] Not all Chinese importers reported their shipments broken out by TTA and BTA. This share reflects shipments reported by Chinese importers that did report their shipments of the two sepparately.

Wincom has been planning to produce BTA but has been prevented from doing so because of the low price of imports from China.[36] [37]

Petitioners stated that TTA and BTA "are considered interchangeable in many applications,"[38] and that some customers switch between TTA and BTA.[39] They also stated that purchasers sometimes combine TTA and BTA in blends, because using a combination of TTA and BTA makes some blended product more effective.[40] They asserted that TTA and BTA are not interchangeable only in certain end uses. For example, only BTA works well as a vapor-phase corrosion inhibitor.[41]

Respondents claimed that TTA and BTA are not interchangeable or have very limited interchangeability.[42] In some uses there is no interchangeability. For example, Suez uses solid TTA to react with sodium hypochlorite to produce HRA, and it is impossible to produce HRA from BTA.[43] BTA is less acidic than TTA and as a result its performance differs in some applications.[44] Respondents also claimed that even when TTA and BTA can technically be used to replace each other in an end use, there remain barriers to substitution. First, TTA may not be as effective as BTA in some uses such as cooling water when chlorination, hydrogen sulfides, organic halide discharges, and stability of the product are concerns.[45] Second, TTA and BTA are both hazardous if used improperly; however, their hazard, and therefore their hazard labeling, differ.[46] Thus, even if both products are equally effective, Dober reported it cannot temporarily switch between TTA and BTA because this would require its customers to have multiple labels which would increase costs.[47] Dober also sells products in the EU and under the EU regulations, each formula must be entered in the EU's ERP system (Enterprise Resource Planning software system). If Dober changes its formula between TTA and BTA, it would need to file it as a new

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[36] Petition p. 13. Chinese importers reported average unit values for solid BTA that are higher than their average unit values for solid TTA in each year 2017-19 and for January-September 2019 and January-September 2020.

[37] Conference transcript pp. 19-20 (Milawski).

[38] Conference transcript p. 8 (Orava).

[39] Petitioner's posthearing brief, p 23.

[40] Conference transcript pp. 92-93 (Milawski).

[41] Conference transcript p. 92 (Milawski).

[42] Conference transcript p. 124 (Bode). Suez's posthearing brief, Exhibit 1 p. I-13.

[43] Suez's posthearing brief, Exhibit 1 p. I-5.

[44] Conference transcript pp. 135-136 (Bode).

[45] Suez's posthearing brief, Exhibit 1 p. I-15-I-16

[46] Conference transcript p. 128 (Helton).

[47] Conference transcript pp. 128-129 (Helton).

product in the ERP system.[48] In addition, purchasers may need to have approval from state authorities for any changes which require revisions to their water discharge permits.[49] Lastly, BTA is more stable when pH is lower.[50] Respondents also stated that customers are reluctant to switch between TTA and BTA because performance may differ.[51] Nalco stated that ***.[52]

Solid vs liquid

U.S. producers sell only liquid TTA, and therefore the difference between liquid TTA and solid TTA reduces interchangeability between U.S.-produced corrosion inhibitors and Chinese corrosion inhibitors that include both liquid and solid TTA.

Respondents reported three distinct problems they faced when using liquid TTA rather than solid TTA. First, respondents reported that solid and liquid TTA require different methods of handling. Suez reported that shifting from solid TTA to liquid TTA would require "a significant amount of detailed engineering and capital investment."[53] Second, in some end uses TTA is used in a solid form rather than a liquid form, for example, selling corrosion inhibitors in a tablet form.[54] [55] Third, for some end use products, the other inputs tend to be caustic; in these cases solid TTA that is added to the mixture may liquify without the addition of a separate caustic. The U.S. produced liquid TTA is a caustic solution while solid TTA from China is not caustic. Therefore, in order to produce a similar or the same end product, the formula would

[48] Conference transcript p. 129 140-141 (Helton).

[49] Suez's posthearing brief, Exhibit 1 p. I-6.

[50] Conference transcript p. 129 (Helton).

[51] Conference transcript p. 135-136 (Bode).

[52] Nalco's prehearing brief, p. 9.

[53] Hearing transcript p. 225 (Jones). "It would require new storage tanks, new piping, fluid transmitters, pumps."

[54] Hearing transcript pp. 151-152 (Dobrez).

[55] Suez stated that it uses solid TTA in a chemical reaction to produce HRA. Liquid TTA (sodium TTA) includes caustic that would have to be neutralized in order to use it its reaction, however, this would add additional ingredients in the final product and therefore the product performance would change. In addition, solid forms are more concentrated (reducing storage costs), liquid TTA and BTA are more likely to cause handling problems such as chemical burns. Suez's posthearing brief exhibit 1, pp. I-1-3. In addition, it stated that if it were to use liquid TTA to produce HRA it would 1) reduce yield and purity, 2) require changes in storage, loading, pumps, piping, and control systems, 3) increase warehouse requirements, and 4) have to meet new EPA requirements costing more than *** dollars. Thus changing to liquid TTA would result in a new product. Suez's posthearing brief, Exhibit 1 p. I-8-9.

have to be changed, either by adding less caustic forms of the other inputs or by adding acid to reduce the pH of the final product.[56] These changes in product formulations may be time consuming and/or costly because they could require changes in the production process (which may require new equipment) as well as extensive testing to ensure the new product is effective.[57]

Types of corrosion inhibitors purchased

Purchasers were asked to report which types of corrosion inhibitors they purchased in 2019 by the source of these products (table II-9). Sixteen[58] purchasers reported purchasing purified liquid TTA,[59] and seven reported purchasing mixtures including only TTA.[60] Eighteen purchasers reported purchases of purified BTA. Twelve reported purchases of solid TTA. No firms reported purchases of either crude TTA or crude BTA.

Table II-9
Corrosion inhibitors: Number of purchasers reporting purchasing types of corrosion inhibitors from U.S., subject, and other sources in 2019

Type of corrosion inhibitor	U.S.	China	Other sources
Purified TTA: liquid	10	8	1
Purified TTA: solid	---	12	1
Mixtures including only TTA	4	2	2
Purified BTA	---	15	4
Mixtures including only BTA	---	1	1
Mixtures including both TTA and BTA	---	1	1

Note: No purchasers reported purchasing crude TTA or crude BTA.

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

Purchaser reported differences

Just over half of responding purchasers (16 of 30) reported that different types of corrosion inhibitors were not interchangeable. Purchasers that reported corrosion inhibitors were not interchangeable were asked to list the types of corrosion inhibitors and what limited

[56] Hearing transcript, p. 171 (Urankar). There are also health and safety risks in using concentrated acids.

[57] Hearing transcript, pp. 170-172 (Urankar).

[58] Some purchasers reported purchases from multiple sources, therefore, the number of purchasers reporting purchases by type is less than the total number of responses for all sources combined.

[59] Three purchased both U.S. and Chinese liquid TTA.

[60] One purchased both U.S. and Chinese mixtures containing only TTA.

their interchangeability. The most common response was those regarding differences between TTA and BTA including:

- differences in solubility (BTA is more soluble in low pH products, while TTA is more soluble in high pH products; BTA is more water soluble than TTA which allows for easier formulation within a corrosion inhibitor system; and BTA is needed in systems with pH 8.5 or lower because at these levels of pH TTA would precipitate out);
- different hazard classifications (TTA and BTA have different health and environmental safety concerns; any substitution would require new Safety Data Sheets (SDS) for each affected products and customers would also have to amend their SDS; and worker odor sensitivity differ between BTA and TTA);
- BTA and TTA protect different types of metal;
- BTA tends to be a more effective corrosion inhibitor than TTA (BTA is more stable thermo-oxidatively in engine coolant and BTA corrosion protection would last longer); and
- BTA and TTA substitution would require several months of laboratory work.[61]

Some purchasers, however, reported TTA and BTA were more interchangeable, either if there is a large price difference between the two, or in particular end uses.

Purchasers also reported differences for other types of corrosion inhibitors (other than TTA compared with BTA) including:

- water based vs oil bases for TTA 50 percent vs TTA DG;
- manufacture process of downstream products differs when using solid versus liquid TTA; and
- Cholorotolytrizone (an out-of-scope product) and TTA are not interchangeable because they have different solubility.

Finally, purchasers reported difficulties that would arise from substitution between different types of corrosion inhibitors (but did not list the specific types of corrosion inhibitors) including:

- preapproved specifications (lab has formula that specifies this product and it is a necessary ingredient);

[61] Old World estimated that "if a formulation change occurs all technical approvals and performance claims will require revalidation, which takes 2-5 years at a cost of ≥$200,000 USD per formula." Old World's posthearing brief, p. 6.

- substitution would require costly and time-consuming changes in formulation (evaluated on performance (rust inhibition, salt spray resistance, and humidity resistance), appearance, chemical make-up, and production process); and
- product name would be changed.

Purchasers were asked if certain grades, types, or sizes were available from only one source. *** reported that only China was able to meet its quality specifications and volume needs. Dober reported that it can only use solid form because its end product is a solid tablet, and it also requires a specific particle size to make tablets.[62] Other purchasers reported solid TTA and BTA were only available from China.

In addition, Old World, an importer and user of liquid TTA states that "Wincom's domestically produced Sodium TTA 50% does not meet our strict quality specifications for the automotive industry."[63] Thus it claims that U.S. produced liquid TTA is not competitive with Chinese liquid TTA in its automotive applications.[64]

Comparisons of domestic products, subject imports, and nonsubject imports

Purchasers were asked a number of questions comparing corrosion inhibitors produced in the United States, China, and nonsubject countries. First, purchasers were asked for a country-by-country comparison on the same 22 factors (table II-10) for which they were asked to rate the importance.

Most purchasers reported that U.S.-produced and Chinese corrosion inhibitors were comparable on 19 of 22 factors. Most firms reported U.S. product was superior on delivery time; half the responding purchasers (8) reported U.S. and Chinese product were comparable in the availability of dry form, but 7 reported Chinese product was superior for availability of dry form; half the responding purchasers (9) reported U.S. and Chinese product were comparable in price but eight reported that Chinese product was superior (lower) priced. Of the six factors that all or almost all purchasers reported were "very important," most responding purchasers reported U.S. and Chinese product were comparable for availability, availability of TTA, product consistency, quality meets industry standards, and reliability of supply. At least half of

[62] Hearing transcript, p. 184-185 (Dobrez).

[63] Old World's posthearing brief, pp. 2-5. *** were not in Old World's specifications. These impurities increase corrosion in automotive applications.

[64] Old World's posthearing brief, p. 5.

purchasers reported that U.S. and nonsubject product were comparable on 16 of 21 factors (no firm responded on availability of crude). Most responding purchasers reported U.S. product was superior on delivery time, product range, quality exceeds industry standards, and technical support. At least half of responding purchasers reported Chinese product was comparable to product from nonsubject countries for 16 of 22 factors. Most responding purchasers reported Chinese product was superior on availability, availability of BTA, availability of TTA, availability in liquid form, price, and technical support/service.

Table II-10
Corrosion inhibitors: Purchasers' comparisons between U.S.-produced and imported product

Factor	U.S. vs. China			U.S. vs. nonsubject			China vs. nonsubject		
	S	C	I	S	C	I	S	C	I
Availability	2	15	3	1	3	---	2	1	---
Availability of BTA	1	10	4	---	2	---	1	---	---
Availability of TTA	2	13	3	1	2	---	2	1	---
Availability of dry form corrosion inhibitors	1	8	7	---	1	---	1	1	---
Availability of liquid form corrosion inhibitors	5	9	2	1	1	---	1	---	---
Availability of crude corrosion inhibitors	---	6	2	---	---	---	---	1	---
Availability of purified corrosion inhibitors	1	10	4	---	3	---	1	1	---
Delivery terms	7	11	2	2	2	---	---	2	---
Delivery time	11	6	3	2	1	1	---	1	1
Discounts offered	2	9	3	---	1	1	---	2	---
Minimum quantity requirements	1	14	2	---	1	---	---	1	---
Packaging	2	18	---	1	3	---	---	2	---
Payment terms	1	15	3	1	3	---	---	2	---
Price	1	9	8	1	1	1	1	---	---
Product consistency	3	15	---	2	2	---	---	2	---
Product range	3	12	1	1	---	---	---	1	---
Quality meets industry standards	3	16	---	2	2	---	---	2	---
Quality exceeds industry standards	5	13	1	2	1	---	---	1	---
Reliability of supply	5	14	1	2	2	---	---	2	---
Requirements of product formula	1	15	---	---	2	---	---	1	---
Technical support/service	7	11	---	2	1	---	1	---	---
U.S. transportation costs	6	10	2	1	2	---	---	1	---

Note: A rating of superior means that price/U.S. transportation cost is generally lower. For example, if a firm reported "U.S. superior," it meant that the U.S. product was generally priced lower than the imported product.
Note: S=first listed country's product is superior; C=both countries' products are comparable; I=first list country's product is inferior.

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

Comparison of U.S.-produced and imported corrosion inhibitors

In order to determine whether U.S.-produced corrosion inhibitors can generally be used in the same applications as imports from China, U.S. producers, importers, and purchasers were asked whether the products can always, frequently, sometimes, or never be used interchangeably. As shown in table II-11, most responding firms reported that product from all

country pairs was always or frequently interchangeable. In instances where interchangeability was limited, purchasers reported the different material may not perform the same way, there is no U.S. production of solid TTA (liquid and solid product require different manufacturing processes), there is no U.S. production of BTA, and interchangeability depends on application for some uses because U.S. product is "poor quality" and U.S. product does not match the performance of Chinese product.[65]

Table II-11
Corrosion inhibitors: Interchangeability between corrosion inhibitors produced in the United States and in other countries, by country pair

Country pair	Number of U.S. producers reporting				Number of U.S. importers reporting				Number of purchasers reporting			
	A	F	S	N	A	F	S	N	A	F	S	N
U.S. vs. subject countries:												
U.S. vs. China	***	***	***	***	5	3	6	---	7	8	4	2
Nonsubject countries comparisons:												
U.S. vs. nonsubject	***	***	***	***	1	---	1	---	3	2	1	---
China vs. nonsubject	***	***	***	***	1	---	1	---	2	1	1	---

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

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

As can be seen from table II-12, most responding purchasers (21 of 24) reported that domestically produced corrosion inhibitors always met minimum quality specifications. Eighteen of 23 responding purchasers reported that the Chinese corrosion inhibitors always met minimum quality specifications. Two purchasers reported that U.S. product rarely or never met minimum quality requirements and two purchasers reported Chinese product sometimes met minimum quality requirements.

Table II-12
Corrosion inhibitors: Ability to meet minimum quality specifications, by source

Source	Always	Usually	Sometimes	Rarely or never
United States	21	1	---	2
China	18	3	2	---
Other	1	1	---	---

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

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

[65] ***. Wincom reported selling both U.S. produced liquid TTA and liquid TTA made from Chinese solid TTA. Hearing transcript p. 74 (Milawski). Dober questioned if these products were equivalent, stating that "Wincom's domestic product does not meet the specifications required by U.S. industry." Dober's posthearing brief pp. 5-6.

In addition, U.S. producers, importers, and purchasers were asked to assess how often differences other than price were significant in sales of corrosion inhibitors from the United States, subject, or nonsubject countries. As seen in table II-13, most firms reported that there were always or frequently differences other than price between U.S. produced and Chinese product. Differences not reported above include technical manager likes working with domestic sources on technical questions; must meet quality standards before price is considered; require quick delivery; and only Chinese producers meet needed quality and availability specifications.

Table II-13
Corrosion inhibitors: Significance of differences other than price between corrosion inhibitors produced in the United States and in other countries, by country pair

Country pair	Number of U.S. producers reporting				Number of U.S. importers reporting				Number of purchasers reporting			
	A	F	S	N	A	F	S	N	A	F	S	N
U.S. vs. subject countries:												
U.S. vs. China	***	***	***	***	4	2	4	2	5	8	4	3
Nonsubject countries comparisons:												
U.S. vs. nonsubject	***	***	***	***	1	---	---	---	2	---	3	---
China vs. nonsubject	***	***	***	***	1	---	---	---	2	---	2	---

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

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

Elasticity estimates

This section discusses elasticity estimates; respondents commented on the characterization and the estimate of elasticity of substitution at the hearing and in their posthearing briefs.

U.S. supply elasticity

The domestic supply elasticity for corrosion inhibitors measures the sensitivity of the quantity supplied by U.S. producers to changes in the U.S. market price of corrosion inhibitors. The elasticity of domestic supply depends on several factors including the level of excess capacity, the ease with which producers can alter capacity, producers' ability to shift to production of other products, the existence of inventories, and the availability of alternate markets for U.S.-produced corrosion inhibitors. Analysis of these factors above indicates that the U.S. industry has the ability to greatly increase or decrease shipments to the U.S. market; an estimate in the range of 6 to 10 is suggested.

U.S. demand elasticity

The U.S. demand elasticity for corrosion inhibitors measures the sensitivity of the overall quantity demanded to a change in the U.S. market price of corrosion inhibitors. This estimate depends on factors discussed above such as the existence, availability, and commercial viability of substitute products, as well as the component share of the corrosion inhibitors in the production of any downstream products. Based on the available information, the aggregate demand for corrosion inhibitors is likely to be inelastic; a range of -0.25 to -0.5 is suggested.

Substitution elasticity

The elasticity of substitution depends upon the extent of product differentiation between the domestic and imported products.[66] Product differentiation, in turn, depends upon such factors as quality (e.g., chemistry, appearance, etc.) and conditions of sale (e.g., availability, sales terms/discounts/promotions, etc.). Based on available information, the elasticity of substitution between U.S.-produced corrosion inhibitors and imported corrosion inhibitors is likely to be in the range of 2 to 3. Overall, U.S. and Chinese product are moderately substitutable. U.S. and Chinese liquid TTA are highly substitutable; U.S. liquid TTA is moderately substitutable with Chinese dry TTA. U.S. producers do not currently produce BTA, which is about *** percent of the overall market, and thus currently there is not an interchangeable product for this portion of the market.

Respondents do not disagree with the above estimates. Respondents claimed "that 2.5 to 4 is really a weighted average of places where there is direct competition, meaning liquid TTA, against places where there is not, and so I think what I would view that as is something in the ballpark of the liquid TTA is maybe substitutable at a level of eight to 10 elasticity of substitution, whereas the other products against the domestic TTA liquid is probably more like one to one-and-a-half."[67] Suez disagreed with staff characterization of substitution as moderate to high, as discussed above, the substitution elasticity is now characterized as moderate rather than moderate to high.[68]

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

[67] Hearing transcript, p. 224 (Becker).

