

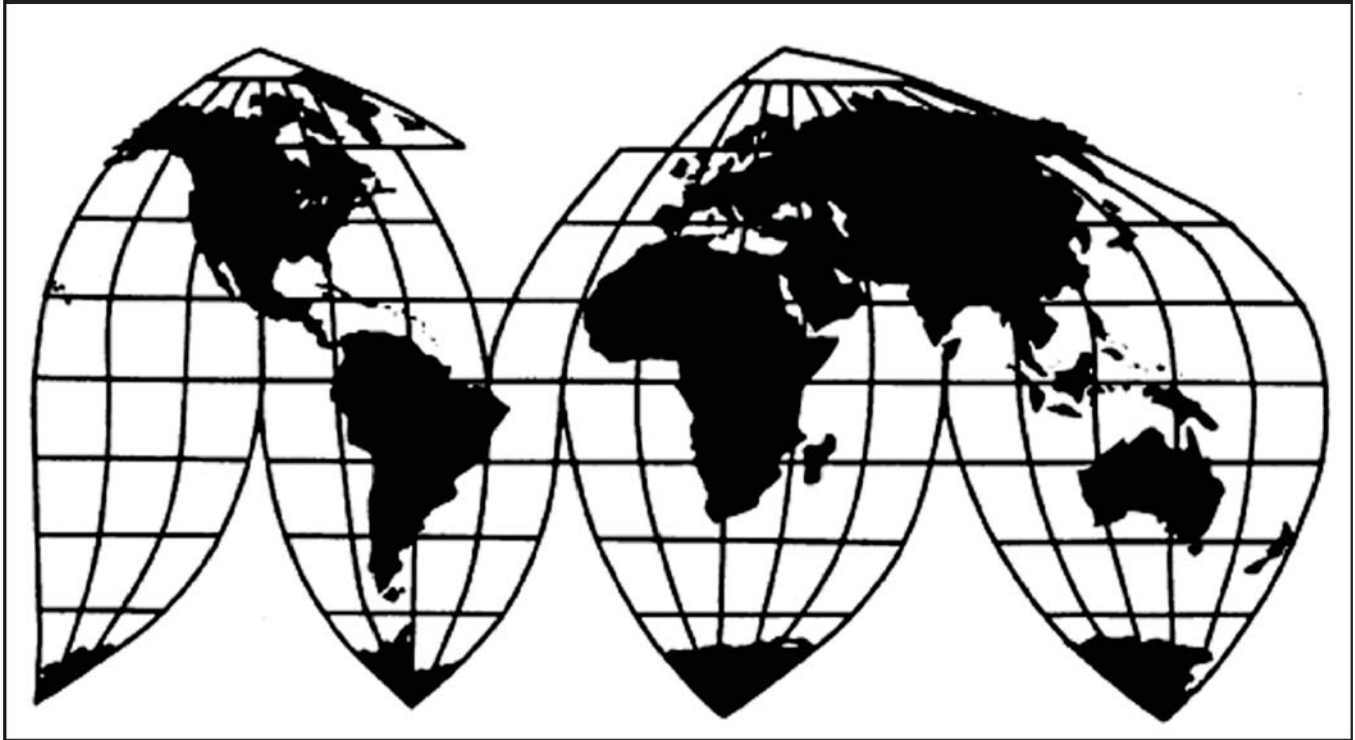
1,1,1,2—TETRAFLUOROETHANE FROM CHINA

Investigation Nos. 701-TA-509 and 731-TA-1244 (Final)

Publication 4503

December 2014

U.S. International Trade Commission



Washington, DC 20436

U.S. International Trade Commission

COMMISSIONERS

Meredith M. Broadbent, Chairman

Dean A. Pinkert, Vice Chairman

Irving A. Williamson

David S. Johanson

F. Scott Kieff

Rhonda K. Schmidlein

Karen Laney

Acting Director of Operations

Staff assigned

Justin Enck, Investigator (205-3363)

Jeffrey Clark, Industry Analyst (205-3318)

Cindy Cohen, Economist (205-3230)

David Boyland, Accountant (708-4725)

Maureen Letostak, Statistician (205-2603)

Nataline Viray-Fung, Attorney (205-2657)

Elizabeth Haines, Supervisory Investigator (205-3200)