[68] Suez's posthearing brief, pp I-21-22.

Part III: U.S. producers' production, shipments, and employment

The Commission analyzes a number of factors in making injury determinations (see 19 U.S.C. §§ 1677(7)(B) and 1677(7)(C)). Information on the subsidies and dumping margins was presented in *Part I* of this report and information on the volume and pricing of imports of the subject merchandise is presented in *Part IV* and *Part V*. Information on the other factors specified is presented in this section and/or *Part VI* and (except as noted) is based on the questionnaire responses of three firms that accounted for the *** of U.S. production of silicon metal during 2019.

U.S. tollers/producers and tollees/processors

The Commission issued U.S. producer questionnaires to three firms based on information contained in the petition. These firms provided usable data on their operations.[1] The three responding U.S. producers include firms that either produce corrosion inhibitors for their own accounts or process the product for the accounts of other firms under a toll agreement. The latter group consists of U.S. producers SantoLubes and Texmark. The responding tollee includes a firm that provides raw materials to the producer, retains title to the product produced, and ultimately sells the corrosion inhibitors to its customers. This group consists of Wincom. Staff believes that these responses represent (***) of U.S. production of corrosion inhibitors.

Table III-1 lists U.S. producers of corrosion inhibitors, their production locations, positions on the petition, and shares of total production. *** indicated that they are not owned by another firm, or any have related and/or affiliated firms.

[1] The Commission received U.S. producer questionnaire responses from three additional firms that were not identified in the petition. Dober Chemical Corporation ("Dober"), Nalco Company LLC ("Nalco"), and Suez WTS USA, Inc. ("Suez") each submitted U.S. producer questionnaires that are presented in Appendix E. ***.

Table III-1
Corrosion inhibitors: U.S. producers of corrosion inhibitors, their positions on the petition, production locations, and shares of reported production, 2019

Firm	Position on petition	Production location(s)	Share of producer/toller production (percent)	Share of processor/tollee production
SantoLubes	***	Spartanburg, South Carolina	***	***
Texmark	***	Galena Park, Texas	***	***
Wincom	Petitioner	Blue Ash, Ohio	***	***
Total			***	***

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

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

Table III-2 lists U.S. producer/toller and processor/tollee firms' narratives on their operations relating to the production and processing of domestically produced corrosion inhibitors during 2019.

Table III-2
Corrosion inhibitors: Producer/toller and processor/tollee firms' narratives on their operations relating to the production and processing of domestic (produced) corrosion inhibitors, 2019

Firm	Narrative
SantoLubes	***
Texmark	***
Wincom	***

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

Table III-3 presents U.S. processor/tollees' level of complexity and importance of its processing operations during 2019. ***.

Table III-3
Corrosion inhibitors: U.S. processor/tollees' level of complexity and importance of their processing operations, 2019

Firm	Rating of complexity (1 = least complex, 5 = most complex)				
	1	2	3	4	5
Wincom	***	***	***	***	***
	Narrative				
Wincom	***.				

Source: Compiled from data submitted in response to Commission questionnaires

Table III-4 presents comparisons with chemical manufacturing with processing activities during 2017-19, January to September 2019, and January to September 2020.

Table III-4
Corrosion inhibitors: Comparison of chemical manufacturing and processing activities, 2017-19, January-September 2019, and January-September 2020

Factor	Corrosion inhibitors chemical manufacturing	Corrosion inhibitors processing
Source and extent of the firm's capital investment[1]	***	***
Technical expertise involved in U.S. production activities[2]	***	***
Value added to the product in the United States[3]	***[4]	***
Employment levels[5]	***	***
Quantity and type of parts and materials sourced in the United States[6]	***[7]	***

[1] Net assets (range 2017-19). Corrosion inhibitor processors had the same value for all periods and thus a single value reported in table.
[2] Technical expertise based on aggregate R&D (range 2017-19). Only one corrosion inhibitor manufacturer reported R&D expenses and only in a single period, thus a single value is reported in table.
[3] Total conversion costs / total COGS (range 2017-19).
[4] Since the chemical manufacturers are tollers, and thus do not incur (or report) the cost of the vast majority of raw materials, total COGS had to be constructed for the calculation of value-added to the product from chemical manufacturing. For 2018 and 2019, this was done by adding the tollee's raw material costs to the total COGS of the tollers. In 2017, the tollee's raw material costs included the cost of importing corrosion inhibitors for *** net sales in that year. Staff removed the cost of these imported corrosion inhibitors ($***) in order to calculate the raw material cost of the product manufactured by the tollers in that year.
[5] Aggregate production and related workers (PRWs) (range 2017-19).
[6] Aggregate raw material values (range 2017-19). These values are being reported under the assumption that raw materials other than imported corrosion inhibitors (i.e., oTDA and sodium nitrite) are being sourced domestically.
[7] Per footnote number 4 regarding adjustment of COGS for value added calculation of tollers, the same adjusted raw materials values were used for the quantity and type of parts sourced in the United States value range presented.

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

Table III-5 presents the nature and extent of *** processing operations during 2019.

Table III-5
Corrosion inhibitors: U.S. processors/tollees' nature and extent of processing operations, 2019

*	*	*	*	*	*	*

Table III-5--Continued
Corrosion inhibitors: U.S. processors/tollees' nature and extent of processing operations, 2019

* * * * * * *

Table III-6 presents U.S. producers' reported changes in operations since January 1, 2017.

Table III-6
Corrosion inhibitors: U.S. producers' reported changes in operations, since January 1, 2017

* * * * * * *

U.S. production, capacity, and capacity utilization

Table III-7 and figure III-1 present U.S. producers/tollers' production, capacity, and capacity utilization. SantoLubes and Texmark were the only firms identified in the petitions as toll producers. Texmark indicated that it began producing tolyltriazole for Wincom in 2018, and further stated that SantoLubes, Texmark, and Wincom were the only firms in the United States that can produce tolyltriazole from start to finish.[2] From 2017 to 2019, all U.S. producers/toller capacity increased by *** percent, but *** during the January-September

[2] Conference transcript, p. 23 (Spore).

2019 and January-September 2020 “interim periods.” The increase in capacity can be attributed to Texmark’s initiation of tolyltriazole production. U.S producers/tollers’ production increased by *** percent, while capacity utilization fluctuated, but overall capacity utilization increased by *** percentage points during 2017-19; production and capacity utilization were both higher during January-September 2020 than during January-September 2019.

Table III-7
Corrosion inhibitors: U.S. producers/tollers’ production, capacity, and capacity utilization, 2017-19, January to September 2019, and January to September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Capacity (1,000 pounds dry weight)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
All U.S. producer/tollers	***	***	***	***	***
	Production (1,000 pounds dry weight)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
All U.S. producer/tollers	***	***	***	***	***
	Capacity utilization (percent)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
All U.S. producer/tollers	***	***	***	***	***
	Share of production (percent)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
All U.S. producer/tollers	***	***	***	***	***

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

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

Figure III-1
Corrosion inhibitors: U.S. producers/tollers' production, capacity, and capacity utilization, 2017-19, January to September 2019, and January to September 2020

* * * * * * *

Table III-8 and figure III-2 present U.S. processors/tollees' production, capacity, and capacity utilization. Wincom was the only firm identified in the petitions as a U.S. processor/tollee. From 2017 to 2019, U.S. processor/tollee capacity increased by *** percent, but *** during the January-September 2019 and January-September 2020 "interim periods." U.S processor/tollee *** production fluctuated, but increased by *** percent during 2017-19, and was higher during January-September 2020 than during January-September 2019. Capacity utilization decreased by *** percentage points during 2017-19, but was higher during January-September 2020 than during January-September 2019.

Table III-8
Corrosion inhibitors: U.S. processors/tollees' production, capacity, and capacity utilization, 2017-19, January to September 2019, and January to September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Capacity (1,000 pounds dry weight)				
Wincom	***	***	***	***	***
All U.S. processor/tollees	***	***	***	***	***
	Production (1,000 pounds dry weight)				
Wincom	***	***	***	***	***
All U.S. processor/tollees	***	***	***	***	***
	Capacity utilization (percent)				
Wincom	***	***	***	***	***
All U.S. processor/tollees	***	***	***	***	***
	Share of production (percent)				
Wincom	***	***	***	***	***
All U.S. processor/tollees	***	***	***	***	***

Note.--Shares and ratios shown as "0.0" represent values greater than zero, but less than "0.05" percent. Approximately ***, U.S. importers' questionnaire response, section II-8.

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

Figure III-2
Corrosion inhibitors: U.S. processors/tollees' production, capacity, and capacity utilization, 2017-19, January to September 2019, and January to September 2020

* * * * * * *

Alternative products

U.S. producers/tollers and U.S. processors/tollees combined reported ***. *** indicated it produced ***.[3] *** was the only producer that reported producing out-of-scope product on the same machinery as in-scope corrosion inhibitors. During 2017-19, there was ***. At the Commision's conference, SantoLubes and Texmark indicated that they both produced out-of-scope products that were not subject to the toll agreements that they each have with Wincom.[4]

[3] *** U.S. producer questionnaire response, section II-3a.

[4] Conference transcript, pp. 58-61 (Spore and Starnes).

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

Tables III-9 and III-10 present U.S. producers/tollers and U.S. processors/tollees' U.S. shipments, export shipments, and total shipments of corrosion inhibitors during 2017-19, January-September 2019, and January-September 2020. Table III-9 presents U.S. producers/tollers *** U.S. shipments, exports shipments, and total shipments that was exclusively tolled merchandise. U.S. producers/tollers' U.S. shipments increased in terms of quantity and value during 2017-19 by *** percent and *** percent, respectively. U.S. producers/tollers' U.S. shipments were higher during January-September 2020 than during January-September 2019 by *** percent, by quantity. The unit value of their U.S. shipments that was returned to the tollee decreased by *** percent or *** during 2017-19 but were higher during January-September 2020 than during January-September 2019 by *** percent or ***.

Table III-10 presents U.S. processors/tollees *** U.S. shipments, exports shipments, and total shipments during 2017-19. U.S. shipments accounted for *** percent of total shipments in terms of quantity and value during each year. *** U.S. shipments, quantity fluctuated, but decreased by *** percent during 2017-19, and value decreased by *** percent. Unit values fluctuated but decreased during 2017-19.

Figure III-3 presents U.S. processor/tollees U.S. shipments by share of quantity during 2019. U.S. processors' U.S. shipments were ***.

Table III-9
Corrosion inhibitors: U.S. producers/tollers' U.S. shipments, exports shipments, and total shipments, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

Table III-10
Corrosion inhibitors: U.S. processors/tollees' U.S. shipments, exports shipments, and total shipments, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

Figure III-3
Corrosion inhibitors: U.S. processors/tollees' U.S. shipments share of quantity, by type, 2019

* * * * * * *

U.S. producers' inventories

Table III-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**.** Since 2017, U.S. producers/tollers and processors/tollees combined have increased their inventories and their ratio of inventories to U.S. shipments, while U.S. producers/tollers and processors/tolles inventories and ratios were lower during January-September 2020 than during January-September 2019.

Table III-11
Corrosion inhibitors: U.S. producers' inventories, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

U.S. producers' imports and purchases

U.S. producers' imports and purchases of corrosion inhibitors are presented in table III-12 during 2017-19, January-September 2019, and January-September 2020. *** did not purchase or import corrosion inhibitors during 2017-19 or the interim periods. During 2017-19, ***.[5]

[5] *** U.S. producer questionnaire response, section II-12.

Table III-12
Corrosion inhibitors: U.S. processors'/tollers' imports, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

U.S. employment, wages, and productivity

Tables III-13, III-14, and III-15 present U.S. producers/tollers, U.S. processors/tollees, and U.S. producers/tollers and processors/tollees' employment-related data, respectively, during 2017-19, January-September 2019, and January-September 2020. In table III-12 and III-15, U.S. producers/tollers' production related data increased in most categories ***.[6]

[6] *** U.S. producer questionnaire response, section II-7c.

Table III-13
Corrosion inhibitors: U.S. producers/tollers' employment related data, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

Table III-14
Corrosion inhibitors: U.S. processors/tollees' employment related data, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

Table III-15
Corrosion inhibitors: U.S. producers/tollers and U.S. processors/tollees' employment related data, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

Part IV: U.S. imports, apparent U.S. consumption, and market shares

U.S. importers

The Commission issued importer questionnaires to 30 firms believed to be importers of subject corrosion inhibitors, as well as to all U.S. producers of corrosion inhibitors.[1] Usable questionnaire responses were received from 19 companies, representing *** percent of U.S. imports from China in 2019 under HTS statistical reporting numbers 2933.99.8210 (benzotriazole), 2933.99.8220 (tolyltriazole) along with liquid corrosion inhibitors data reported in response to Commission questionnaires.[2] Based on the analysis of the questionnaire data and official import statistics, the *** of corrosion inhibitors arrived as tolyltriazole, while ***.[3] Table IV-1 lists all responding U.S. importers of corrosion inhibitors from China and other sources, their locations, and their shares of U.S. imports, in 2019.

[1] The Commission issued questionnaires to those firms identified in the petition, along with firms that, based on a review of data provided by U.S. Customs and Border Protection ("Customs"), may have accounted for more than one percent of total imports under HTS statistical reporting numbers 2933.99.8210, 2933.99.8220, and 2933.99.8290 in 2019.

[2] The coverage estimate was calculated by the quantity of U.S. imports of corrosion inhibitors from China in 2019 reported in the combined 19 U.S. importer questionnaires *** divided by the quantity of total U.S. imports of corrosion inhibitors from China based on official import statistics under HTS statistical reporting numbers 2933.99.8210 (benzotriazole), 2933.99.8220 (tolyltriazole) which totaled 11.9 million pounds. Additionally, 7.8 million pounds of imports from China arrived under HTS statistical reporting number 2933.99.8290, the "basket" category that includes both sodium tolyltriazole and sodium benzotriazole during 2019.

[3] Based on their "NO" responses to the U.S. importer questionnaire (during the preliminary phase investigations) and proprietary *** files reported under HTS statistical reporting number 2933.99.8290, ***.

Table IV-1
Corrosion inhibitors: U.S. importers, their headquarters, and share of total imports by source, 2019

Firm	Headquarters	Share of imports by source (percent)		
		China	Nonsubject sources	All import sources
Aceto	Port Washington, NY	***	***	***
Blaser	Goshen, NY	***	***	***
Charkit	South Norwalk, CT	***	***	***
ChemTreat	Glen Allen, VA	***	***	***
Connect Chemicals	Alpharetta, GA	***	***	***
DNG Chemicals	Beaverton, OR	***	***	***
Ivanhoe	Tullytown, PA	***	***	***
Nalco	Naperville, IL	***	***	***
Old World	Northbrook, IL	***	***	***
P.A.T. Products	Hermon, ME	***	***	***
Penn Chemicals	Bensalem, PA	***	***	***
PMC	Cincinnati, OH	***	***	***
Quaker	Conshohocken, PA	***	***	***
SDA	Long Beach, CA	***	***	***
Sea-Land	Westlake, OH	***	***	***
Suez	Trevose, PA	***	***	***
Superior	Indianapolis, IN	***	***	***
Wego	Great Neck Road, NY	***	***	***
Wincom	Blue Ash, OH	***	***	***
Total		***	***	***

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

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

U.S. imports

Table IV-2, figure IV-1, and figure IV-2 present data for U.S. imports of corrosion inhibitors from China and all other sources. U.S. imports of corrosion inhibitors from China accounted for the vast majority of U.S. imports during 2017-19, January-September 2019, and January-September 2020. During 2017-19, U.S. imports of corrosion inhibitors from China increased based on quantity by 11.9 percent but decreased by value by 20.1 percent. During January-September 2020 compared to January-September 2019, U.S. imports of corrosion inhibitors from China were higher based on quantity and were lower based on value by 4.8 percent and by 22.4 percent, respectively.[4] [5] During 2017-19, the unit value of imports of

[4] *** was the largest subject importer during 2017-19, January-September 2019, and January-September 2020.

corrosion inhibitors from China decreased by 28.6 percent, and was lower by 25.9 percent during January-September 2020 than during January-September 2019. [6] Nonsubject imports were less than 2.0 percent of all imports of corrosion inhibitors during 2017-19 but increased slightly (from 152,000 pounds in 2017 to 199,000 pounds of corrosion inhibitors) from 2017 to 2019 but were lower during January-September 2020 than during January-September 2019. As a share of both quantity and value, subject imports were at least 75.0 percent of total imports of corrosion inhibitors during 2017-19, January-September 2019, and January-September 2020 based on HTS statistical reporting numbers 2933.99.8210 and 2933.99.8220.

(…*continued*)

[5] *** was the second largest subject importer of corrosion inhibitors during 2017-19, January-September 2019, and January-September 2020.

[6] Based on the 19 U.S. importer questionnaire responses, at least 5 firms indicated that they have imported BTA or TTA in the liquid forms. *** indicated that they had imported liquid forms of TTA or BTA. *** indicated that they had imported both BTA and TTA in the liquid form, while *** indicated that it had imported liquid TTA in 250kg and 1250 kg drums, but that it had shipped its TTA in the solid form. *** indicated that it imports liquid TTA and solid BTA, and *** imports both liquid and solid BTA and TTA. *** indicated that it had imported only liquid TTA. *** did not provide its actual imports, but it indicated that it had shipped *** of liquid TTA during 2019.

Based on the responses of these five firms, staff estimates that 1.2 million pounds of liquid TTA or BTA was imported during 2019, and accounts for at least *** of all imports of corrosion inhibitors during 2019.

Table IV-2
Corrosion inhibitors: U.S. imports by source, 2017-19, January-September 2019, and January-September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Quantity (1,000 pounds dry weight)				
U.S. imports from.--					
China	10,648	14,043	11,918	8,412	8,813
Nonsubject sources	152	170	199	182	63
All import sources	10,800	14,213	12,117	8,594	8,877
	Value (1,000 dollars)				
U.S. imports from.--					
China	24,759	31,514	19,794	14,675	11,389
Nonsubject sources	715	921	2,034	1,811	822
All import sources	25,474	32,435	21,828	16,486	12,211
	Unit value (dollars per pound dry weight)				
U.S. imports from.--					
China	2.33	2.24	1.66	1.74	1.29
Nonsubject sources	4.71	5.43	10.22	9.93	12.96
All import sources	2.36	2.28	1.80	1.92	1.38
	Share of quantity (percent)				
U.S. imports from.--					
China	98.6	98.8	98.4	97.9	99.3
Nonsubject sources	1.4	1.2	1.6	2.1	0.7
All import sources	100.0	100.0	100.0	100.0	100.0
	Share of value (percent)				
U.S. imports from.--					
China	97.2	97.2	90.7	89.0	93.3
Nonsubject sources	2.8	2.8	9.3	11.0	6.7
All import sources	100.0	100.0	100.0	100.0	100.0
	Ratio to U.S. production (percent)				
U.S. imports from.--					
China	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***

Note.--U.S. importers' U.S. imports are derived by combining official U.S. import statistics for HTS statistical reporting numbers 2933.99.8210 and 2933.99.8220 (dry corrosion inhibitors) and liquid corrosion inhibitors data reported in response to Commission questionnaires.

Source: Compiled from data submitted in response to Commission questionnaires and official U.S. import statistics for HTS statistical reporting numbers 2933.99.8210 and 2933.99.8220, accessed November 6, 2020.

Figure IV-1
Corrosion inhibitors: U.S. imports by source, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

Negligibility

The statute requires that an investigation be terminated without an injury determination if imports of the subject merchandise are found to be negligible.[7] 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

[7] 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)).

such merchandise imported into the United States during the applicable 12-month period, then imports from such countries are deemed not to be negligible.[8] Imports from China accounted for 98.1 percent of total imports of corrosion inhibitors by quantity during 2019. Table IV-3 presents U.S. imports in the 12 months preceding the filing of the petition (February 2019 through January 2020).

Table IV-3
Corrosion inhibitors: U.S. imports in the twelve-month period preceding the filing of the petitions, February 2019 through January 2020

Item	February 2019 through January 2020	
	Quantity (1,000 pounds dry weight)	Share quantity (percent)
U.S. imports from.--		
China	10,251	98.1
Nonsubject sources	202	1.9
All import sources	10,453	100.0

Source: Official U.S. import statistics for HTS statistical reporting numbers 2933.99.8210 and 2933.99.8220, accessed November 6,2020.

Fungibility

Figure IV-2 present data for U.S. importers' U.S. shipments by type during 2019. U.S. shipments by type are categorized by chemical type: tolyltriazole or benzotriazole, solid or liquid, and crude or purified, of which the majority were ***.

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

Figure IV-2
Corrosion inhibitors: U.S. importers' U.S. shipments of imports from China share of quantity, by type, 2019

* * * * * * *

Apparent U.S. consumption and market shares

Table IV-4 and figure IV-3 present data on U.S. consumption and U.S. market shares for corrosion inhibitors during 2017-19, January-September 2019, and January-September 2020. Apparent U.S. consumption based on quantity increased overall by *** percent during 2017-19, and was higher by *** percent during January-September 2020 than during January-September 2019. U.S. consumption based on value decreased by *** percent during 2017-19, and was lower by *** percent during January-September 2020 than during January-September 2019. During 2017-19, U.S. producers' U.S. shipments quantity increased by *** percent and value increased *** percent. U.S. producers' U.S. shipments were lower both quantity and value during January-September 2020 than during January-September 2019.

During 2017-19, U.S. importers' U.S. share of imports from China decreased by *** percentage points based on quantity, decreased by *** percent based on value, and were higher by *** percentage points, based on quantity and *** percentage points based on value, during January-September 2020 compared to January-September 2019, respectively. U.S. producers' U.S. shipments share of quantity increased by *** percentage points, and were *** percentage points lower during January-September 2020 than during January-September 2019. U.S. producers' U.S. shipments share of value increased by *** percentage points during 2017-19, and were higher by *** percentage points during January-September 2020 than during January-September 2019.

Table IV-4
Corrosion inhibitors: Apparent U.S. consumption and market shares, 2017-19, January-September 2019, and January-September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Quantity (1,000 pounds dry weight)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. imports from.--					
China	10,648	14,043	11,918	8,412	8,813
Nonsubject sources	152	170	199	182	63
All import sources	10,800	14,213	12,117	8,594	8,877
Apparent U.S. consumption	***	***	***	***	***
	Value (1,000 dollars)				
U.S. producers' U.S. shipments.--					
Fully domestic value	***	***	***	***	***
Value added to imports	***	***	***	***	***
Total value	***	***	***	***	***
U.S. imports from.--					
China	24,759	31,514	19,794	14,675	11,389
Nonsubject sources	715	921	2,034	1,811	822
All import sources	25,474	32,435	21,828	16,486	12,211
Apparent U.S. consumption	***	***	***	***	***
	Share of quantity (percent)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. imports from.--					
China	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
	Share of value (percent)				
U.S. producers' U.S. shipments.--					
Fully domestic value	***	***	***	***	***
Value added to imports	***	***	***	***	***
Total value	***	***	***	***	***
U.S. imports from.--					
China	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***

Note.--The quantity for U.S. producers' U.S. shipments used for apparent consumption reflects the quantity of corrosion inhibitors sold in the United States by processor/tollees using domestically manufactured TTA. The fully domestic value for U.S. producers' U.S. shipments reflects the value of corrosion inhibitors sold in the United States by processor/tollees that used domestically manufactured TTA. The additional value added to imports reflect's the value added by processor/tollees to imported Chinese TTA. In measuring U.S. apparent consumption and market share this methodology avoids reclassifying and/or double counting merchandise already reported once as an import.
Note.--U.S. importers' U.S. imports are derived by combining official U.S. import statistics for HTS statistical reporting numbers 2933.99.8210 and 2933.99.8220 (dry corrosion inhibitors) and liquid corrosion inhibitors data reported in response to Commission questionnaires.

Source: Compiled from data submitted in response to Commission questionnaires and official U.S. import statistics for HTS statistical reporting numbers 2933.99.8210 and 2933.99.8220, accessed November 6, 2020.

Figure IV-3
Corrosion inhibitors: Apparent U.S. consumption and market shares, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

U.S. producers' U.S. shipments and U.S. imports by product type

Tables IV-5 and IV-6 present data on U.S. producers' U.S. shipment and U.S. imports by product type during 2017-19, January-September 2019, and January-September 2020. As shown in table IV-5, there were *** U.S. producers' U.S. shipments of BTA over the data collection period. As shown in table IV-6, overall shipments and imports of TTA fluctuated but increased during 2017-19, and were higher during January-September 2020 compared to January-September 2019.

Table IV-5
Corrosion inhibitors: U.S. consumption of BTA, 2017-19, January-September 2019, and January-September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Quantity (1,000 pounds dry weight)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. imports from.--					
China	3,565	4,258	3,448	2,515	2,923
Nonsubject sources	70	134	149	134	63
All import sources	3,635	4,392	3,598	2,650	2,986
Combined producers and imports	***	***	***	***	***
	Share of quantity (percent)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. imports from.--					
China	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
Combined producers and imports	***	***	***	***	***
	Ratio to overall apparent consumption (percent)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. imports from.--					
China	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
Combined producers and imports	***	***	***	***	***

Note.--U.S. importers' U.S. imports of BTA are derived by combining official U.S. import statistics for HTS statistical reporting number 2933.99.8210 (dry BTA corrosion inhibitors) and liquid BTA corrosion inhibitors data reported in response to Commission questionnaires.

Source: Compiled from data submitted in response to Commission questionnaires and official U.S. import statistics for HTS statistical reporting number 2933.99.8210, accessed November 6, 2020.

Table IV-6
Corrosion inhibitors: U.S. consumption of TTA, 2017-19, January-September 2019, and January-September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Quantity (1,000 pounds dry weight)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. imports from.--					
China	7,083	9,785	8,470	5,896	5,891
Nonsubject sources	82	36	50	48	---
All import sources	7,165	9,820	8,519	5,944	5,891
Combined producers and imports	***	***	***	***	***
	Share of quantity (percent)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. imports from.--					
China	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
Combined producers and imports	***	***	***	***	***
	Ratio to overall apparent consumption (percent)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. imports from.--					
China	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
Combined producers and imports	***	***	***	***	***

Note.--U.S. importers' U.S. imports of TTA are derived by combining official U.S. import statistics for HTS statistical reporting number 2933.99.8220 (dry TTA corrosion inhibitors) and liquid TTA corrosion inhibitors data reported in response to Commission questionnaires.

Source: Compiled from data submitted in response to Commission questionnaires and official U.S. import statistics for HTS statistical reporting number 2933.99.8220, accessed November 6, 2020.

Part V: Pricing data

Factors affecting prices

Raw material costs

Corrosion inhibitor TTA is produced using ortho toluene diamine (oTDA) and sodium nitrite. The price of oTDA was *** between 2017 and 2019.[1] [2] Liquid (sodium) TTA is produced from TTA by adding caustic and water.[3] BTA is produced from ortho phenylenedimine and sodium nitrite.[4]

Transportation costs to the U.S. market

Transportation costs for corrosion inhibitors shipped from China to the United States averaged 6.4 percent during 2019. These estimates were derived from official import data and represent the transportation and other charges on imports.[5]

U.S. inland transportation costs

*** responding U.S. producers reported that the purchaser typically arranges transportation. Most importers (9 of 14)[6] reported that they arrange transportation to their

[1] Petitioners' postconference brief, Answers to Staff Questions, p. 17. Respondents reported that the price of TTA has declined because supply of oTDA increased as a result of a new producer entering the market. Conference transcript, p. 127 (Bode). Respondents were requested to provide information on raw material costs in their post conference briefs, but none was provided.

[2] Respondents and petitioners agree that oTDA is a byproduct/waste product from the production of TDI (toluene diisocyanate, also in the transcript as TBI). As a result, the availability of oTDA is determined by TDI production which is used in construction and consumer goods. P.A.T. Products reported that it distributed U.S. produced oTDA in China. Hearing transcript, p. 92, 155-156, 161, 221 (Milawski, Coyle). P.A.T. Products reported that *** because of the declines in the industries using TDI.

[3] Petition, p. 6.

[4] Petition, p. 7. No price indexes were reported to be available for these raw materials.

[5] The estimated transportation costs were obtained by subtracting the customs value from the c.i.f. value of the imports for 2019 and then dividing by the customs value based on the HTS subheading 2933.99.8210 and 2933.99.8220.

[6] One importer reported both.

customers and six importers reported that their customers arrange transportation. *** reported that its U.S. inland transportation cost was *** percent.[7] Most importers reported inland transportation costs of 1 to 9 percent.

Pricing practices[8]

Pricing methods

*** importers reported using transaction-by-transaction negotiations, contracts, and price lists.[9] As presented in table V-1, importers sell primarily on a transaction-by-transaction negotiations basis.

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

Method	U.S. producers	Importers
Transaction-by-transaction	***	12
Contract	***	4
Set price list	***	2
Other	***	---
Responding firms	1	13

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.

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

Wincom reported selling ***. Importers reported selling most of their corrosion inhibitors in spot sales or under short-term contracts. As shown in table V-2, U.S. producers and importers reported their 2019 U.S. commercial shipments of corrosion inhibitors by type of sale.

[7] ***.

[8] Pricing methods reported in this section are those reported by Wincom because its sells corrosion inhibitors that compete directly with imports. Tollers do not directly compete with imports. No firm, other than Wincom, reported importing or purchasing crude TTA or BTA.

[9] Two importers reported that they did not sell corrosion inhibitors but used them internally to produce ***.

Table V-2
Corrosion inhibitors: U.S. producers' and importers' shares of U.S. commercial shipments by type of sale, 2019

Type of sale	U.S. producers	Importers
Long-term contracts	***	***
Annual contracts	***	***
Short-term contracts	***	***
Spot sales	***	***

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

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

Wincom's ***. Importers' short-term contracts typically fix both price and quantity and do not allow for price renegotiation during the contract; annual contracts may fix quantity, price, or both, and typically do not allow price renegotiations during the contract. One importer reported long-term contracts, which fix quantity, but have provisions for price renegotiations during the contract.

Sixteen of 33 responding purchasers reported that they purchased corrosion inhibitors less frequently than once a month. No purchasers reported that they purchase product daily, 1 purchased weekly, 11 purchase monthly, and 5 report purchasing as needed.[10] Twenty-eight of 33 responding purchasers reported that their purchasing frequency had not changed since 2017. Most responding purchasers (25 of 31) contact one to three suppliers before making a purchase.

Sales terms and discounts

Wincom reported selling ***. Most importers (11 of 14 responding) typically quote prices on an f.o.b. basis, and six importers reported that they typically quoted on a delivered basis.[11] Wincom reported ***. Most importers (10 of 13 responding) reported no discount policy, two reported quantity discounts, and one (***) reported total volume discounts.

[10] One purchaser reported that it purchased as needed but less than once a year. Its responses are included with both firms purchasing less frequently than once a month and those reporting purchasing as needed.

[11] Three reported typically quoting on both an f.o.b. and delivered basis.

Price leadership

Most purchasers reported that there were no price leaders or that they did not know of any price leaders. Three purchasers each reported that Nanjing Trust and Wincom were price leaders. Purchasers reported Wincom was a price leader because it offered a competitive or reasonable price, and Nanjing Trust was a price leader because it has driven prices down or it is the largest supplier of TTA.[12]

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 corrosion inhibitors products shipped to unrelated U.S. customers during January 2017 to September 2020.

Product 1.—Liquid TTA in totes of 2,400 to 2,600 pounds net weight (include only refined liquid TTA)

Product 2.—Liquid TTA in drums of 450 to 550 pounds net weight (include only refined liquid TTA)

One U.S. producer and three importers provided usable pricing data for sales of the requested products, although not all firms reported pricing for all products for all quarters.[13] Pricing data reported by these firms accounted for approximately *** percent of U.S. producers' shipments of corrosion inhibitors and *** percent of U.S. shipments of subject imports from China in 2019.[14] [15]

Price data for products 1-2 are presented in tables V-3 to V-4 and figures V-1 to V-2. ***

[12] Two purchasers reported other price leaders; one listed Nantong Kanghua as a price leader because it was a large producer and one listed SDA (an importer) as a price leader because it had lower prices.

[13] Per-unit pricing data are calculated from total quantity and total value data provided by U.S. producers and importers. The precision and variation of these figures may be affected by rounding, limited quantities, and producer or importer estimates.

[14] Pricing coverage is based on U.S. shipments reported in questionnaires.

[15] Importer coverage is relatively small because U.S. production was only of liquid TTA, therefore no comparable import and U.S. data could be collected for other products. These other products represented 73.0 percent of overall imports from China in 2019. ***.

***.[16] Wincom ***.[17]

Table V-3
Corrosion inhibitors: Weighted-average f.o.b. prices and quantities of domestic and imported product 1 and margins of underselling/(overselling), by quarter, January 2017 to September 2020

	United States		China		
Period	Price (per pound dry weight)	Quantity (1,000 pounds dry weight)	Price (per pound dry weight)	Quantity (1,000 pounds dry weight)	Margin (percent)
2017: Jan.-Mar.	***	***	***	***	***
Apr.-June	***	***	***	***	***
July-Sept.	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***
Apr.-June	***	***	***	***	***
July-Sept.	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***
Apr.-June	***	***	***	***	***
July-Sept.	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***
Apr.-June	***	***	***	***	***
July-Sept.	***	***	***	***	***

Note: Product 1: Liquid TTA in totes of 2,400 to 2,600 pounds net weight (include only refined liquid TTA)

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

[16] ***.

[17] Staff notes from virtual visit. EDIS document 731703.

Figure V-1
Corrosion inhibitors: Weighted-average prices and quantities of domestic and imported product 1, by quarter, January 2017 to September 2020

* * * * * * *

Product 1: Liquid TTA in totes of 2,400 to 2,600 pounds net weight (include only refined liquid TTA)

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

Table V-4
Corrosion inhibitors: Weighted-average f.o.b. prices and quantities of domestic and imported product 2 and margins of underselling/(overselling), by quarter, January 2017 to September 2020

Period	United States		China		
	Price (per pound dry weight)	Quantity (1,000 pounds dry weight)	Price (per pound dry weight)	Quantity (1,000 pounds dry weight)	Margin (percent)
2017: Jan.-Mar.	***	***	***	***	***
Apr.-June	***	***	***	***	***
July-Sept.	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***
Apr.-June	***	***	***	***	***
July-Sept.	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***
Apr.-June	***	***	***	***	***
July-Sept.	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***
Apr.-June	***	***	***	***	***
July-Sept.	***	***	***	***	***

Note: Product 2: Liquid TTA in drums of 450 to 550 pounds net weight (include only refined liquid TTA)

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

Figure V-2
Corrosion inhibitors: Weighted-average prices and quantities of domestic and imported product 2, by quarter, January 2017 to September 2020

* * * * * * *

Product 2: Liquid TTA in drums of 450 to 550 pounds net weight (include only refined liquid TTA)

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

Price trends

In general, prices decreased during January 2017 to September 2020. Table V-5 summarizes the price trends, by country and by product. As shown in the table, domestic price decrease *** percent during January 2017 to September 2020. Domestic price for product 1 *** while import price decreased *** percent during January 2017 to September 2020.

Table V-5
Corrosion inhibitors: Summary of weighted-average f.o.b. prices for products 1-2 from the United States and China

Item	Number of quarters	Low price (per pound dry weight)	High price (per pound dry weight)	Change in price (percent)
Product 1				
United States	13	***	***	***
China	15	***	***	***
Product 2				
United States	15	***	***	***
China	5	***	***	***

Note: Percentage change from the first quarter in which price was available in 2017 to the third quarter of 2020.

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

Price comparisons

As shown in table V-6, prices for product imported from China were below those for U.S.-produced product in all 18 instances (*** pounds dry weight); margins of underselling ranged from *** to *** percent.

Table V-6
Corrosion inhibitors: Instances of underselling and the range and average of margins, by product, January 2017 to June 2020

Source	Underselling				
	Number of quarters	Quantity (1,000 pounds dry weight)	Average margin (percent)	Margin range (percent)	
				Min	Max
Product 1	***	***	***	***	***
Product 2	***	***	***	***	***
Total	***	***	***	***	***

Note: These data include only quarters in which there is a comparison between the U.S. and subject product.

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

Lost sales and lost revenue

In the preliminary phase of the investigation, the Commission requested that U.S. producers of corrosion inhibitors report purchasers with which they experienced instances of lost sales or revenue due to competition from imports of corrosion inhibitors from China during 2017-19. One U.S. producer submitted lost sales and lost revenue allegations and identified 19 firms with which it lost sales or revenue (all 19 consisting of both types of allegations).

In the final phase of the investigation, two of the three responding U.S. producers reported that they had to either reduce prices or roll back announced price increases, and all three firms reported that they had lost sales.