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

1,1,1,2—TETRAFLUOROETHANE FROM CHINA

Investigation Nos. 701-TA-509 and 731-TA-1244 (Final)

Publication 4503



December 2014

CONTENTS

	Page
Determinations.....	1
Views of the Commission.....	3
Dissenting Views of Commissioners Irving A. Williamson and Rhonda K. Schmidlein.....	31
Part I: Introduction	I-1
Background.....	I-1
Statutory criteria and organization of the report	I-2
Statutory criteria	I-2
Organization of report.....	I-3
Market summary	I-3
summary data and data sources	I-3
Previous and related investigations	I-4
Nature and extent of subsidies and sales at LTFV	I-4
Nature of the subsidies	I-4
Sales at LTFV	I-5
The subject merchandise	I-6
Commerce’s scope	I-6
Tariff treatment.....	I-7
Manufacturing processes	I-7
Description and applications	I-9
Domestic like product issues.....	I-21
Part II: Conditions of competition in the U.S. market.....	II-1
U.S. market characteristics.....	II-1
U.S. purchasers.....	II-2
Channels of distribution	II-3
Geographic distribution	II-3
Supply and demand considerations	II-4
U.S. supply	II-4
U.S. demand	II-7
Substitutability issues.....	II-11
Lead times	II-11
Knowledge of country sources	II-11
Factors affecting purchasing decisions.....	II-12
Comparisons of domestic products, subject imports, and nonsubject imports.....	II-15
Comparison of U.S.-produced and imported R-134a	II-16
Elasticity estimates.....	II-18

CONTENTS

	Page
U.S. supply elasticity	II-18
Substitution elasticity	II-18
Part III: U.S. producers' production, shipments, and employment.....	III-1
U.S. producers	III-1
U.S. production, capacity, and capacity utilization	III-2
U.S. producers' U.S. shipments and exports	III-4
U.S. producers' U.S. shipments by segment	III-4
U.S. producers' inventories	III-5
U.S. producers' imports and purchases	III-6
U.S. employment, wages, and productivity	III-6
Part IV: U.S. imports, apparent U.S. consumption, and market shares	IV-1
U.S. importers.....	IV-1
U.S. imports	IV-4
Critical circumstances.....	IV-6
Negligibility.....	IV-7
Apparent U.S. consumption and market shares	IV-7
Part V: Pricing data	V-1
Factors affecting prices	V-1
Raw material costs	V-1
U.S. inland transportation costs	V-1
Pricing practices	V-2
Pricing methods.....	V-2
Sales terms and discounts	V-3
Price leadership	V-3
Price data.....	V-3
Price trends.....	V-6
Price comparisons	V-6
Lost sales and lost revenue	V-7
Part VI: Financial experience of U.S. producers.....	VI-1
Background.....	VI-1
Operations on R-134a	VI-2
Revenue	VI-3
Cost of goods sold and gross profit	VI-4
SG&A expenses and operating income	VI-6
Capital expenditures and research and development expenses	VI-6
Capital and investment	VI-7

CONTENTS

	Page
Actual negative effects	VI-7
Anticipated negative effects.....	VI-7
Part VII: Threat considerations and information on nonsubject countries	VII-1
The industry in China.....	VII-2
U.S. inventories of imported merchandise	VII-6
U.S. importers' outstanding orders.....	VII-6
Antidumping or countervailing duty orders in third-country markets.....	VII-7
Information on nonsubject countries	VII-7
United Kingdom.....	VII-9
Germany	VII-10
 Appendixes	
A. <i>Federal Register</i> notices	A-1
B. List of hearing witnesses	B-1
C. Summary data	C-1
D. <i>The U.S. Industry's Financial Results Without Input Adjustment for Related Party Profit Loss</i>	D-1

Note.—Information that would reveal confidential operations of individual concerns may not be published and therefore has been deleted. Such deletions are indicated by asterisks.

UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation Nos. 701-TA-509 and 731-TA-1244 (Final)

1,1,1,2-TETRAFLUOROETHANE FROM CHINA

DETERMINATIONS

On the basis of the record¹ developed in the subject investigations, the United States International Trade Commission (“Commission”) determines, pursuant to sections 705(b) and 735(b) of the Tariff Act of 1930 (19 U.S.C. 1671d(b)) and (19 U.S.C. 1673d(b)) (“the Act”), that an industry in the United States is not materially injured or threatened with material injury, and the establishment of an industry in the United States is not materially retarded, by reason of imports of 1,1,1,2-Tetrafluoroethane from China, provided for in subheading 2903.39.20 of the Harmonized Tariff Schedule of the United States, that have been found by the Department of Commerce (“Commerce”) to be sold in the United States at less than fair value (“LTFV”) and subsidized by the government of China.²

BACKGROUND

The Commission instituted these investigations effective October 22, 2013, following receipt of a petition filed with the Commission and Commerce by Mexichem Fluor Inc., St. Gabriel, LA. The final phase of the investigations was scheduled by the Commission following notification of preliminary determinations by Commerce that imports of 1,1,1,2-Tetrafluoroethane 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 June 24, 2014 (79 FR 35795). The hearing was held in Washington, DC, on October 15, 2014, and all persons who requested the opportunity were permitted to appear in person or by counsel.

¹ The record is defined in sec. 207.2(f) of the Commission’s Rules of Practice and Procedure (19 CFR 207.2(f)).

² Commissioners Irving A. Williamson and Rhonda K. Schmidlein dissenting.

Views of the Commission

Based on the record in the final phase of these investigations, we find that an industry in the United States is not materially injured or threatened with material injury by reason of imports of 1,1,1,2 – Tetrafluoroethane (“R-134a”) from China, found by the U.S. Department of Commerce (“Commerce”) to be sold in the United States at less than fair value and to be subsidized by the government of China.^{1 2}

1. Background

The petition in these investigations was filed on October 22, 2013 by Mexichem Fluor, Inc. (“Mexichem”), a U.S. producer of R-134a. Mexichem appeared at the hearing and submitted prehearing and posthearing briefs. E.I. DuPont de Nemours & Co. (“DuPont”), a U.S. producer of R-134a that supports the imposition of duties, also appeared at the hearing and submitted prehearing and posthearing briefs.

Sinochem Environmental Protection Chemicals (Taican) Co. (“Sinochem”), Zhejiang Quhau Fluor-Chemistry Co. (“Quhau”), Zhejiang Sanmei Chemical Industry Co. (“Sanmei”), and Weitron International Refrigeration Equipment (Kunshan) Co. (“Weitron”) (collectively “Respondents”) appeared at the hearing and jointly submitted prehearing and posthearing briefs opposing the imposition of duties. Sinochem, Quhau, and Sanmei are Chinese producers of the subject merchandise; Weitron imports the subject merchandise. AutoZone, Inc., a U.S. purchaser and importer of R-134a, appeared at the hearing in opposition to the imposition of duties and submitted a posthearing brief answering Commissioners’ questions. National Refrigerants, Inc. (“National Refrigerants”), a U.S. importer of R-134a, appeared at the hearing and filed prehearing and posthearing briefs opposing an affirmative critical circumstances determination.

U.S. industry data are based on the questionnaire responses from three domestic producers, Mexichem, DuPont, and Arkema, Inc. (“Arkema”), that accounted for 100 percent of domestic production of R-134a during the period of investigation (“POI”), which encompasses January 2011 through June 2014.³ U.S. import data are based on official Customs import statistics and on the questionnaire responses of 40 U.S. importers of subject merchandise.⁴

¹ Material retardation is not an issue in these investigations.

² Commissioners Williamson and Schmidlein determine that an industry in the United States is materially injured by reason of imports of R-134a from China that Commerce found to be sold in the United States at less than fair value and subsidized by the government of China. See their dissenting views. They join sections I-V of this opinion.

³ Confidential Report (“CR”) at III-1, Public Report (“PR”) at III-1.

⁴ CR/PR at IV-1. Because of the likelihood that official Customs import statistics understate the true volume of R-134a imports during the POI due to misclassified entries, staff requested that importers report all R-134a that entered the United States under HTS numbers other than 2903.39.2020. These data were combined with official Customs import statistics to arrive at the (Continued...)