Staff contacted 99 purchasers and received responses from 34 purchasers.[18] Responding purchasers reported purchasing or importing 22.2 million pounds dry weight of corrosion inhibitors during January 2017 through September 2020 (table V-7).

[18] Four purchasers submitted lost sales lost revenue survey responses in the preliminary phase but did not submit purchaser questionnaire responses in the final phase.

Table V-7
Corrosion inhibitors: Purchasers' reported purchases and imports, January 2017 through September 2020

Purchaser	Purchases and imports in January 2017 to September 2020 (1,000 pounds dry weight)			Change in domestic share (pp, 2017-19)	Change in subject country share (pp, 2017-19)
	Domestic	Subject	All other		
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
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***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
Total	***	***	***	***	***

Note: All other includes all other sources and unknown sources.
Note: Percentage points (pp) change: Change in the share of the firm's total purchases of domestic and/or subject country imports between first and last years.

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

Of the 31 responding purchasers, 17 reported that they had purchased imported corrosion inhibitors from China instead of U.S.-produced product since 2017.[19] Thirteen of these purchasers reported that subject import prices were lower than U.S.-produced product, and eight of these purchasers reported that price was a primary reason for the decision to purchase imported product rather than U.S.-produced product. Eight purchasers estimated the quantity of corrosion inhibitors from China purchased instead of domestic product with quantities ranging from *** pounds dry weight to *** pounds dry weight (table V-8). Purchasers identified availability of BTA, availability of solid TTA, better availability of product from China (only China could meet quantity needs), lab approval, relationship with supplier, and purchasing from distributors as non-price reasons for purchasing imported rather than U.S.-produced product.

[19] ***.

Table V-8
Corrosion inhibitors: Purchasers' responses to purchasing subject imports instead of domestic product

Purchaser	Purchased imports instead of domestic	Import lower priced	If purchased imports instead of domestic, was price a primary reason: Yes /No	If Yes, quantity (1,000 pounds dry weight)	If No, non-price reason
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
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***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***

Table continued on next page

Table V-8--Continued
Corrosion inhibitors: Purchasers' responses to purchasing subject imports instead of domestic product

Purchaser	Purchased imports instead of domestic	Import lower priced	If purchased imports instead of domestic, was price a primary reason		
			Yes /No	If Yes, quantity (1,000 pounds dry weight)	If No, non-price reason
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
Total	Yes--17; No--14	Yes--13; No--4	Yes--8; No--9	***	

Note:--***

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

Of the 32 responding purchasers, 3 reported that U.S. producers had reduced prices in order to compete with lower-priced imports from China; 12 reported that U.S. producers had not reduced their price because of lower priced imports from China; and 17 reported that they did not know (table V-9). The reported estimated price reduction ranged from *** to *** percent.

Table V-9
Corrosion inhibitors: Purchasers’ responses to U.S. producer price reductions

Purchaser	U.S. producers reduced priced to compete with subject imports (Y/N)	If U.S. producers reduced prices	
		Estimated U.S. price reduction (percent)	Additional information, if available
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
***	***	***	***
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***	***	***	***
***	***	***	***
***	***	***	***
Total / average	Yes--3; No—12	***	

Note:--***

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

Some purchasers provided additional information on purchases and market dynamics. One purchaser reported that imports are purchased because they are in stock in local

warehouses for quick delivery at competitive prices. ***.

Part VI: Financial experience of U.S. producers

Background

The financial results presented in this section are based on the responses of three companies that either produce or process corrosion inhibitors.[1] All companies reported financial data on a calendar-year basis and two companies reported financial data on a GAAP basis.[2] Wincom has tolling arrangements with SantoLubes and Texmark that began in 2017 and 2018, respectively, in which Wincom provides the companies with oTDA and sodium nitrite, and the companies produce a crude form of corrosion inhibitors for Wincom. Wincom refines this product through a proprietary method known as ***.

Revenue primarily reflects commercial sales, but also includes a small amount of ***. ***, and is not shown separately in this section of the report.

Operations on corrosion inhibitors

Table VI-1 presents data on the total operations in relation to corrosion inhibitors,[3] while table VI-2 presents corresponding changes in average unit values ("AUVs") on a dry pound basis. Table VI-3 presents selected company-specific financial data.[4]

[1] The firms included are Wincom, the tollee and a processor of corrosion inhibitors, and Wincom's tollers, SantoLubes and Texmark, which act as producers of corrosion inhibitors. Appendix E presents data for Dober, Nalco, and Wincom on their operations that process imported corrosion inhibitors.

[2] ***.

[3] In order to present combined toller/tollee data in table VI-1 without double-counting net sales and distorting the revenue and cost average unit values ("AUVs"), the data excludes the tolling volume shipped and revenue received by the tollers and the tolling fees paid by Wincom. The exclusion of these items offset one with the other. While the reported tolling revenue and tolling expenses do not match in each period, the difference between the two is small enough to have no material impact on profitability.

[4] While tolling revenue received and tolling fees paid are not included in the combined data in table VI-1, they are included in table VI-3 to show the individual firms' performances during the period examined. Totals and averages for "all firms" are not shown in table VI-3 because they would double-count certain values and are, therefore, not meaningful.

Table VI-1
Corrosion inhibitors: Results of operations of U.S. producers/tollers and processor/tollee, 2017-19, January-September 2019, and January-September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Quantity (1,000 pounds dry weight)				
Total net sales	***	***	***	***	***
	Value (1,000 dollars)				
Total net sales	***	***	***	***	***
Cost of goods sold.-- Raw materials	***	***	***	***	***
Direct labor	***	***	***	***	***
Other factory costs	***	***	***	***	***
Total COGS	***	***	***	***	***
Gross profit	***	***	***	***	***
SG&A expense	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***
Other expense / (income), net	***	***	***	***	***
Net income or (loss)	***	***	***	***	***
Depreciation/amortization	***	***	***	***	***
Cash flow	***	***	***	***	***
	Ratio to net sales (percent)				
Cost of goods sold.-- Raw materials	***	***	***	***	***
Direct labor	***	***	***	***	***
Other factory costs	***	***	***	***	***
Average COGS	***	***	***	***	***
Gross profit	***	***	***	***	***
SG&A expense	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***
Net income or (loss)	***	***	***	***	***

Table continued on next page.

Table VI-1—Continued
Corrosion inhibitors: Results of operations of U.S. producers, 2017-19, January-September 2019, and January-September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Ratio to total COGS (percent)				
Cost of goods sold.-- Raw materials	***	***	***	***	***
Direct labor	***	***	***	***	***
Other factory costs	***	***	***	***	***
Average COGS	***	***	***	***	***
	Unit value (dollars per pound dry weight)				
Total net sales	***	***	***	***	***
Cost of goods sold.-- Raw materials	***	***	***	***	***
Direct labor	***	***	***	***	***
Other factory costs	***	***	***	***	***
Average COGS	***	***	***	***	***
Gross profit	***	***	***	***	***
SG&A expense	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***
Net income or (loss)	***	***	***	***	***
	Number of firms reporting				
Operating losses	***	***	***	***	***
Net losses	***	***	***	***	***
Data	***	***	***	***	***

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

Table VI-2
Corrosion inhibitors: Changes in AUVs for U.S. producers/tollers and processor/tollee, between calendar years and partial year periods

Item	Between calendar years			Between partial year periods
	2017-19	2017-18	2018-19	2019-20
	Change in AUVs (percent)			
Total net sales	***	***	***	***
Cost of goods sold.-- Raw materials	***	***	***	***
Direct labor	***	***	***	***
Other factory costs	***	***	***	***
Average COGS	***	***	***	***
	Change in AUVs (dollars per pound dry weight)			
Total net sales	***	***	***	***
Cost of goods sold.-- Raw materials	***	***	***	***
Direct labor	***	***	***	***
Other factory costs	***	***	***	***
Average COGS	***	***	***	***
Gross profit	***	***	***	***
SG&A expense	***	***	***	***
Operating income or (loss)	***	***	***	***
Net income or (loss)	***	***	***	***

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

Table VI-3
Corrosion inhibitors: Results of operations of U.S. producers/tollers and U.S. processors/tollees, by firm, 2017-19, January-September 2019, and January-September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Total net sales/Tolling shipments (1,000 pounds dry weight)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Total net sales/Tolling revenue (1,000 dollars)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Cost of goods sold (1,000 dollars)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Gross profit or (loss) (1,000 dollars)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	SG&A expenses (1,000 dollars)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Operating income or (loss) (1,000 dollars)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Net income or (loss) (1,000 dollars)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***

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Table VI-3—Continued
Corrosion inhibitors: Results of operations of U.S. producers/tollers and U.S. processors/tollees, by firm, 2017-19, January-September 2019, and January-September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	COGS to net sales ratio (percent)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Gross profit or (loss) to net sales ratio (percent)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	SG&A expense to net sales ratio (percent)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Operating income or (loss) to net sales ratio (percent)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Net income or (loss) to net sales ratio (percent)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Unit net sales value/Unit tolling fees received (dollars per pound)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Unit raw materials (dollars per pound dry weight)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Unit direct labor (dollars per pound dry weight)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***

Table continued on next page.

Table VI-3—Continued
Corrosion inhibitors: Results of operations of U.S. producers/tollers and U.S. processors/tollees, by firm, 2017-19, January-September 2019, and January-September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Unit other factory costs (dollars per pound dry weight)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Unit tolling fees paid (dollars per pound dry weight)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Unit COGS (dollars per pound dry weight)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Unit gross profit or (loss) (dollars per pound dry weight)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Unit SG&A expenses (dollars per pound dry weight)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Unit operating income or (loss) (dollars per pound dry weight)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***
	Unit net income or (loss) (dollars per pound dry weight)				
SantoLubes	***	***	***	***	***
Texmark	***	***	***	***	***
Subtotal, tollers	***	***	***	***	***
Wincom	***	***	***	***	***

Note: Data presented are the full financial results of U.S. producers/tollers and U.S. processor/tollee inclusive of net sales quantity and value for shipments made by tollers to tollee and tolling fees paid by tollee to tollers (tolling fees are included in ***). For that reason, totals by category will not be equal to data presented in VI-1.

Note: Shares and ratios shown as "0.0" and unit values shown as “0.00, represent values greater than zero, but less than "0.05" percent or “$0.005,” respectively.

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

Net sales

As seen in table VI-1, net sales of corrosion inhibitors, by both quantity and value, decreased irregularly from 2017 to 2019, and were lower in interim 2020 than in interim 2019.[5] The average unit value of net sales increased from $*** per dry pound in 2017 to $*** per dry pound in 2018 and decreased to $*** per dry pound in 2019. It was lower in interim 2020 (at $***) than during interim 2019 (at $***).

For the tollers specifically, the volume of tolling shipments and the tolling revenue received increased irregularly from 2017 to 2019, and were higher in interim 2020 than in interim 2019 (table VI-3).[6] However, on a per-pound basis, the tolling revenue received decreased from $*** per dry pound in 2017 to $*** per dry pound in 2019, but was higher in interim 2020 than in interim 2019 (table VI-3).

Cost of goods sold and gross profit or loss

For the corrosion inhibitor industry overall (table VI-1), there was a shift in the cost structure of COGS that resulted from a change in the way in which the crude corrosion inhibitors were sourced or produced. The industry's raw material costs were the largest component of COGS in 2017, but were the second largest component of COGS for the remainder of the period examined.[7] The higher raw material costs in 2017 were the result of ***.[8]

[5] As discussed previously, for the combined toller/tollee operations in table VI-1, net sales include Wincom's total net sales, but do not include the tolling volume/revenue reported by the tollers.

[6] ***. Email from ***.

[7] Raw materials were primarily ***.

[8] ***. Email from ***. ***.

On a per-dry pound basis, raw materials decreased from $*** in 2017 to $*** in 2019, but were higher in interim 2020 (at $***) than during interim 2019 (at $***). [9] Table VI-4 shows the cost of the major raw material inputs in corrosion inhibitors in 2019, as well as the unit values and shares of the total raw material costs.

Table VI-4
Corrosion inhibitors: Wincom's raw material costs, by type, 2019

Raw materials	Calendar year 2019		
	Value (1,000 dollars)	Unit value (dollars per dry pound)	Share of value (percent)
Orthotoluene diamine	***	***	***
Sodium nitrite	***	***	***
Other material inputs	***	***	***
Total, raw materials	***	***	***

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

[9] Due to the change in the way in which ***, 2017 raw material costs and 2017 tolling fees paid, on both a per-dry pound basis and as a ratio to net sales, are not directly comparable to the data reported for the remainder of the period. If the portion of the 2017 net sales quantity ***.

Other factory costs were the largest component of COGS during the majority of the period examined. On a per-dry pound basis, other factory costs increased from $*** in 2017 to $*** in 2019, and were higher in interim 2020 (at $***) than during the same period in 2019 (at $***).[10] Direct labor, the last component of COGS accounted for between *** percent (in 2017) and *** percent (in 2018) of total COGS during the period examined. On a per-dry pound basis, direct labor increased from $*** in 2017 to $*** in 2019, but was lower in interim 2020 than during interim 2019.[11] [12]

The industry's total COGS decreased from 2017 to 2019, but was higher in interim 2020 than during interim 2019. The amount of the overall decrease in COGS between 2017 and 2019 was less than the overall decrease in net sales revenue during the same period, which led to an overall decrease in gross profit. Since total COGS was higher in interim 2020 than in interim 2019, and net sales revenue was lower, gross profit was lower in interim 2020 than during the same period in 2019. Overall, the corrosion inhibitor industry's gross profit increased from $*** in 2017 to $*** in 2018, and then decreased to $*** in 2019. It was $*** in interim 2019 and $*** in interim 2020.

[10] The increase in the combined industry's other factory costs, both as a share of COGS and on a per-unit basis (as seen in table VI-1), are ***.

[11] As seen in table VI-3, ***. *** U.S. producer questionnaire response, section III-9d. ***.

[12] Based on the standard value-added formula of conversion costs (direct labor and other factory costs) as a percentage of total COGS, ***.

SG&A expenses and operating income or loss

As shown in table VI-1, the industry's SG&A expense increased irregularly from 2017 to 2019, but were lower in interim 2020 than in interim 2019. The increase between 2017 and 2019 was partially attributable to ***, as well as ***.[13]

Operating income followed similar directional trends as gross profit. It increased from an operating profit of $*** in 2017 to $*** in 2018, and then declined to *** in 2019. It was *** in interim 2019 and *** in interim 2020.

All other expenses and net income or loss

Classified below the operating income level are all other expenses (including interest expense) and all other income. In table VI-1, a net amount is shown. All other expenses, net *** decreased irregularly from 2017 to 2019, and was lower in interim 2020 than in interim 2019. Overall, net income followed similar trends as gross profit and operating income increased from $*** in 2017 to $*** in 2018, then decreased to *** in 2019. It was *** in interim 2019 and *** in interim 2020.[14]

[13] ***. Email from ***.

[14] A variance analysis is not meaningful and is therefore not presented due to ***.

Capital expenditures, R&D expenses, assets, and return on assets

Table VI-5 presents capital expenditures, research and development ("R&D") expenses, total assets, and the operating return on assets ("ROA").[15] *** of the firms provided capital expenditure data, and *** firms provided data on R&D expenses. *** had the largest company-specific capital expenditures during the period for which data were collected.[16] *** accounted for the *** of overall R&D expenses and reported data in each period, however ***.[17] [18]

Total assets increased noticeably from 2017 to 2018, and then decreased slightly in 2019. The *** increase in total assets in 2018 is attributable to ***. The average operating ROA decreased from *** percent in 2017 to *** percent in 2019.

[15] The return on assets ("ROA") is calculated as operating income divided by total assets. With respect to a firm's overall operations, the total asset value reflects an aggregation of a number of assets which are generally not product specific. Thus, high-level allocations are generally required in order to report a total asset value for the subject product.

[16] ***. U.S. producers' questionnaire, section III-13.

[17] *** described its R&D expenses as ***. U.S. producers' questionnaire, section III-13.

[18] ***. U.S. producers' questionnaire, section III-13.

Table VI-5
Corrosion inhibitors: U.S. producers/tollers' and processor/tollee's capital expenditures, R&D expenses, total assets, and operating ROA, 2017-19, January-September 2019, and January-September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Capital expenditures (1,000 dollars)				
U.S. producers/tollers	***	***	***	***	***
U.S. processor/tollee	***	***	***	***	***
All firms	***	***	***	***	***
	R&D expenses (1,000 dollars)				
U.S. producers/tollers	***	***	***	***	***
U.S. processor/tollee	***	***	***	***	***
All firms	***	***	***	***	***
	Total net assets (1,000 dollars)				
U.S. producers/tollers	***	***	***		
U.S. processor/tollee	***	***	***		
All firms	***	***	***		
	Operating ROA (percent)				
U.S. producers/tollers	***	***	***		
U.S. processor/tollee	***	***	***		
All firms	***	***	***		

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

Capital and investment

The Commission requested that U.S. producers of corrosion inhibitors describe any actual or potential negative effects of imports of corrosion inhibitors from China on their firms' growth, investment, ability to raise capital, development and production efforts, or the scale of capital investments. Table VI-6 presents the number of firms reporting an impact in each category and table VI-7 provides the U.S. producers' narrative responses.

Table VI-6
Corrosion inhibitors: Actual and anticipated negative effects of imports on investment, growth, and development, since January 1, 2017

Item	No	Yes
Negative effects on investment	0	3
Cancellation, postponement, or rejection of expansion projects		***
Denial or rejection of investment proposal		***
Reduction in the size of capital investments		***
Return on specific investments negatively impacted		***
Other		***
Negative effects on growth and development	0	3
Rejection of bank loans		***
Lowering of credit rating		***
Problem related to the issue of stocks or bonds		***
Ability to service debt		***
Other		***
Anticipated negative effects of imports	0	3

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

Table VI-7
Corrosion inhibitors: Narratives relating to actual and anticipated negative effects of imports on investment, growth, and development, since January 1, 2017

Item / Firm	Narrative
Cancellation, postponement, or rejection of expansion projects:	
***	***
Reduction in the size of capital investments:	
***	***
Return on specific investments negatively impacted:	
***	***
***	***
Other negative effects on investments:	
***	***
Ability to service debt:	
***	***
***	***
***	***
Anticipated effects of imports:	
***	***
***	***
***	***

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

Part VII: Threat considerations and information on nonsubject countries

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

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

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

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

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

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

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

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

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

The industry in China

The Commission issued foreign producers' or exporters' questionnaires to eight firms believed to produce and/or export corrosion inhibitors from China.[3] The Commission received a usable questionnaire response from one firm: Nantong Botao Chemical Co., Ltd. ("Nantong Botao").[4] [5] This firm's exports to the United States accounted for approximately *** percent of U.S. imports of corrosion inhibitors from China in 2019.[6] According to estimates requested of the responding producer (Nantong Botao), its production of corrosion inhibitors in China reported in its questionnaire response accounts for approximately *** percent of overall production of corrosion inhibitors in China.[7] Table VII-1 presents information on the corrosion inhibitor operations of Nantong Botao.

Table VII-1
Corrosion inhibitors: Summary data for producers in China, 2019

Firm	Production (1,000 pounds dry weight)	Share of reported production (percent)	Exports to the United States (1,000 pounds dry weight)	Share of reported exports to the United States (percent)	Total shipments (1,000 pounds dry weight)	Share of firm's total shipments exported to the United States (percent)
Nantong Botao	***	***	***	***	***	***
Total	***	***	***	***	***	***

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

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

[4] Nantong Botao's foreign producer questionnaire during the preliminary phase investigations was primarily used for this report due to errors in reporting from its foreign producer questionnaire from the final phase. Nantong Botao did not report January-September 2019 or January-September 2020 data, and only provided capacity and production projections for 2020 and 2021.

[5] According to Connect Chemicals' website, Nantong Botao produces corrosion inhibitors, and has production a combined capacity of 12,000 metric tons per year for both BTA and TTA (26.4 million pounds). https://connectchemicals.com/en/production/nantong.

[6] In its questionnaire response, Nantong Botao indicated that its exports of corrosion inhibitors to the United States accounted for ***. Nantong Botao's foreign producer questionnaire response, question II-6b.

[7] In its prehearing brief, Wincom indicated that there were at least seven other Chinese producers of corrosion inhibitors and that the Chinese industry has approximately 61 million pounds of annual production capacity ***. Petitioner's prehearing brief, p. 35.

Changes in operations

Nantong Botao reported no operational or organizational changes since January 1, 2017.

Operations on corrosion inhibitors

Table VII-2 presents information on the corrosion inhibitor operations of Chinese producer Nantong Botao in China. During 2017-19, Nantong Botao's capacity to produce corrosion inhibitors ***,[8] while its production of corrosion inhibitors ***, but decreased by *** percent from 2017 to 2019.[9] Capacity utilization also ***, but decreased by *** percentage points during 2017-19.

Export shipments to the United States and total home market shipments both fluctuated during 2017-19, but decreased overall by *** percent and *** percent, respectively. Export shipments to the United States as a share of total shipments decreased from *** percent to *** percent during 2017-19, while total home market shipments as a share of total shipments increased from *** percent to *** percent during the same period. Nantong Botao's other export markets include ***.

[8] Nantong Botao reported its projections for capacity ***. Nantong Botao's foreign producer questionnaire response, section II-11.

[9] In 2019, Nantong Botao indicated it produced ***. Nantong Botao foreign producer questionnaire response, question II-8.

Table VII-2
Corrosion inhibitors: Nantong Botao's data on industry in China, 2017-19, January-September 2019, January-September 2020, and projections for 2020 and 2021

*	*	*	*	*	*	*

Firms were asked about their capacity constraints and the ability to switch production from corrosion inhibitors to other products. Nantong Botao reported that its production is constrained by ***.[10]

Alternative products

Nantong Botao reported that corrosion inhibitors ***.[11]

Exports

According to GTA, the leading export markets for heterocyclic compounds with nitrogen hetero-atoms (which include corrosion inhibitors) from China based on quantity are India, the United States, and Brazil (table VII-3). During 2019, the United States was the second largest export market for heterocyclic compounds with nitrogen hetero-atoms (which include corrosion inhibitors) from China, accounting for 12.9 percent of total Chinese exports. India and Brazil accounted for 14.6 percent and 7.6 percent of total Chinese exports, respectively.

[10] Nantong Botao foreign producer questionnaire response, section II-3d.
[11] Nantong Botao foreign producer questionnaire, section II-4.

Table VII-3
Heterocyclic Compounds with Nitrogen Hetero-Atoms: Exports from China, 2017-19

Destination market	Calendar year		
	2017	2018	2019
	Quantity (1,000 pounds)		
United States	39,029	38,057	31,370
India	39,400	34,416	35,477
Brazil	12,224	17,074	18,537
Germany	14,717	15,299	17,260
Korea	15,050	14,571	15,011
Taiwan	15,297	11,875	10,405
Netherlands	10,874	11,232	10,122
Japan	10,850	9,462	9,774
Russia	9,508	7,104	7,053
All other destination markets	101,163	90,771	88,791
All destination markets	268,111	249,862	243,799
	Value (1,000 dollars)		
United States	235,789	278,624	256,694
India	270,958	310,536	284,958
Brazil	65,055	89,081	98,612
Germany	78,353	92,718	93,986
Korea	138,063	146,779	145,191
Taiwan	57,364	53,031	46,645
Netherlands	66,143	62,475	49,858
Japan	114,696	111,426	136,809
Russia	52,283	44,005	52,735
All other destination markets	858,560	952,826	978,161
All destination markets	1,937,264	2,141,502	2,143,647

Table continued on next page.

Table VII-3 - Continued
Heterocyclic Compounds with Nitrogen Hetero-Atoms: Exports from China, 2017-19

Destination market	Calendar year		
	2017	2018	2019
	Unit value (dollars per pound)		
United States	6.04	7.32	8.18
India	6.88	9.02	8.03
Brazil	5.32	5.22	5.32
Germany	5.32	6.06	5.45
Korea	9.17	10.07	9.67
Taiwan	3.75	4.47	4.48
Netherlands	6.08	5.56	4.93
Japan	10.57	11.78	14.00
Russia	5.50	6.19	7.48
All other destination markets	8.49	10.50	11.02
All destination markets	7.23	8.57	8.79
	Share of quantity (percent)		
United States	14.6	15.2	12.9
India	14.7	13.8	14.6
Brazil	4.6	6.8	7.6
Germany	5.5	6.1	7.1
Korea	5.6	5.8	6.2
Taiwan	5.7	4.8	4.3
Netherlands	4.1	4.5	4.2
Japan	4.0	3.8	4.0
Russia	3.5	2.8	2.9
All other destination markets	37.7	36.3	36.4
All destination markets	100.0	100.0	100.0

Note.-- United States is shown at the top, all remaining top export destinations shown in descending order of 2019 data. GTA data for HS subheading 2933.99 includes products that are outside the scope of these investigations. Consequently, the Chinese export data presented are overstated.

Source: Official exports statistics under HS subheading 2933.99 as reported by China Customs in the Global Trade Atlas database, accessed November 09, 2020.

U.S. inventories of imported merchandise

Table VII-4 presents data on U.S. importers' reported inventories of corrosion inhibitors. U.S importers' end-of-period inventories of imports from China increased *** percent from 2017 to 2019. This increase in U.S. importers' end-of-period inventories of corrosion inhibitors from China is ***. During 2017-19, the ratio of subject importers' inventories to total shipments of imports increased from *** percent in 2017 to *** percent in 2019, and was *** percent during interim 2020.

Table VII-4
Corrosion inhibitors: U.S. importers' end-of-period inventories of imports by source, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

U.S. importers' outstanding orders

The Commission requested importers to indicate whether they imported or arranged for the importation of corrosion inhibitors after September 30, 2020. Ten of 19 responding firms indicated that they had arranged such imports. These data are presented in table VII-5.

Table VII-5
Corrosion inhibitors: Arranged imports, October 2020 through September 2021

* * * * * * *

Antidumping or countervailing duty orders in third-country markets

There are no known antidumping or countervailing duty orders on certain corrosion inhibitors in third-country markets.[12]

Information on nonsubject countries

The respondent reports they are only aware of production of tolytriazole in China with very limited production in India.[13] One estimate was that all the nonsubject countries combined would add up to less than 5 percent of the imports.[14] In addition to India, the nonsubject countries include Germany and South Korea.[15] Between 2017 and 2019, the nonsubject import market share was small and ranged between *** percent and *** percent of the total market.[16]

Chinese capacity is estimated at a minimum of 61 million pounds.[17] The capacities in Germany, India, and Korea are unknown.[18] Global capacity is estimated at a minimum of *** million pounds.[19]

At the global exporter level, TTA, BTA, sodium BTA, and sodium TTA fall under the category of heterocyclic compounds with nitrogen hetero-atoms. In 2019, the three largest global exporters in this larger category of products were Switzerland ($4.77 billion, 30.0 percent of total share of value), Ireland ($3.85 billion, 24.1 percent of total share of value), and China ($2.14 billion, 13.5 percent of total share of value), as shown in table VII-6.

[12] Hearing transcript, p. 233 (Dobrez); Conference transcript, p. 96 (Milawski), p. 96 (Reynolds), p. 148 (Bode); Petitioner's postconference brief, Exhibit 1, p. 26; Suez posthearing statement, Exhibit I, p. IX-58.

[13] Dober Chemical Corporation's postconference statement, p. 14. Dober's products are blended in the EU, but Dober believes the EU sources their material from China.

[14] Conference transcript, p. 60 (Jones).

[15] Conference transcript, p. 111 (Milawski).

[16] Conference transcript, pp. 38-39 (Lutz); Petitioner's postconference brief, pp. 14, and Exhibit 2.

[17] Petitioner's posthearing brief, p. 15.

[18] Petitioner's postconference brief, Exhibit 1, pp. 20-21.

[19] Petitioner's postconference brief, Exhibit 1, pp. 20-21.

Table VII-6
Heterocyclic Compounds with Nitrogen Hetero-Atoms, 2017—19

Exporter	Calendar year		
	2017	2018	2019
	Value (1,000 dollars)		
United States	353,103	265,750	278,546
China	1,937,264	2,141,502	2,143,647
Switzerland	3,427,421	4,260,479	4,773,596
Ireland	1,873,818	2,406,037	3,848,028
India	662,320	773,237	933,700
United Kingdom	597,518	656,731	833,244
Germany	930,198	815,867	784,831
Belgium	1,559,279	581,736	676,946
Japan	340,938	318,071	350,237
Italy	249,946	408,843	317,031
Netherlands	191,513	893,306	214,146
Korea	136,120	128,699	179,453
All other exporters	855,321	703,575	600,863
All exporters	13,114,760	14,353,835	15,934,270
	Share of value (percent)		
United States	2.7	1.9	1.7
China	14.8	14.9	13.5
Switzerland	26.1	29.7	30.0
Ireland	14.3	16.8	24.1
India	5.1	5.4	5.9
United Kingdom	4.6	4.6	5.2
Germany	7.1	5.7	4.9
Belgium	11.9	4.1	4.2
Japan	2.6	2.2	2.2
Italy	1.9	2.8	2.0
Netherlands	1.5	6.2	1.3
Korea	1.0	0.9	1.1
All other exporters	6.5	4.9	3.8
All exporters	100.0	100.0	100.0

Source: Official exports statistics under HS subheading 2933.99 reported by various national statistical authorities in the Global Trade Atlas database, accessed November 6, 2020. HS subheading 2933.99 has heterocyclic compounds with nitrogen hetero-atoms that are not elsewhere specified or included. The category includes products that are outside the scope of these investigations and therefore overstate export data.

APPENDIX A

FEDERAL REGISTER NOTICES

The Commission makes available notices relevant to its investigations and reviews on its website, www.usitc.gov. In addition, the following tabulation presents, in chronological order, *Federal Register* notices issued by the Commission and Commerce during the current proceeding.

Citation	Title	Link
85 FR 7784, February 11, 2020	*Corrosion Inhibitors From China; Institution of Anti-Dumping and Countervailing Duty Investigations and Scheduling of Preliminary Phase Investigations*	https://www.govinfo.gov/content/pkg/FR-2020-02-11/pdf/2020-02643.pdf
85 FR 12502, March 3, 2020	*Certain Corrosion Inhibitors From the People's Republic of China: Initiation of Countervailing Duty Investigation*	https://www.govinfo.gov/content/pkg/FR-2020-03-03/pdf/2020-04342.pdf
85 FR 12506, March 3, 2020	*Certain Corrosion Inhibitors From the People's Republic of China: Initiation of Less-Than-Fair-Value Investigation*	https://www.govinfo.gov/content/pkg/FR-2020-03-03/pdf/2020-04339.pdf
85 FR 17364, March 27, 2020	*Corrosion Inhibitors From China; Determinations*	https://www.govinfo.gov/content/pkg/FR-2020-03-27/pdf/2020-06373.pdf
85 FR 19455, April 7, 2020	*Certain Corrosion Inhibitors From the People's Republic of China: Postponement of Preliminary Determination in the Countervailing Duty Investigation*	https://www.govinfo.gov/content/pkg/FR-2020-04-07/pdf/2020-07294.pdf
85 FR 36376, June 16, 2020	*Certain Corrosion Inhibitors From the People's Republic of China: Postponement of Preliminary Determination in the Less-Than-Fair-Value Investigation*	https://www.govinfo.gov/content/pkg/FR-2020-06-16/pdf/2020-12948.pdf

Citation	Title	Link
85 FR 41960, July 13, 2020	*Certain Corrosion Inhibitors from the People's Republic of China: Preliminary Affirmative Countervailing Duty Determination, and Alignment of Final Determination With Final Antidumping Duty Determination*	https://www.govinfo.gov/content/pkg/FR-2020-07-13/pdf/2020-15053.pdf
85 FR 55825, September 10, 2020	*Certain Corrosion Inhibitors From the People's Republic of China: Preliminary Affirmative Determination of Sales at Less Than Fair Value, Postponement of Final Determination, and Extension of Provisional Measures*	https://www.govinfo.gov/content/pkg/FR-2020-09-10/pdf/2020-20010.pdf
85 FR 63139, October 6, 2020	*Corrosion Inhibitors From China; Scheduling of the Final Phase of Countervailing Duty and Anti-Dumping Duty Investigations*	https://www.govinfo.gov/content/pkg/FR-2020-10-06/pdf/2020-22027.pdf
86 FR 7532, January 29, 2021	*Certain Corrosion Inhibitors From the People's Republic of China: Final Affirmative Countervailing Duty Determination*	https://www.govinfo.gov/content/pkg/FR-2021-01-29/pdf/2021-01976.pdf
86 FR 7537, January 29, 2021	*Certain Corrosion Inhibitors From the People's Republic of China: Final Affirmative Determination of Sales at Less Than Fair Value*	https://www.govinfo.gov/content/pkg/FR-2021-01-29/pdf/2021-01975.pdf

APPENDIX B

LIST OF HEARING WITNESSES

CALENDAR OF PUBLIC HEARING

Those listed below appeared in the United States International Trade Commission's hearing via videoconference:

Subject: Corrosion Inhibitors from China

Inv. Nos.: 701-TA-638 and 731-TA-1473 (Final)

Date and Time: January 21, 2021 - 9:30 a.m.

OPENING REMARKS:

Petitioner (**Stephen J. Orava**, King & Spalding LLP)
Respondents (**Kristen Smith**, Sandler Travis & Rosenberg, P.A.)

In Support of the Imposition of
Antidumping and Countervailing Duty Orders:

King & Spalding LLP
Washington, DC
on behalf of

Wincom, Inc.

James Milawski, President, Wincom, Inc.

Eric Spore, Vice President of Sales, Texmark Chemicals, Inc.

Richard Lutz, Consultant to Petitioner, King & Spalding LLP

Andrew Szamosszegi, Consultant to Petitioner, Capital Trade, Inc.

Laura Delgado, Consultant to Petitioner, Capital Trade, Inc.

Stephen J. Orava)
Neal J. Reynolds) – OF COUNSEL
Mercedes C. Morno)

In Opposition to the Imposition of
Antidumping and Countervailing Duty Orders:

Sandler Travis & Rosenberg, P.A.
Washington, DC
on behalf of

SUEZ WTS USA, Inc.

Jeff Melzer, Technology Leader, SUEZ WTS USA, Inc.

Vincent LaFrado, Global Sourcing Manager, SUEZ WTS USA, Inc.

Eric Thungstrom, Global Manager, SUEZ WTS USA, Inc.

Robin Strother, Plant Manager, SUEZ WTS USA, Inc.

Bill Jones, Operations Manager, SUEZ WTS USA, Inc.

Ed Green, North American Counsel, Legal, SUEZ WTS USA, Inc.

Richard McGovern, International Trade Compliance Manager,
SUEZ WTS USA, Inc.

Ed Urankar, Engineering Manager, SUEZ WTS USA, Inc.

Peter Macios, Executive Product Manager, SUEZ WTS USA, Inc.

Brian C. Becker, Ph.D., Precision Economics, LLC

Kristen Smith)
) – OF COUNSEL
Sarah E. Yuskaitis)

Thompson & Associates, PLLC
Washington, DC
on behalf of

Nalco Company, LLC

Hector Olivera, Global Category Manager,
Nalco Company, LLC

Daniel Meier, Industry Fellow, Global Cooling Water R&D,
Nalco Company, LLC

George W. Thompson) – OF COUNSEL

Interested Parties in Opposition to Imposition:

P.A.T. Products
Hermon, ME

Leo E. Coyle, Vice President

Michael Best Strategies
Washington, DC
on behalf of

Dober Chemical Corp.

Scott Dobrez, Executive Vice President, Dober Chemical Corp.