Data on the subject industry are based on questionnaire responses from five foreign producers that accounted for approximately 96.5 percent of overall production of subject merchandise in China and 83.0 percent of all exports of R-134a to the United States in 2013.⁵

2. Domestic Like Product

A. In General

In determining whether an industry in the United States is materially injured or threatened with material injury by reason of imports of subject merchandise, the Commission first defines the “domestic like product” and the “industry.”⁶ 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.”⁷ 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.”⁸

The decision regarding the appropriate domestic like product in an investigation is a factual determination, and the Commission has applied the statutory standard of “like” or “most similar in characteristics and uses” on a case-by-case basis.⁹ No single factor is dispositive, and the Commission may consider other factors it deems relevant based on the facts of a particular investigation.¹⁰ The Commission looks for clear dividing lines among

(...Continued)

estimated total imports of R-134a during the POI. CR/PR at IV-1 n.4 . Importer questionnaire responses account for *** percent of subject imports from China in 2013 reported in adjusted official import statistics. This discrepancy is likely due to (1) estimation of some of the data in questionnaire responses, due to inadequate records and (2) underreporting by importers of the volume of R-134a imported under an HTS number other than 2903.39.2020. *Id.* at n.3

⁵ CR at VII-3, PR at 2-3.

⁶ 19 U.S.C. § 1677(4)(A).

⁷ 19 U.S.C. § 1677(4)(A).

⁸ 19 U.S.C. § 1677(10).

⁹ *See, e.g., Cleo Inc. v. United States*, 501 F.3d 1291, 1299 (Fed. Cir. 2007); *NEC Corp. v. Department of Commerce*, 36 F. Supp. 2d 380, 383 (Ct. Int’l Trade 1998); *Nippon Steel Corp. v. United States*, 19 CIT 450, 455 (1995); *Torrington Co. v. United States*, 747 F. Supp. 744, 749 n.3 (Ct. Int’l Trade 1990), *aff’d*, 938 F.2d 1278 (Fed. Cir. 1991) (“every like product determination ‘must be made on the particular record at issue’ and the ‘unique facts of each case’”). The Commission generally considers a number of factors, including the following: (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) customer and producer perceptions of the products; (5) common manufacturing facilities, production processes, and production employees; and, where appropriate, (6) price. *See Nippon*, 19 CIT at 455 n.4; *Timken Co. v. United States*, 913 F. Supp. 580, 584 (Ct. Int’l Trade 1996).

¹⁰ *See, e.g., S. Rep. No. 96-249 at 90-91 (1979).*

possible like products and disregards minor variations.¹¹ Although the Commission must accept Commerce's determination as to the scope of the imported merchandise that is subsidized or sold at less than fair value,¹² the Commission determines what domestic product is like the imported articles Commerce has identified.¹³

B. Product Description

Commerce defined the scope of the imported merchandise under investigation as follows:

1,1,1,2-Tetrafluoroethane, R-134a, or its chemical equivalent, regardless of form, type, or purity level. The chemical formula for 1,1,1,2-tetrafluoroethane is $\text{CF}_3\text{-CH}_2\text{F}$, and the Chemical Abstracts Service registry number is CAS 811-97-2.

1,1,1,2-Tetrafluoroethane is sold under a number of trade names including Klea 134a and Zephex 134a (Mexichem Fluor); Genetron 134a (Honeywell); Suva 134a, Dymel 134a, and Dymel P134a (DuPont); Solkane 134a (Solvay); and Forane 134a (Arkema). Generically, 1,1,1,2-tetrafluoroethane has been sold as Fluorocarbon 134a, R-134a, HFC-134a, HF A-134a, Refrigerant 134a, and UN3159.

Merchandise covered by the scope of these investigations is currently classified in the Harmonized Tariff Schedule of the United States at subheading 2903.39.2020.¹⁴

R-134a is used predominantly as a refrigerant in air conditioning systems. It is a clear, colorless liquid or gas that is relatively nontoxic and nonflammable.¹⁵ R-134a is the primary

¹¹ *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.").

¹² *See, e.g., USEC, Inc. v. United States*, 34 Fed. Appx. 725, 730 (Fed. Cir. 2002) ("The ITC may not modify the class or kind of imported merchandise examined by Commerce."); *Algoma Steel Corp. v. United States*, 688 F. Supp. 639, 644 (Ct. Int'l Trade 1988), *aff'd*, 865 F.3d 240 (Fed. Cir.), *cert. denied*, 492 U.S. 919 (1989).