Denise Bode, Partner, Michael Best Strategies

Sarah Helton, Partner, Michael Best Strategies

REBUTTAL/CLOSING REMARKS:

Petitioner (**Stephen J. Orava**, King & Spalding LLP)
Respondents (**George W. Thompson**, Thompson & Associates, PLLC)

-END-

APPENDIX C

SUMMARY DATA

Producers and processors of domestic product

Table C-1

Corrosion inhibitors: Summary data concerning the U.S. market defining the domestic industry to both include producers/tollers and processor/tollees of domestic corrosion inhibitors, 2017-19, January to September 2019, and January to September 2020

(Quantity=1,000 pounds dry weight; Value=1,000 dollars; Productivity=pounds dry weight per hour; Unit values, unit labor costs, and unit expenses=dollars per pound dry weight; Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to September		Comparison years			Jan-Sep
	2017	2018	2019	2019	2020	2017-19	2017-18	2018-19	2019-20
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):									
Fully domestic value	***	***	***	***	***	▲***	▲***	▲***	▲***
Value added to imports	***	***	***	***	***	▼***	▼***	***	***
Total value	***	***	***	***	***	▲***	▲***	▲***	▲***
Importers' share (fn1):									
China	***	***	***	***	***	▼***	▼***	▼***	▲***
Nonsubject sources	***	***	***	***	***	▲***	▼***	▲***	▼***
All import sources	***	***	***	***	***	▼***	▼***	▼***	▼***
U.S. imports from (fn2):									
China:									
Quantity	10,648	14,043	11,918	8,412	8,813	▲11.9	▲31.9	▼(15.1)	▲4.8
Value	24,759	31,514	19,794	14,675	11,389	▼(20.1)	▲27.3	▼(37.2)	▼(22.4)
Unit value	$2.33	$2.24	$1.66	$1.74	$1.29	▼(28.6)	▼(3.5)	▼(26.0)	▼(25.9)
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
Nonsubject sources:									
Quantity	152	170	199	182	63	▲31.2	▲11.9	▲17.2	▼(65.2)
Value	715	921	2,034	1,811	822	▲184.5	▲28.8	▲120.8	▼(54.6)
Unit value	$4.71	$5.43	$10.22	$9.93	$12.96	▲116.9	▲15.1	▲88.4	▲30.6
Ending inventory quantity	***	***	***	***	***	***	▲***	▼***	***
All import sources:									
Quantity	10,800	14,213	12,117	8,594	8,877	▲12.2	▲31.6	▼(14.7)	▲3.3
Value	25,474	32,435	21,828	16,486	12,211	▼(14.3)	▲27.3	▼(32.7)	▼(25.9)
Unit value	$2.36	$2.28	$1.80	$1.92	$1.38	▼(23.6)	▼(3.3)	▼(21.1)	▼(28.3)
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
U.S. producers' and processors':									
Producers: Average capacity quantity	***	***	***	***	***	▲***	▲***	▲***	***
Producers: Production quantity	***	***	***	***	***	▲***	▲***	▼***	▲***
Producers: Capacity utilization (fn1)	***	***	***	***	***	▲***	▲***	▼***	▲***
Processors: Average capacity quantity	***	***	***	***	***	▲***	▲***	▲***	***
Processors: Production quantity	***	***	***	***	***	▲***	▲***	▼***	▲***
Processors: Capacity utilization (fn1)	***	***	***	***	***	▼***	▼***	▼***	▲***
U.S. shipments (fn3):									
Quantity	***	***	***	***	***	▲***	▲***	▼***	▼***
Value:									
Fully domestic value	***	***	***	***	***	▲***	▲***	▼***	▼***
Value added to imports	***	***	***	***	***	▼***	▼***	***	***
Total value	***	***	***	***	***	▲***	▲***	▼***	▼***
Unit value	***	***	***	***	***	▼***	▲***	▼***	▼***
Export shipments:									
Quantity	***	***	***	***	***	▲***	▲***	▲***	▼***
Value	***	***	***	***	***	▲***	▲***	▲***	▼***
Unit value	***	***	***	***	***	▼***	▼***	▼***	▼***
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▼***
Inventories/U.S. shipments (fn1)	***	***	***	***	***	▼***	▼***	▲***	▼***
Production workers	***	***	***	***	***	▲***	▲***	▼***	▲***
Hours worked (1,000s)	***	***	***	***	***	▲***	▲***	▲***	▼***
Wages paid ($1,000)	***	***	***	***	***	▲***	▲***	▲***	▲***
Hourly wages (dollars per hour)	***	***	***	***	***	▲***	▲***	▲***	▲***
Producers: Productivity	***	***	***	***	***	▲***	▲***	▲***	▲***
Producers: Unit labor costs	***	***	***	***	***	▲***	▲***	▲***	▲***
Processors: Productivity	***	***	***	***	***	▼***	▲***	▼***	▲***
Processors: Unit labor costs	***	***	***	***	***	▲***	▼***	▲***	▼***

Table continued on next page.

Table C-1--Continued

Corrosion inhibitors: Summary data concerning the U.S. market defining the domestic industry to both include producers/tollers and processor/tollees of domestic corrosion inhibitors, 2017-19, January to September 2019, and January to September 2020

(Quantity=1,000 pounds dry weight; Value=1,000 dollars; Productivity=pounds dry weight per hour; Unit values, unit labor costs, and unit expenses=dollars per pound dry weight; Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to September		Comparison years			Jan-Sep
	2017	2018	2019	2019	2020	2017-19	2017-18	2018-19	2019-20
U.S. producers' and processors'--Continued:									
Net sales (fn4):									
Quantity	***	***	***	***	***	▼***	▲***	▼***	▼***
Value	***	***	***	***	***	▼***	▲***	▼***	▼***
Unit value	***	***	***	***	***	▼***	▲***	▼***	▼***
Cost of goods sold (COGS) (fn4)	***	***	***	***	***	▼***	▼***	▼***	▲***
Gross profit or (loss) (fn5)	***	***	***	***	***	▼***	▲***	▼***	▼***
SG&A expenses	***	***	***	***	***	▲***	▲***	▼***	▼***
Operating income or (loss) (fn5)	***	***	***	***	***	▼***	▲***	▼***	▼***
Net income or (loss) (fn5)	***	***	***	***	***	▼***	▲***	▼***	▼***
Capital expenditures	***	***	***	***	***	▲***	▲***	▼***	▼***
Research and development expenses	***	***	***	***	***	▼***	▼***	***	▲***
Net assets	***	***	***	***	***	▲***	▲***	▼***	***
Unit COGS	***	***	***	***	***	▲***	▼***	▲***	▲***
Unit SG&A expenses	***	***	***	***	***	▲***	▲***	▲***	▼***
Unit operating income or (loss) (fn5)	***	***	***	***	***	▼***	▲***	▼***	▼***
Unit net income or (loss) (fn5)	***	***	***	***	***	▼***	▲***	▼***	▼***
COGS/sales (fn1)	***	***	***	***	***	▲***	▼***	▲***	▲***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▲***	▼***	▼***
Net income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▲***	▼***	▼***

Note.--Shares and ratios shown as "0.0" percent represent non-zero values less than "0.05" percent (if positive) and greater than "(0.05)" percent (if negative). Zeroes, null values, and undefined calculations are suppressed and shown as "---". Period changes preceded by a "▲" represent an increase, while period changes preceded by a "▼" represent a decrease.

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

fn2.--U.S. importers' U.S. imports are derived by combining official U.S. import statistics for HTS statistical reporting numbers 2933.99.8210 and 2933.99.8220 (dry corrosion inhibitors) and liquid corrosion inhibitors data reported in response to Commission questionnaires.

fn3.--The quantity for U.S. producers' U.S. shipments used for apparent consumption reflects the quantity of corrosion inhibitors sold in the United States by processor/tollees using domestically manufactured TTA. The fully domestic value for U.S. producers' U.S. shipments reflects the value of corrision inhibitors sold in the United States by processor/tollees that used domestically manufactured TTA. The additional value added to imports reflect's the value added by processor/tollees to imported Chinese TTA. In measuring U.S. apparent consumption and market share this methodology avoids reclassifying and/or double counting merchandise already reported once as an import. U.S. shipments unit value is presented for domestically manufactured TTA.

fn4.--Net sales quantity and value includes only the data reported by processor/tollees (which in this industry includes the totality of the producer/toller volumes), additionally the net sales quantity and value in 2017 includes some volume of imported Chinese TTA processed domestically by the processor/tollees. Cost data merges the costs reported by both producer/tollers and processor/tollees excluding the tolling fees paid by U.S. processor/tollees in order to avoid double counting costs. This methodology best reflects the consolidated results across toller/tollees in this industry.

fn5.--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.

Source: Compiled from data submitted in response to Commission questionnaires and official U.S. import statistics for HTS statistical reporting numbers 2933.99.8210 and 2933.99.8220, accessed November 6, 2020.

Producers

Table C-2

Corrosion inhibitors: Summary data concerning the U.S. market defining the domestic industry to only include producers/tollers of domestic corrosion inhibitors, 2017-19, January to September 2019, and January to September 2020

(Quantity=1,000 pounds dry weight; Value=1,000 dollars; Productivity=pounds dry weight per hour; Unit values, unit labor costs, and unit expenses=dollars per pound dry weight; Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to September		Comparison years			Jan-Sep
	2017	2018	2019	2019	2020	2017-19	2017-18	2018-19	2019-20
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 (fn2):									
China:									
Quantity	10,648	14,043	11,918	8,412	8,813	▲11.9	▲31.9	▼(15.1)	▲4.8
Value	24,759	31,514	19,794	14,675	11,389	▼(20.1)	▲27.3	▼(37.2)	▼(22.4)
Unit value	$2.33	$2.24	$1.66	$1.74	$1.29	▼(28.6)	▼(3.5)	▼(26.0)	▼(25.9)
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
Nonsubject sources:									
Quantity	152	170	199	182	63	▲31.2	▲11.9	▲17.2	▼(65.2)
Value	715	921	2,034	1,811	822	▲184.5	▲28.8	▲120.8	▼(54.6)
Unit value	$4.71	$5.43	$10.22	$9.93	$12.96	▲116.9	▲15.1	▲88.4	▲30.6
Ending inventory quantity	***	***	***	***	***	***	▲***	▼***	***
All import sources:									
Quantity	10,800	14,213	12,117	8,594	8,877	▲12.2	▲31.6	▼(14.7)	▲3.3
Value	25,474	32,435	21,828	16,486	12,211	▼(14.3)	▲27.3	▼(32.7)	▼(25.9)
Unit value	$2.36	$2.28	$1.80	$1.92	$1.38	▼(23.6)	▼(3.3)	▼(21.1)	▼(28.3)
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
U.S. producers':									
Average capacity quantity	***	***	***	***	***	▲***	▲***	▲***	***
Production quantity	***	***	***	***	***	▲***	▲***	▼***	▲***
Capacity utilization (fn1)	***	***	***	***	***	▲***	▲***	▼***	▲***
U.S. shipments:									
Quantity	***	***	***	***	***	▲***	▲***	▼***	▲***
Value	***	***	***	***	***	▲***	▲***	▼***	▲***
Unit value	***	***	***	***	***	▼***	▼***	▼***	▲***
Export shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	▼***	▲***	▼***	▼***
Inventories/U.S. shipments (fn1)	***	***	***	***	***	▼***	▼***	▼***	▼***
Production workers	***	***	***	***	***	▲***	▲***	▼***	***
Hours worked (1,000s)	***	***	***	***	***	▲***	▲***	▼***	▼***
Wages paid ($1,000)	***	***	***	***	***	▲***	▲***	▼***	▲***
Hourly wages (dollars per hour)	***	***	***	***	***	▲***	▲***	▲***	▲***
Productivity	***	***	***	***	***	▲***	▲***	▲***	▲***
Unit labor costs	***	***	***	***	***	▲***	▲***	▲***	▲***

Table continued on next page.

Table C-2--Continued
Corrosion inhibitors: Summary data concerning the U.S. market defining the domestic industry to only include producers/tollers of domestic corrosion inhibitors, 2017-19, January to September 2019, and January to September 2020
(Quantity=1,000 pounds dry weight; Value=1,000 dollars; Productivity=pounds dry weight per hour; Unit values, unit labor costs, and unit expenses=dollars per pound dry weight; Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to September		Comparison years			Jan-Sep
	2017	2018	2019	2019	2020	2017-19	2017-18	2018-19	2019-20
U.S. producers'--Continued:									
Net sales:									
Quantity	***	***	***	***	***	▲***	▲***	▼***	▲***
Value	***	***	***	***	***	▲***	▲***	▼***	▲***
Unit value	***	***	***	***	***	▼***	▼***	▼***	▲***
Cost of goods sold (COGS)	***	***	***	***	***	▲***	▲***	▲***	▲***
Gross profit or (loss) (fn3)	***	***	***	***	***	▼***	▲***	▼***	▼***
SG&A expenses	***	***	***	***	***	▲***	▲***	▼***	▼***
Operating income or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▼***	▼***
Net income or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▼***	▼***
Capital expenditures	***	***	***	***	***	▲***	▲***	▼***	▼***
Research and development expenses	***	***	***	***	***	▼***	▼***	***	***
Net assets	***	***	***	***	***	▲***	▲***	▼***	***
Unit COGS	***	***	***	***	***	▲***	▲***	▲***	▲***
Unit SG&A expenses	***	***	***	***	***	▼***	▲***	▼***	▼***
Unit operating income or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▼***	▼***
Unit net income or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▼***	▼***
COGS/sales (fn1)	***	***	***	***	***	▲***	▲***	▲***	▲***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▼***	▼***	▼***
Net income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▼***	▼***	▼***

Note.--Shares and ratios shown as "0.0" percent represent non-zero values less than "0.05" percent (if positive) and greater than "(0.05)" percent (if negative). Zeroes, null values, and undefined calculations are suppressed and shown as "---". Period changes preceded by a "▲" represent an increase, while period changes preceded by a "▼" represent a decrease.

fn1.--Reported data are in percent and period changes are in percentage points.
fn2.--U.S. imports are derived by combining official U.S. import statistics for HTS statistical reporting numbers 2933.99.8210 and 2933.99.8220 (dry corrosion inhibitors) and liquid corrosion inhibitors data reported in response to Commission questionnaires.
fn3.--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. U.S. shipments unit value is presented for domestically manufactured TTA.

Source: Compiled from data submitted in response to Commission questionnaires and official U.S. import statistics for HTS statistical reporting numbers 2933.99.8210 and 2933.99.8220, accessed November 6, 2020.

Table C-3

Corrosion inhibitors: Summary data concerning the U.S. market defining the domestic industry to include producers/tollers, processor/tollees of domestic corrosion inhibitors, and processors of imported corrosion inhibitors, 2017-19, January to September 2019, and January to September 2020

(Quantity=1,000 pounds dry weight; Value=1,000 dollars; Productivity=pounds dry weight per hour; Unit values, unit labor costs, and unit expenses=dollars per pound dry weight; Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to September		Comparison years			Jan-Sep
	2017	2018	2019	2019	2020	2017-19	2017-18	2018-19	2019-20
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):									
Fully domestic value	***	***	***	***	***	▲***	▲***	▼***	▲***
Value added to imports	***	***	***	***	***	▲***	▼***	▲***	▲***
Total value	***	***	***	***	***	▲***	▼***	▲***	▲***
Importers' share (fn1):									
China	***	***	***	***	***	▼***	▲***	▼***	▼***
Nonsubject sources	***	***	***	***	***	▲***	▲***	▲***	▼***
All import sources	***	***	***	***	***	▼***	▲***	▼***	▼***
U.S. imports from (fn2):									
China:									
Quantity	10,648	14,043	11,918	8,412	8,813	▲11.9	▲31.9	▼(15.1)	▲4.8
Value	24,759	31,514	19,794	14,675	11,389	▼(20.1)	▲27.3	▼(37.2)	▼(22.4)
Unit value	$2.33	$2.24	$1.66	$1.74	$1.29	▼(28.6)	▼(3.5)	▼(26.0)	▼(25.9)
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
Nonsubject sources:									
Quantity	152	170	199	182	63	▲31.2	▲11.9	▲17.2	▼(65.2)
Value	715	921	2,034	1,811	822	▲184.5	▲28.8	▲120.8	▼(54.6)
Unit value	$4.71	$5.43	$10.22	$9.93	$12.96	▲116.9	▲15.1	▲88.4	▲30.6
Ending inventory quantity	***	***	***	***	***	***	▲***	▼***	***
All import sources:									
Quantity	10,800	14,213	12,117	8,594	8,877	▲12.2	▲31.6	▼(14.7)	▲3.3
Value	25,474	32,435	21,828	16,486	12,211	▼(14.3)	▲27.3	▼(32.7)	▼(25.9)
Unit value	$2.36	$2.28	$1.80	$1.92	$1.38	▼(23.6)	▼(3.3)	▼(21.1)	▼(28.3)
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
U.S. producers' and processors':									
Producers: Average capacity quantity	***	***	***	***	***	▲***	▲***	▲***	***
Producers: Production quantity	***	***	***	***	***	▲***	▲***	▼***	▲***
Producers: Capacity utilization (fn1)	***	***	***	***	***	▲***	▲***	▼***	▲***
Domestic processor: Capacity	***	***	***	***	***	▲***	▲***	▲***	***
Domestic processor: Production	***	***	***	***	***	▲***	▲***	▼***	▲***
Domestic processor: Utilization (fn1)	***	***	***	***	***	▲***	▲***	▼***	▲***
Importer processors: Capacity	***	***	***	***	***	▲***	***	▲***	***
Importer processors: Production	***	***	***	***	***	▼***	▼***	▼***	▼***
Importer processors: Utilization (fn1)	***	***	***	***	***	▼***	▼***	▼***	▼***
U.S. shipments (fn3):									
Quantity	***	***	***	***	***	▲***	▲***	▼***	▼***
Value:									
Fully domestic value	***	***	***	***	***	▲***	▲***	▼***	▼***
Value added to imports	***	***	***	***	***	▼***	▼***	▲***	▲***
Total value	***	***	***	***	***	▲***	▲***	▼***	▲***
Unit value	***	***	***	***	***	▼***	▲***	▼***	▼***
Export shipments:									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▲***
Value	***	***	***	***	***	▲***	▲***	▼***	▼***
Unit value	***	***	***	***	***	▲***	▲***	▼***	▼***
Producers: Ending inventory quantity	***	***	***	***	***	▼***	▲***	▼***	▼***
Producers: Inv./U.S. shipments (fn1)	***	***	***	***	***	▼***	▼***	▼***	▼***
Domestic processor: Ending inventory	***	***	***	***	***	▲***	▼***	▲***	▼***
Domestic processor: Inv./U.S. ship.(fn1)	***	***	***	***	***	▲***	▼***	▲***	▲***
Importer processors: Ending inventory	***	***	***	***	***	▲***	▲***	▼***	▼***
Importer processors: Inv./U.S. ship.(fn1)	***	***	***	***	***	▲***	▲***	▼***	▲***

Table continued on next page.