¹³ *Hosiden Corp. v. Advanced Display Mfrs.*, 85 F.3d 1561, 1568 (Fed. Cir. 1996) (the Commission may find a single like product corresponding to several different classes or kinds defined by Commerce); *Cleo*, 501 F.3d at 1298 n.1 ("Commerce's {scope} finding does not control the Commission's {like product} determination."); *Torrington*, 747 F. Supp. at 748-52 (affirming the Commission's determination defining six like products in investigations in which Commerce found five classes or kinds).

¹⁴ *1,1,1,2 – Tetrafluoroethane from the People's Republic of China*, 79 Fed. Reg. 62597 (final determination of sales at less than fair value) ("Commerce Final AD Determination") (Oct. 20, 2014).

¹⁵ CR at I-10, PR at I-7.

refrigerant used in automotive air conditioning systems and is also used in domestic and commercial refrigeration, as a propellant in aerosol cans, in foam-blowing of building insulation, and in pharmaceutical uses such as asthma inhalers.¹⁶ R-134a is produced by a number of methods which generally involve reacting hydrogen fluoride with a compound containing carbon and chlorine.¹⁷

C. Domestic Like Product Analysis

In the preliminary phase of these investigations, the Commission found that R-134a was used primarily as a refrigerant in air conditioning systems, and that, notwithstanding differences between producers in achieving the chemical reaction necessary to producing R-134a, they used similar general processes to produce R-134a.¹⁸ The Commission also found that domestically produced R-134a was sold to both distributors and end users and was interchangeable with other refrigerants only in some circumstances.¹⁹ Based on these findings and the lack of any contrary argument from any of the parties, the Commission identified a single domestic like product that is coextensive with the scope of Commerce's investigations.

In the final phase of these investigations, the record does not contain any new information concerning the domestic like product factors,²⁰ and no party has argued that the Commission should adopt a definition of the domestic like product that is different from the preliminary phase determinations.²¹ Therefore, for the reasons set forth in the preliminary phase of these investigations, we define a single domestic like product that is coextensive with the scope of Commerce's investigations.

3. 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."²² 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.

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

¹⁶ CR at I-19-22, PR at I-13-15.

¹⁷ CR at I-11, PR at I-8.

¹⁸ *1,1,1,2 – Tetrafluoroethane from China*, Inv. Nos. 701-TA-509 and 731-TA-1244 (Preliminary) ("Preliminary Opinion"), USITC Pub. 4444 at 6-7 (Jan. 2014).

¹⁹ Preliminary Opinion, USITC Pub. 4444 at 7.

²⁰ See generally CR at I-10-25, PR at I-7-16.

²¹ See generally Petitioner's Prehearing Brief; Respondents' Prehearing Brief at 4.

²² 19 U.S.C. § 1677(4)(A).

domestic industry producers that are related to an exporter or importer of subject merchandise or which are themselves importers.²³ Exclusion of such a producer is within the Commission's discretion based upon the facts presented in each investigation.²⁴

Domestic producer *** imported subject merchandise from China in ***.²⁵ Accordingly, *** is a related party.²⁶

*** ratio of imports from China to U.S. production was ***.²⁷ The record does not indicate that this producer has benefitted from the small amount of subject imports that it imported over the POI.²⁸ Indeed, ***.²⁹ ***.³⁰ ***.³¹ Because *** principal interest remains in domestic production and because the record does not suggest that it benefitted from the subject merchandise that it imported, we find that appropriate circumstances do not exist to warrant excluding it as a related party. Accordingly, we define the domestic industry as consisting of all domestic producers of R-134a.

4. Legal Standards

In the final phase of antidumping and countervailing duty investigations, the Commission determines whether an industry in the United States is materially injured or threatened with material injury by reason of the imports under investigation.³² In making this determination, the Commission must consider the volume of subject imports, their effect on

²³ 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).

²⁴ 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, *i.e.*, 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; and

(3) the position of the related producer vis-a-vis the rest of the industry, *i.e.*, whether inclusion or exclusion of the related party will skew the data for the rest of the industry. See, *e.g.*, *Torrington Co. v. United States*, 790 F. Supp. at 1168.

²⁵ CR/PR at Table III-10.

²⁶ The parties have not raised any arguments regarding the definition of the domestic industry.

²⁷ CR/PR at Table III-10.

²⁸ CR/PR at Table VI-2.

²⁹ CR/PR at Table VI-2.

³⁰ Vice Chairman Pinkert has not relied upon existing parties' financial performance on their U.S. manufacturing operations as a factor in determining whether there are appropriate circumstances to exclude them from the domestic industry and has instead relied on the other information set forth in the text.

³¹ CR/PR at Table III-1.

³² 19 U.S.C. §§ 1671d(b), 1673d(b).

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.³³ The statute defines “material injury” as “harm which is not inconsequential, immaterial, or unimportant.”³⁴ 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.³⁵ 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.”³⁶

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,³⁷ it does not define the phrase “by reason of,” indicating that this aspect of the injury analysis is left to the Commission’s reasonable exercise of its discretion.³⁸ 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.³⁹

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

³³ 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).

³⁴ 19 U.S.C. § 1677(7)(A).

³⁵ 19 U.S.C. § 1677(7)(C)(iii).

³⁶ 19 U.S.C. § 1677(7)(C)(iii).

³⁷ 19 U.S.C. §§ 1671d(a), 1673d(a).

³⁸ *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).

³⁹ The Federal Circuit, in addressing the causation standard of the statute, observed that “[a]s long as its effects are not merely incidental, tangential, or trivial, the foreign product sold at less than fair value meets the causation requirement.” *Nippon Steel Corp. v. USITC*, 345 F.3d 1379, 1384 (Fed. Cir. 2003). This was further ratified in *Mittal Steel Point Lisas Ltd. v. United States*, 542 F.3d 867, 873 (Fed. Cir. 2008), where the Federal Circuit, quoting *Gerald Metals, Inc. v. United States*, 132 F.3d 716, 722 (Fed. Cir. 1997), stated that “this court requires evidence in the record ‘to show that the harm occurred ‘by reason of’ the LTFV imports, not by reason of a minimal or tangential contribution to material harm caused by LTFV goods.’” *See also Nippon Steel Corp. v. United States*, 458 F.3d 1345, 1357 (Fed. Cir. 2006); *Taiwan Semiconductor Industry Ass’n v. USITC*, 266 F.3d 1339, 1345 (Fed. Cir. 2001).

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.⁴⁰ In performing its examination, however, the Commission need not isolate the injury caused by other factors from injury caused by unfairly traded imports.⁴¹ 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.⁴² It is clear that the existence of injury caused by other factors does not compel a negative determination.⁴³

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” and the Commission “ensure{s} that it is not attributing injury from other sources to

⁴⁰ SAA at 851-52 (“{T}he Commission must examine other factors to ensure that it is not attributing injury from other sources to the subject imports.”); S. Rep. 96-249 at 75 (1979) (the Commission “will consider information which indicates that harm is caused by factors other than less-than-fair-value imports.”); H.R. Rep. 96-317 at 47 (1979) (“in examining the overall injury being experienced by a domestic industry, the ITC will take into account evidence presented to it which demonstrates that the harm attributed by the petitioner to the subsidized or dumped imports is attributable to such other factors;” those factors include “the volume and prices of nonsubsidized imports or imports sold at fair value, contraction in demand or changes in patterns of consumption, trade restrictive practices of and competition between the foreign and domestic producers, developments in technology and the export performance and productivity of the domestic industry”); *accord Mittal Steel*, 542 F.3d at 877.

⁴¹ 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.”).

⁴² S. Rep. 96-249 at 74-75; H.R. Rep. 96-317 at 47.

⁴³ *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.”).

the subject imports.”⁴⁴ ⁴⁵ Indeed, the Federal Circuit has examined and affirmed various Commission methodologies and has disavowed “rigid adherence to a specific formula.”⁴⁶

The Federal Circuit’s decisions in *Gerald Metals*, *Bratsk*, and *Mittal Steel* all involved cases where the relevant “other factor” was the presence in the market of significant volumes of price-competitive nonsubject imports. The Commission interpreted the Federal Circuit’s guidance in *Bratsk* as requiring it to apply a particular additional methodology following its finding of material injury in cases involving commodity products and a significant market presence of price-competitive nonsubject imports.⁴⁷ The additional “replacement/benefit” test looked at whether nonsubject imports might have replaced subject imports without any benefit to the U.S. industry. The Commission applied that specific additional test in subsequent cases, including the *Carbon and Certain Alloy Steel Wire Rod from Trinidad and Tobago* determination that underlies the *Mittal Steel* litigation.