Table C-3--Continued
Corrosion inhibitors: Summary data concerning the U.S. market defining the domestic industry to include producers/tollers, processor/tollees of domestic corrosion inhibitors, and processors of imported corrosion inhibitors, 2017-19, January to September 2019, and January to September 2020

(Quantity=1,000 pounds dry weight; Value=1,000 dollars; Productivity=pounds dry weight per hour; Unit values, unit labor costs, and unit expenses=dollars per pound dry weight; Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to September		Comparison years			Jan-Sep
	2017	2018	2019	2019	2020	2017-19	2017-18	2018-19	2019-20
U.S. producers' and processors'--Continued:									
Production workers	***	***	***	***	***	▲***	▲***	***	***
Hours worked (1,000s)	***	***	***	***	***	▲***	▲***	▲***	▼***
Wages paid ($1,000)	***	***	***	***	***	▲***	▲***	▲***	▲***
Hourly wages (dollars per hour)	***	***	***	***	***	▲***	▲***	▲***	▲***
Producers: Productivity	***	***	***	***	***	▲***	▲***	▲***	▲***
Producers: Unit labor costs	***	***	***	***	***	▲***	▲***	▲***	▲***
Domestic processor: Productivity	***	***	***	***	***	▼***	▲***	▼***	▲***
Domestic processor: Unit labor costs	***	***	***	***	***	▲***	▼***	▲***	▼***
Importer processors: Productivity	***	***	***	***	***	▼***	▼***	▼***	▼***
Importer processors: Unit labor costs	***	***	***	***	***	▲***	▲***	▲***	▲***
Net sales (fn4):									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▼***
Value	***	***	***	***	***	▼***	▲***	▼***	▼***
Unit value	***	***	***	***	***	▲***	▲***	▼***	▼***
Cost of goods sold (COGS) (fn4)	***	***	***	***	***	▲***	▲***	▼***	▼***
Gross profit or (loss) (fn5)	***	***	***	***	***	▼***	▲***	▼***	▲***
SG&A expenses	***	***	***	***	***	▲***	▲***	▼***	▼***
Operating income or (loss) (fn5)	***	***	***	***	***	▼***	▼***	▼***	▲***
Net income or (loss) (fn5)	***	***	***	***	***	▼***	▼***	▼***	▲***
Capital expenditures	***	***	***	***	***	▲***	▲***	▼***	▼***
Research and development expenses	***	***	***	***	***	▼***	▼***	▼***	▲***
Net assets	***	***	***	***	***	▲***	▲***	▼***	***
Unit COGS	***	***	***	***	***	▲***	▲***	▼***	▼***
Unit SG&A expenses	***	***	***	***	***	▲***	▲***	▲***	▼***
Unit operating income or (loss) (fn5)	***	***	***	***	***	▼***	▼***	▼***	▲***
Unit net income or (loss) (fn5)	***	***	***	***	***	▼***	▼***	▼***	▲***
COGS/sales (fn1)	***	***	***	***	***	▲***	▲***	▲***	▼***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▼***	▼***	▲***
Net income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▼***	▼***	▲***

Note.--Shares and ratios shown as "0.0" percent represent non-zero values less than "0.05" percent (if positive) and greater than "(0.05)" percent (if negative). Zeroes, null values, and undefined calculations are suppressed and shown as "---". Period changes preceded by a "▲" represent an increase, while period changes preceded by a "▼" represent a decrease.

fn1.--Reported data are in percent and period changes are in percentage points.
fn2.--U.S. importers' U.S. imports are derived by combining official U.S. import statistics for HTS statistical reporting numbers 2933.99.8210 and 2933.99.8220 (dry corrosion inhibitors) and liquid corrosion inhibitors data reported in response to Commission questionnaires.
fn3.--The quantity for U.S. producers' U.S. shipments used for apparent consumption reflects the quantity of corrosion inhibitors sold in the United States by processor/tollees using domestically manufactured TTA. The fully domestic value for U.S. producers' U.S. shipments reflects the value of corrision inhibitors sold in the United States by processor/tollees that used domestically manufactured TTA. The additional value added to imports reflect's the value added by processor/tollees to imported TTA and BTA. In measuring U.S. apparent consumption and market share this methodology avoids reclassifying and/or double counting merchandise already reported once as an import. U.S. shipments unit value is presented for domestically manufactured TTA.
fn4.--Net sales quantity and value includes only the data reported by domestic and importer processors/tollees (in this industry the domestic tollees data includes the totality of the U.S. producer/toller volumes). Cost data merges the costs reported by producer/tollers, domestic processor tollees, and importer processors excluding the tolling fees paid by U.S. processor/tollees in order to avoid double counting costs. This methodology best reflects the consolidated results across toller/tollees in this industry.

fn5.--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.

Source: Compiled from data submitted in response to Commission questionnaires and official U.S. import statistics for HTS statistical reporting numbers 2933.99.8210 and 2933.99.8220, accessed November 6, 2020.

Related Party Exclusion: Based on C-3

Table C-4

Corrosion inhibitors: Summary data concerning the U.S. market defining the domestic industry to include producers/tollers, processor/tollees of domestic corrosion inhibitors, and processors of imported corrosion inhibitors, excluding one U.S. processor *, 2017-19, January to September 2019, and January to September 2020**

(Quantity=1,000 pounds dry weight; Value=1,000 dollars; Productivity=pounds dry weight per hour; Unit values, unit labor costs, and unit expenses=dollars per pound dry weight; Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to September		Comparison years			Jan-Sep
	2017	2018	2019	2019	2020	2017-19	2017-18	2018-19	2019-20
U.S. consumption quantity:									
Amount	***	***	***	***	***	▲***	▲***	▼***	▲***
Producers' share (fn1):									
Included producers	***	***	***	***	***	▲***	▲***	▲***	▼***
Excluded producers	***	***	***	***	***	***	***	***	***
All producers	***	***	***	***	***	▲***	▲***	▲***	▼***
Importers' share (fn1):									
China	***	***	***	***	***	▼***	▼***	▼***	▲***
Nonsubject sources	***	***	***	***	***	▲***	▼***	▲***	▼***
All import sources	***	***	***	***	***	▼***	▼***	▼***	▲***
U.S. consumption value:									
Amount	***	***	***	***	***	▼***	▲***	▼***	▼***
Producers' share (fn1):									
Included producers	***	***	***	***	***	▲***	▼***	▲***	▲***
Excluded producers	***	***	***	***	***	▲***	▲***	▲***	▲***
All producers	***	***	***	***	***	▲***	▼***	▲***	▲***
Importers' share (fn1):									
China	***	***	***	***	***	▼***	▲***	▼***	▼***
Nonsubject sources	***	***	***	***	***	▲***	▲***	▲***	▼***
All import sources	***	***	***	***	***	▼***	▲***	▼***	▼***
U.S. imports from (fn2):									
China:									
Quantity	10,648	14,043	11,918	8,412	8,813	▲11.9	▲31.9	▼(15.1)	▲4.8
Value	24,759	31,514	19,794	14,675	11,389	▼(20.1)	▲27.3	▼(37.2)	▼(22.4)
Unit value	$2.33	$2.24	$1.66	$1.74	$1.29	▼(28.6)	▼(3.5)	▼(26.0)	▼(25.9)
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
Nonsubject sources:									
Quantity	152	170	199	182	63	▲31.2	▲11.9	▲17.2	▼(65.2)
Value	715	921	2,034	1,811	822	▲184.5	▲28.8	▲120.8	▼(54.6)
Unit value	$4.71	$5.43	$10.22	$9.93	$12.96	▲116.9	▲15.1	▲88.4	▲30.6
Ending inventory quantity	***	***	***	***	***	***	▲***	▼***	***
All import sources:									
Quantity	10,800	14,213	12,117	8,594	8,877	▲12.2	▲31.6	▼(14.7)	▲3.3
Value	25,474	32,435	21,828	16,486	12,211	▼(14.3)	▲27.3	▼(32.7)	▼(25.9)
Unit value	$2.36	$2.28	$1.80	$1.92	$1.38	▼(23.6)	▼(3.3)	▼(21.1)	▼(28.3)
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
Included U.S. producers' and processors':									
Producers: Average capacity quantity	***	***	***	***	***	▲***	▲***	▲***	***
Producers: Production quantity	***	***	***	***	***	▲***	▲***	▼***	▲***
Producers: Capacity utilization (fn1)	***	***	***	***	***	▲***	▲***	▼***	▲***
Domestic processor: Capacity	***	***	***	***	***	▲***	▲***	▲***	***
Domestic processor: Production	***	***	***	***	***	▲***	▲***	▼***	▲***
Domestic processor: Utilization (fn1)	***	***	***	***	***	▲***	▲***	▼***	▲***
Importer processors: Capacity	***	***	***	***	***	▲***	***	▲***	***
Importer processors: Production	***	***	***	***	***	▼***	▲***	▼***	▼***
Importer processors: Utilization (fn1)	***	***	***	***	***	▼***	▲***	▼***	▼***
U.S. shipments (fn3):									
Quantity	***	***	***	***	***	▲***	▲***	▼***	▼***
Value:	***	***	***	***	***	▲***	▲***	▼***	▲***
Unit value	***	***	***	***	***	▼***	▲***	▼***	▼***
Export shipments:									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▲***
Value	***	***	***	***	***	▲***	▲***	▲***	▼***
Unit value	***	***	***	***	***	▲***	▲***	▲***	▼***
Producers: Ending inventory quantity	***	***	***	***	***	▼***	▲***	▼***	▼***
Producers: Inv./U.S. shipments (fn1)	***	***	***	***	***	▼***	▼***	▼***	▼***
Domestic processor: Ending inventory	***	***	***	***	***	▲***	▼***	▲***	▼***
Domestic processor: Inv./U.S. ship.(fn1)	***	***	***	***	***	▲***	▼***	▲***	▲***
Importer processors: Ending inventory	***	***	***	***	***	▲***	▲***	▼***	▼***
Importer processors: Inv./U.S. ship.(fn1)	***	***	***	***	***	▲***	▲***	▼***	▲***

Table continued on next page.

Table C-4--Continued
Corrosion inhibitors: Summary data concerning the U.S. market defining the domestic industry to include producers/tollers, processor/tollees of domestic corrosion inhibitors, and processors of imported corrosion inhibitors, excluding one U.S. processor *, 2017-19, January to September 2019, and January to September 2020**

(Quantity=1,000 pounds dry weight; Value=1,000 dollars; Productivity=pounds dry weight per hour; Unit values, unit labor costs, and unit expenses=dollars per pound dry weight; Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to September		Comparison years			Jan-Sep
	2017	2018	2019	2019	2020	2017-19	2017-18	2018-19	2019-20
Included U.S. producers' and processors'--Continued:									
Production workers	***	***	***	***	***	▲***	▲***	***	***
Hours worked (1,000s)	***	***	***	***	***	▲***	▲***	▲***	▼***
Wages paid ($1,000)	***	***	***	***	***	▲***	▲***	▲***	▲***
Hourly wages (dollars per hour)	***	***	***	***	***	▲***	▲***	▲***	▲***
Producers: Productivity	***	***	***	***	***	▲***	▲***	▲***	▲***
Producers: Unit labor costs	***	***	***	***	***	▲***	▲***	▲***	▲***
Domestic processors: Productivity	***	***	***	***	***	▼***	▲***	▼***	▲***
Domestic processors: Unit labor costs	***	***	***	***	***	▲***	▼***	▲***	▼***
Importer processors: Productivity	***	***	***	***	***	▼***	▲***	▼***	▼***
Importer processors: Unit labor costs	***	***	***	***	***	▲***	▼***	▲***	▲***
Net sales (fn4):									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▼***
Value	***	***	***	***	***	▼***	▲***	▼***	▼***
Unit value	***	***	***	***	***	▲***	▲***	▼***	▼***
Cost of goods sold (COGS) (fn4)	***	***	***	***	***	▲***	▲***	▼***	▼***
Gross profit or (loss) (fn5)	***	***	***	***	***	▼***	▼***	▼***	▲***
SG&A expenses	***	***	***	***	***	▲***	▲***	▲***	▼***
Operating income or (loss) (fn5)	***	***	***	***	***	▼***	▼***	▼***	▲***
Net income or (loss) (fn5)	***	***	***	***	***	▼***	▼***	▼***	▲***
Capital expenditures	***	***	***	***	***	▲***	▲***	▼***	▼***
Research and development expenses	***	***	***	***	***	▼***	▼***	***	▲***
Net assets	***	***	***	***	***	▲***	▲***	▼***	***
Unit COGS	***	***	***	***	***	▲***	▲***	▼***	▼***
Unit SG&A expenses	***	***	***	***	***	▲***	▲***	▲***	▼***
Unit operating income or (loss) (fn5)	***	***	***	***	***	▼***	▼***	▼***	▲***
Unit net income or (loss) (fn5)	***	***	***	***	***	▼***	▼***	▼***	▲***
COGS/sales (fn1)	***	***	***	***	***	▲***	▲***	▲***	▼***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▼***	▼***	▲***
Net income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▼***	▼***	▲***

Note.--Shares and ratios shown as "0.0" percent represent non-zero values less than "0.05" percent (if positive) and greater than "(0.05)" percent (if negative). Zeroes, null values, and undefined calculations are suppressed and shown as "---". Period changes preceded by a "▲" represent an increase, while period changes preceded by a "▼" represent a decrease.

fn1.--Reported data are in percent and period changes are in percentage points.
fn2.--U.S. importers' U.S. imports are derived by combining official U.S. import statistics for HTS statistical reporting numbers 2933.99.8210 and 2933.99.8220 (dry corrosion inhibitors) and liquid corrosion inhibitors data reported in response to Commission questionnaires.
fn3.--The quantity for U.S. producers' U.S. shipments used for apparent consumption reflects the quantity of corrosion inhibitors sold in the United States by processor/tollees using domestically manufactured TTA. The fully domestic value for U.S. producers' U.S. shipments reflects the value of corrision inhibitors sold in the United States by processor/tollees that used domestically manufactured TTA. The additional value added to imports reflect's the value added by processor/tollees to imported TTA and BTA. In measuring U.S. apparent consumption and market share this methodology avoids reclassifying and/or double counting merchandise already reported once as an import. U.S. shipments unit value is presented for domestically manufactured TTA.

fn4.--Net sales quantity and value includes only the data reported by domestic and importer processors/tollees (in this industry the domestic tollees data includes the totality of the U.S. producer/toller volumes). Cost data merges the costs reported by producer/tollers, domestic processor tollees, and importer processors excluding the tolling fees paid by U.S. processor/tollees in order to avoid double counting costs. This methodology best reflects the consolidated results across toller/tollees in this industry.

fn5.--Percent changes only calculated when both comparison values represent profits; The directional change in profitability provided when one or both comparison values

Source: Compiled from data submitted in response to Commission questionnaires and official U.S. import statistics for HTS statistical reporting numbers 2933.99.8210 and 2933.99.8220, accessed November 6, 2020.

APPENDIX D

U.S. PRODUCERS' AND U.S. IMPORTERS' SHIPMENTS BY TYPE, 2017-19, JANUARY TO SEPTEMBER 2019, AND JANUARY TO SEPTEMBER 2020

Appendix D presents data on U.S. producers' and U.S. importers' U.S. shipments by type during 2017-19, January-September 2019, January-September 2020. Table D-1 presents U.S. processor/tollees' U.S. shipments by type, while table D-2 presents U.S. importers' U.S. shipments by type.

Table D-1
Corrosion inhibitors: U.S. processor/tollees' U.S. shipments by type, 2017-19, January-September 2019, and January-September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Quantity (1,000 pounds dry weight)				
U.S. shipments.--					
Crude TTA solid	***	***	***	***	***
Crude TTA liquid	***	***	***	***	***
Purified TTA solid	***	***	***	***	***
Purified TTA liquid	***	***	***	***	***
Crude BTA solid	***	***	***	***	***
Crude BTA liquid	***	***	***	***	***
Purified BTA solid	***	***	***	***	***
Purified BTA liquid	***	***	***	***	***
Crude TTA	***	***	***	***	***
Purified TTA	***	***	***	***	***
Crude BTA	***	***	***	***	***
Purified BTA	***	***	***	***	***
All crude inhibitors	***	***	***	***	***
All purified inhibitors	***	***	***	***	***
All TTA	***	***	***	***	***
All BTA	***	***	***	***	***
All product types	***	***	***	***	***
	Value (1,000 dollars)				
U.S. shipments.--					
Crude TTA solid	***	***	***	***	***
Crude TTA liquid	***	***	***	***	***
Purified TTA solid	***	***	***	***	***
Purified TTA liquid	***	***	***	***	***
Crude BTA solid	***	***	***	***	***
Crude BTA liquid	***	***	***	***	***
Purified BTA solid	***	***	***	***	***
Purified BTA liquid	***	***	***	***	***
Crude TTA	***	***	***	***	***
Purified TTA	***	***	***	***	***
Crude BTA	***	***	***	***	***
Purified BTA	***	***	***	***	***
All crude inhibitors	***	***	***	***	***
All purified inhibitors	***	***	***	***	***
All TTA	***	***	***	***	***
All BTA	***	***	***	***	***
All product types	***	***	***	***	***

Table continued on next page.

Table D-1—Continued
Corrosion inhibitors: U.S. processor/tollees' U.S. shipments by type, 2017-19, January-September 2019, and January-September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Unit value (dollars per pound dry weight)				
U.S. shipments.--					
Crude TTA solid	***	***	***	***	***
Crude TTA liquid	***	***	***	***	***
Purified TTA solid	***	***	***	***	***
Purified TTA liquid	***	***	***	***	***
Crude BTA solid	***	***	***	***	***
Crude BTA liquid	***	***	***	***	***
Purified BTA solid	***	***	***	***	***
Purified BTA liquid	***	***	***	***	***
Crude TTA	***	***	***	***	***
Purified TTA	***	***	***	***	***
Crude BTA	***	***	***	***	***
Purified BTA	***	***	***	***	***
All crude inhibitors	***	***	***	***	***
All purified inhibitors	***	***	***	***	***
All TTA	***	***	***	***	***
All BTA	***	***	***	***	***
All product types	***	***	***	***	***
	Share of quantity (percent)				
U.S. shipments.--					
Crude TTA solid	***	***	***	***	***
Crude TTA liquid	***	***	***	***	***
Purified TTA solid	***	***	***	***	***
Purified TTA liquid	***	***	***	***	***
Crude BTA solid	***	***	***	***	***
Crude BTA liquid	***	***	***	***	***
Purified BTA solid	***	***	***	***	***
Purified BTA liquid	***	***	***	***	***
Crude TTA	***	***	***	***	***
Purified TTA	***	***	***	***	***
Crude BTA	***	***	***	***	***
Purified BTA	***	***	***	***	***
All crude inhibitors	***	***	***	***	***
All purified inhibitors	***	***	***	***	***
All TTA	***	***	***	***	***
All BTA	***	***	***	***	***
All product types	***	***	***	***	***

Table continued on next page.