Mittal Steel clarifies that the Commission’s interpretation of *Bratsk* was too rigid and makes clear that the Federal Circuit does not require the Commission to apply an additional test nor any one specific methodology; instead, the court requires the Commission to have “evidence in the record” to “show that the harm occurred ‘by reason of’ the LTFV imports,” and requires that the Commission not attribute injury from nonsubject imports or other factors to

⁴⁴ *Mittal Steel*, 542 F.3d at 877-78; 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.

⁴⁵ Vice Chairman Pinkert does not join this paragraph or the following three paragraphs. He points out that the Federal Circuit, in *Bratsk*, 444 F.3d 1369, and *Mittal Steel*, held that the Commission is *required*, in certain circumstances when considering present material injury, to undertake a particular kind of analysis of non-subject imports, albeit without reliance upon presumptions or rigid formulas.

Mittal Steel explains as follows:

What *Bratsk* held is that “where commodity products are at issue and fairly traded, price competitive, non-subject imports are in the market,” the Commission would not fulfill its obligation to consider an important aspect of the problem if it failed to consider whether non-subject or non-LTFV imports would have replaced LTFV subject imports during the period of investigation without a continuing benefit to the domestic industry. 444 F.3d at 1369. Under those circumstances, *Bratsk* requires the Commission to consider whether replacement of the LTFV subject imports might have occurred during the period of investigation, and it requires the Commission to provide an explanation of its conclusion with respect to that factor.

542 F.3d at 878.

⁴⁶ *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.”).

⁴⁷ *Mittal Steel*, 542 F.3d at 875-79.

subject imports.⁴⁸ Accordingly, we do not consider ourselves required to apply the replacement/benefit test that was included in Commission opinions subsequent to *Bratsk*.

The progression of *Gerald Metals*, *Bratsk*, and *Mittal Steel* clarifies that, in cases involving commodity products where price-competitive nonsubject imports are a significant factor in the U.S. market, the Court will require the Commission to give full consideration, with adequate explanation, to non-attribution issues when it performs its causation analysis.⁴⁹

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.⁵⁰ Congress has delegated this factual finding to the Commission because of the agency's institutional expertise in resolving injury issues.⁵¹

5. Conditions of Competition and the Business Cycle⁵²

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

⁴⁸ *Mittal Steel*, 542 F.3d at 873 (quoting from *Gerald Metals*, 132 F.3d at 722), 875-79 & n.2 (recognizing the Commission's alternative interpretation of *Bratsk* as a reminder to conduct a non-attribution analysis).

⁴⁹ To that end, after the Federal Circuit issued its decision in *Bratsk*, the Commission began to present published information or send out information requests in final phase investigations to producers in nonsubject countries that accounted for substantial shares of U.S. imports of subject merchandise (if, in fact, there were large nonsubject import suppliers). In order to provide a more complete record for the Commission's causation analysis, these requests typically seek information on capacity, production, and shipments of the product under investigation in the major source countries that export to the United States. The Commission plans to continue utilizing published or requested information in final phase investigations in which there are substantial levels of nonsubject imports.

⁵⁰ We provide in our respective discussions of volume, price effects, and impact a full analysis of other factors alleged to have caused any material injury experienced by the domestic industry.

⁵¹ *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.").

⁵² Pursuant to Section 771(24) of the Tariff Act, imports from a subject country of merchandise corresponding to a domestic like product that account for less than 3 percent of all such merchandise imported into the United States during the most recent 12 months for which data are available preceding the filing of the petition shall be deemed negligible. 19 U.S.C. §§ 1671b(a), 1673b(a), 1677(24)(A)(i), 1677(24)(B); see also 15 C.F.R. § 2013.1 (developing countries for purposes for 19 U.S.C. § 1677(36)). The available data, compiled from information submitted in response to Commission questionnaires, show that in the 12-month period preceding the filing of the petition, subject imports from China accounted for 92.2 percent of total imports of R-134a by volume. CR at IV-10, PR at IV-7. Because subject imports were above the applicable statutory negligibility thresholds, we find that imports from China are not negligible.