Table D-1—Continued
Corrosion inhibitors: U.S. processor/tollees' U.S. shipments by type, 2017-19, January-September 2019, and January-September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Share of value (percent)				
U.S. shipments.--					
Crude TTA solid	***	***	***	***	***
Crude TTA liquid	***	***	***	***	***
Purified TTA solid	***	***	***	***	***
Purified TTA liquid	***	***	***	***	***
Crude BTA solid	***	***	***	***	***
Crude BTA liquid	***	***	***	***	***
Purified BTA solid	***	***	***	***	***
Purified BTA liquid	***	***	***	***	***
Crude TTA	***	***	***	***	***
Purified TTA	***	***	***	***	***
Crude BTA	***	***	***	***	***
Purified BTA	***	***	***	***	***
All crude inhibitors	***	***	***	***	***
All purified inhibitors	***	***	***	***	***
All TTA	***	***	***	***	***
All BTA	***	***	***	***	***
All product types	***	***	***	***	***

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

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

Table D-2
Corrosion inhibitors: U.S. importers' U.S. shipments by type, 2017-19, January-September 2019, and January-September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Quantity (1,000 pounds dry weight)				
U.S. shipments of imports from China.--					
Crude TTA solid	***	***	***	***	***
Crude TTA liquid	***	***	***	***	***
Purified TTA solid	***	***	***	***	***
Purified TTA liquid	***	***	***	***	***
Crude BTA solid	***	***	***	***	***
Crude BTA liquid	***	***	***	***	***
Purified BTA solid	***	***	***	***	***
Purified BTA liquid	***	***	***	***	***
Crude TTA	***	***	***	***	***
Purified TTA	***	***	***	***	***
Crude BTA	***	***	***	***	***
Purified BTA	***	***	***	***	***
All crude inhibitors	***	***	***	***	***
All purified inhibitors	***	***	***	***	***
All TTA	***	***	***	***	***
All BTA	***	***	***	***	***
All product types	***	***	***	***	***
	Value (1,000 dollars)				
U.S. shipments of imports from China.--					
Crude TTA solid	***	***	***	***	***
Crude TTA liquid	***	***	***	***	***
Purified TTA solid	***	***	***	***	***
Purified TTA liquid	***	***	***	***	***
Crude BTA solid	***	***	***	***	***
Crude BTA liquid	***	***	***	***	***
Purified BTA solid	***	***	***	***	***
Purified BTA liquid	***	***	***	***	***
Crude TTA	***	***	***	***	***
Purified TTA	***	***	***	***	***
Crude BTA	***	***	***	***	***
Purified BTA	***	***	***	***	***
All crude inhibitors	***	***	***	***	***
All purified inhibitors	***	***	***	***	***
All TTA	***	***	***	***	***
All BTA	***	***	***	***	***
All product types	***	***	***	***	***

Table continued on next page.

Table D-2—Continued
Corrosion inhibitors: U.S. importers' U.S. shipments by type, 2017-19, January-September 2019, and January-September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Unit value (dollars per pound dry weight)				
U.S. shipments of imports from China.--					
Crude TTA solid	***	***	***	***	***
Crude TTA liquid	***	***	***	***	***
Purified TTA solid	***	***	***	***	***
Purified TTA liquid	***	***	***	***	***
Crude BTA solid	***	***	***	***	***
Crude BTA liquid	***	***	***	***	***
Purified BTA solid	***	***	***	***	***
Purified BTA liquid	***	***	***	***	***
Crude TTA	***	***	***	***	***
Purified TTA	***	***	***	***	***
Crude BTA	***	***	***	***	***
Purified BTA	***	***	***	***	***
All crude inhibitors	***	***	***	***	***
All purified inhibitors	***	***	***	***	***
All TTA	***	***	***	***	***
All BTA	***	***	***	***	***
All product types	***	***	***	***	***

Table continued on next page.

Table D-2—Continued
Corrosion inhibitors: U.S. importers' U.S. shipments by type, 2017-19, January-September 2019, and January-September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Share of quantity (percent)				
U.S. shipments of imports from China.--Crude TTA solid	***	***	***	***	***
Crude TTA liquid	***	***	***	***	***
Purified TTA solid	***	***	***	***	***
Purified TTA liquid	***	***	***	***	***
Crude BTA solid	***	***	***	***	***
Crude BTA liquid	***	***	***	***	***
Purified BTA solid	***	***	***	***	***
Purified BTA liquid	***	***	***	***	***
Crude TTA	***	***	***	***	***
Purified TTA	***	***	***	***	***
Crude BTA	***	***	***	***	***
Purified BTA	***	***	***	***	***
All crude inhibitors	***	***	***	***	***
All purified inhibitors	***	***	***	***	***
All TTA	***	***	***	***	***
All BTA	***	***	***	***	***
All product types	***	***	***	***	***
	Share of value (percent)				
U.S. shipments of imports from China.--Crude TTA solid	***	***	***	***	***
Crude TTA liquid	***	***	***	***	***
Purified TTA solid	***	***	***	***	***
Purified TTA liquid	***	***	***	***	***
Crude BTA solid	***	***	***	***	***
Crude BTA liquid	***	***	***	***	***
Purified BTA solid	***	***	***	***	***
Purified BTA liquid	***	***	***	***	***
Crude TTA	***	***	***	***	***
Purified TTA	***	***	***	***	***
Crude BTA	***	***	***	***	***
Purified BTA	***	***	***	***	***
All crude inhibitors	***	***	***	***	***
All purified inhibitors	***	***	***	***	***
All TTA	***	***	***	***	***
All BTA	***	***	***	***	***
All product types	***	***	***	***	***

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

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

APPENDIX E

ADDITIONAL U.S. INDUSTRY DATA

Appendix E presents data for certain U.S. firms that process imported corrosion inhibitors (Dober, Nalco, and Wincom).[1] [2]

Dober, Nalco, and Wincom provided usable U.S. producer questionnaire responses in these investigations with information regarding their additional processing of imports of corrosion inhibitors. These companies ***. In addition, ***.[3] [4] [5]

Table E-1 lists the additional U.S. processors of corrosion inhibitors firms' narratives on their operations related to their processing of imported corrosion inhibitors during 2019.

[1] As of the writing of this report, the financial data reported by ***.
[2] ***. ***.
[3] ***. ***.
[4] After the hearing, ***. ***.
[5] ***.

Table E-1
Corrosion inhibitors: Additional U.S. processing firms' narratives on their operations relating to processing of imported corrosion inhibitors, 2019

Firm	Narrative
Dober	***
Nalco	***
Wincom	***

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

Table E-2 lists additional U.S. processors of corrosion inhibitors, their production locations, positions on the petition, and shares of total production.

Table E-2
Corrosion inhibitors: Additional U.S. processing data, position on petitions, location, and share of additional processing, 2019

Firm	Position on petition	Production location(s)	Share of additional processing (percent)
Dober	***	Hazle Township, PA	***
Nalco	***	Garyville, LA Carson, CA Port Allen, LA Ellwood City, PA	***
Wincom	Petitioner	Blue Ash, Ohio	***
Total			***

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

Table E-3 presents additional processors' ownership, related and/or affiliated firms.

Table E-3
Corrosion inhibitors: Additional U.S. processors' ownership, related and/or affiliated firms

* * * * * * *

Table E-4 presents additional U.S. processors' level of complexity and importance of its processing operations during 2019. ***.

Table E-4
Corrosion inhibitors: Additional U.S. processors/tollees' level of complexity and importance of their processing operations, 2019

Firm	Rating of complexity (1 = least complex, 5 = most complex)				
	1	2	3	4	5
Dober	---	---	---	---	1
Nalco	---	---	1	---	---
Wincom	1	---	---	---	---
	Narrative				
Dober	***				
Nalco	***				
Wincom	***				

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

Table E-5 presents additional U.S. processors' comparisons with chemical manufacturing with processing activities during 2017-19, January to September 2019, and January to September 2020.

Table E-5
Corrosion inhibitors: Comparison of chemical manufacturing and processing activities, 2017-19, January-September 2019, and January-September 2020

Factor	Corrosion inhibitors chemical manufacturing from Part III of report	Corrosion inhibitors processing from Part III of the report	Dober	Nalco	Wincom
Source and extent of the firm's capital investment[1]	***	***	***	***	***
Technical expertise involved in U.S. production activities[2]	***	***	***	***	***
Value added to the product in the United States[3]	***[4]	***	***[5]	***	***
Employment levels[6]	***	***	***	***	***
Quantity and type of parts and materials sourced in the United States[8]	***[7]	***	***[9]	***[9]	***[9]

[1] Net assets (range 2017-2019). If the same value was reported for all periods, a single value rather than a range is shown. ***.

[2] Technical expertise is based on R&D expenses (range 2017-2019). If the same value was reported for all periods, a single value rather than a range is shown. ***.

[3] Total conversion costs / total COGS (range 2017-19). As discussed in greater detail in the financial section of this appendix, ***.

[4] Since the chemical manufacturers are tollers, and thus do not incur the vast majority of any raw material costs related to their production, total COGS had to be constructed to calculate the value added to the product from chemical manufacturing. For 2018 and 2019, this was done by adding the tollee's raw material costs to the total COGS of the tollers. In 2017, the tollee's raw material costs included the cost of importing corrosion inhibitors for *** net sales in that year. Staff removed the cost of these imported corrosion inhibitors ($***) in order to calculate the raw material cost of the product manufactured by the tollers in that year.

[5] ***.

Table notes continued on next page.

Table E-5—Continued
Corrosion inhibitors: Comparison of chemical manufacturing and processing activities, 2017-19, January-September 2019, and January-September 2020

[6] Aggregate production and related workers (PRW) (range 2017-2019). ***.

[7] Raw material values or "other raw material costs" for the additional processors. These values are being reported under the assumption that raw materials other than imported corrosion inhibitors (i.e., oTDA, sodium nitrite, and caustic) are being sourced domestically.

[8] Per fn. 4 regarding adjustment of COGS for the value-added calculation of tollers, the same adjusted raw material values were used for the quantity and type of parts sourced in the U.S. value range presented.

[9] These data are these companies' "other raw material costs" since the rest of their raw materials are imported TTA and BTA.

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

Table E-6 presents the nature and extent of *** additional processing operations during 2019.

Table E-6
Corrosion inhibitors: U.S. processors' nature and extent of processing operations, 2019

* * * * * * *

Table E-6--Continued
Corrosion inhibitors: U.S. processors' nature and extent of processing operations, 2019

*	*	*	*	*	*	*

Table E-6--Continued
Corrosion inhibitors: U.S. processors' nature and extent of processing operations, 2019

*	*	*	*	*	*	*

U.S. production, capacity, and capacity utilization

Table E-7 and figure E-1 present additional U.S. processors' production, capacity, and capacity utilization.

Table E-7
Corrosion inhibitors: Additional U.S. processing production, capacity, and capacity utilization, 2017-19, January to September 2019, and January to September 2020

Item	Calendar year			January to September	
	2017	2018	2019	2019	2020
	Capacity (1,000 pounds dry weight)				
Dober	***	***	***	***	***
Nalco	***	***	***	***	***
Wincom	***	***	***	***	***
All additional U.S. processors	***	***	***	***	***
	Production (1,000 pounds dry weight)				
Dober	***	***	***	***	***
Nalco	***	***	***	***	***
Wincom	***	***	***	***	***
All additional U.S. processors	***	***	***	***	***
	Capacity utilization (percent)				
Dober	***	***	***	***	***
Nalco	***	***	***	***	***
Wincom	***	***	***	***	***
All additional U.S. processors	***	***	***	***	***
	Share of production (percent)				
Dober	***	***	***	***	***
Nalco	***	***	***	***	***
Wincom	***	***	***	***	***
All additional U.S. processors	***	***	***	***	***

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

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

Figure E-1

Corrosion inhibitors: Additional U.S. processing production, capacity, and capacity utilization, 2017-19, January to September 2019, and January to September 2020

* * * * * * *

Additional U.S. processors' U.S. shipments and exports

Tables E-8, E-9, and figure E-2 present additional U.S. processors' U.S. shipments, export shipments, and total shipments (table E-8), U.S. shipments by type (table E-9), and U.S. shipments by share of quantity (figure E-2) of corrosion inhibitors during 2017-19, January-September 2019, and January-September 2020.

Table E-8
Corrosion inhibitors: Additional U.S. processing, U.S. shipments, exports shipments, and total shipments, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

Table E-9
Corrosion inhibitors: Additional U.S. processing, U.S. shipments, by type, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

Table E-9—Continued
Corrosion inhibitors: Additional U.S. processing, U.S. shipments, by type, 2017-19, January-September 2019, and January-September 2020

*	*	*	*	*	*	*

Table E-9—Continued
Corrosion inhibitors: Additional U.S. processing, U.S. shipments, by type, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

Figure E-2
Corrosion inhibitors: Additional U.S. processing, U.S. shipments share of quantity, by type, 2019

* * * * * * *

U.S. producers' inventories

Table E-10 presents additional U.S. processors' end-of-period inventories and the ratio of these inventories to U.S. producers' production, U.S. shipments, and total shipments.

Table E-10
Corrosion inhibitors: Additional U.S. processing inventories, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

U.S. producers' imports and purchases

Additional U.S. processors' imports of corrosion inhibitors are presented in table E-11 (Nalco's), while their purchases of imports are presented in table E-12 (Dober's).

Table E-11
Corrosion inhibitors: Additional U.S. processors' imports and purchases of imports, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

Table E-12
Corrosion inhibitors: Additional U.S. processors' imports and purchases of imports, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

U.S. employment, wages, and productivity

Table E-13 presents additional U.S. processors employment-related data for 2017-19, January-September 2019, and January-September 2020. Table E-14 presents the combined employment data of the U.S. producers/tollers, U.S. processor/tollee of domestic corrosion inhibitors, and the additional processors of imported corrosion inhibitors.

Table E-13
Corrosion inhibitors: Additional U.S. processors' employment related data, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

Table E-14
Corrosion inhibitors: U.S. producer/tollers', processor/tollee of domestic corrosion inhibitors, and additional processors of imported corrosion inhibitors employment related data, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

Financial results related to corrosion inhibitors

Table E-15 presents financial results in relation to the additional processing of imported corrosion inhibitors, while table E-16 presents the corresponding changes in average unit values. Table E-17 presents selected financial data for the additional processors of imported corrosion inhibitors, by company.[6] [7] [8] [9]

[6] ***.

[7] As previously discussed, some of ***. ***. While these allocations are preferable to reporting profit and loss data for the entirety of the ***, it still assigns some of the value, ***.

[8] Similarly, ***.

[9] In response to questions from staff, ***. ***.

Table E-15
Corrosion Inhibitors: Results of operations, additional processing data, 2017-19, January-September 2019, and January-September 2020

*	*	*	*	*	*	*

Table E-15—Continued
Corrosion Inhibitors: Results of operations, additional processing data, 2017-19, January-September 2019, and January-September 2020

*	*	*	*	*	*	*

Table E-16
Corrosion Inhibitors: Changes in additional U.S. processing data AUVs, between calendar years and between partial year periods

Item	Between calendar years			Between partial year period
	2017-19	2017-18	2018-19	2019-20
	Change in AUVs (percent)			
Total net sales	▲***	▲***	▼***	▼***
Cost of goods sold.-- Raw materials	▲***	▲***	▼***	▼***
Direct labor	▲***	▲***	▲***	▲***
Other factory costs	▲***	▼***	▲***	▲***
Average COGS	▲***	▲***	▼***	▼***
	Change in AUVs (dollars per pound dry weight)			
Total net sales	▲***	▲***	▼***	▼***
Cost of goods sold.-- Raw materials	▲***	▲***	▼***	▼***
Direct labor	▲***	▲***	▲***	▲***
Other factory costs	▲***	▼***	▲***	▲***
Average COGS	▲***	▲***	▼***	▼***
Gross profit	▲***	▼***	▲***	▲***
SG&A expense	▲***	▲***	▲***	▼***
Operating income or (loss)	▼***	▼***	▲***	▲***
Net income or (loss)	▼***	▼***	▲***	▲***

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

Table E-17
Corrosion Inhibitors: Results of operations, additional processing data, by firm, 2017-19, January-September 2019, and January-September 2020

*	*	*	*	*	*	*

Table E-17—Continued
Corrosion Inhibitors: Results of operations, additional processing data, by firm, 2017-19, January-September 2019, and January-September 2020

*	*	*	*	*	*	*

Table E-17—Continued
Corrosion Inhibitors: Results of operations, additional processing data, by firm, 2017-19, January-September 2019, and January-September 2020

*	*	*	*	*	*	*

Table E-18 presents raw material cost information resulting from the additional processing operations. Table E-19 presents the companies' capital expenditures, research and development ("R&D") expenses, assets, and return on assets related to the additional processing operations.[10]

Table E-18
Corrosion Inhibitors: Additional U.S. processing data, raw material costs, 2019

* * * * * * *

Table E-19
Corrosion Inhibitors: Capital expenditures, R&D expenses, total assets, and operating return on assets related to additional processing operations, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

[10] ***. ***.

Table E-20 presents the combined financial results of the U.S. producers/tollers, U.S. processor/tollee of domestic corrosion inhibitors, and the additional processors of imported corrosion inhibitors. Table E-21 presents the corresponding changes in average unit values.

Table E-20
Corrosion Inhibitors: Results of operations of U.S. producers/tollers', processor/tollee of domestic corrosion inhibitors, and processors of imported corrosion inhibitors, 2017-19, January-September 2019, and January-September 2020

* * * * * * *

Table E-20—Continued
Corrosion Inhibitors: Results of operations of U.S. producers/tollers', processor/tollee of domestic corrosion inhibitors, and processors of imported corrosion inhibitors, 2017-19, January-September 2019, and January-September 2020

*	*	*	*	*	*	*

Table E-21
Corrosion Inhibitors: Changes in U.S. producers/tollers', processor/tollee of domestic corrosion inhibitors, and processors of imported corrosion inhibitors AUVs, between calendar years and partial year periods

Item	Between calendar years			Between partial year period
	2017-19	2017-18	2018-19	2019-20
	Change in AUVs (percent)			
Total net sales	▲***	▲***	▼***	▼***
Cost of goods sold.-- Raw materials	▲***	▲***	▼***	▼***
Direct labor	▲***	▲***	▲***	▲***
Other factory costs	▲***	▲***	▲***	▲***
Average COGS	▲***	▲***	▼***	▼***
	Change in AUVs (dollars per pound dry weight)			
Total net sales	▲***	▲***	▼***	▼***
Cost of goods sold.-- Raw materials	▲***	▲***	▼***	▼***
Direct labor	▲***	▲***	▲***	▲***
Other factory costs	▲***	▲***	▲***	▲***
Average COGS	▲***	▲***	▼***	▼***
Gross profit	▼***	▲***	▼***	▲***
SG&A expense	▲***	▲***	▲***	▼***
Operating income or (loss)	▼***	▼***	▼***	▲***
Net income or (loss)	▼***	▼***	▼***	▲***

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