A. Demand Conditions

Demand for R-134a derives from demand for its end uses, the largest of which is automotive air conditioning systems.⁵³ Approximately *** percent of sales of R-134a for use in automotive air conditioning systems are to the replacement market, with the remainder to original equipment manufacturers (“OEMs”).⁵⁴ The automotive aftermarket is supplied primarily by the domestic producers and subject imports and operates primarily on a spot sale basis.⁵⁵ The OEM market is supplied exclusively by domestic producers and operates on yearly or multi-year contracts.⁵⁶

Demand for R-134a that is used in the automotive air conditioning systems replacement market is seasonal and is highest during the spring and summer. As a result, R-134a producers tend to increase shipments during the first half of the year in order to build inventory levels in preparation for the warmer summer months.⁵⁷ The other main end uses for R-134a are in household and commercial refrigeration systems, as a propellant in aerosol cans, as a foam expansion agent, and in pharmaceutical applications such as asthma inhalers.⁵⁸

Market participants reported mixed perceptions of U.S. demand for R-134a during the POI. Petitioners asserted at the hearing that demand for R-134a was “relatively static” from 2012 to 2014.⁵⁹ Respondents assert that overall demand for R-134a declined slightly over the POI, but that demand in the automotive OEM market experienced a significant increase.⁶⁰ Respondents further assert that demand in the automotive replacement market increased over the POI, but not as significantly as demand in the OEM market.⁶¹ The majority of U.S. purchasers and importers reported that U.S. demand was unchanged or that it decreased.⁶²

The White House recently issued a statement announcing plans to reduce and eventually replace R-134a as a refrigerant with environmentally friendly alternatives.⁶³ However, the parties agree these plans will not be implemented in the imminent future.⁶⁴

⁵³ CR at I-18-19, PR at I-13.

⁵⁴ CR at II-12, PR at II-7.

⁵⁵ CR/PR at Table I-3; CR at VII-14, PR at VII-9. Nonsubject imports ***. *Id.*; Tr. at 28-29 (Geosits), 53-55 (Rubin), 164 (Dayton); *Compare* CR/PR at Table IV-8 with Tables III-6 and IV-7.

⁵⁶ Tr. at 28 (Geosits); CR/PR at Table I-3.

⁵⁷ *See, e.g.* Respondents’ Prehearing Brief at 6; Petitioner’s Prehearing Brief at 18, 36; Tr. at 78-79 (Rubin), 116 (Lammers), 127 (Dayton).

⁵⁸ CR/PR at Table I-3.

⁵⁹ Tr. at 56-57 (Schagrin).

⁶⁰ Respondents’ Prehearing Brief at 6.

⁶¹ Respondents’ Prehearing Brief at 6.

⁶² CR/PR at Table II-3.

⁶³ CR at I-14 n.20, PR at I-10.

⁶⁴ Tr. at 97 (Geosits), 162 (Lammers).

Apparent U.S. consumption declined somewhat from 2011 to 2013. Apparent U.S. consumption declined from *** short tons in 2011 to *** short tons in 2012 and *** short tons in 2013.⁶⁵

B. Supply Conditions

The domestic industry supplied the majority of R-134a to the U.S. market during the POI. Nonsubject imports had a minimal presence in the U.S. market throughout the POI.⁶⁶

U.S. producers' U.S. shipments as a share of apparent consumption were *** percent in 2011, *** percent in 2012, and *** percent in 2013.⁶⁷ Domestically produced R-134a was sold for all applications over the POI.⁶⁸ Subject imports as a share of apparent U.S. consumption were *** percent in 2011, *** percent in 2012, and *** percent in 2013.⁶⁹ The overwhelming majority of subject imports were sold for use in the automotive refrigerant aftermarket, with some sold for use as other refrigerants.⁷⁰ R-134a for household and commercial refrigeration is supplied by the domestic producers, subject imports, and to some extent nonsubject imports.⁷¹ Nonsubject imports' share of apparent U.S. consumption never exceeded *** percent during any calendar year or interim period.⁷²

The parties agree that from mid-2010 through at least 2011, the U.S. market for R-134a experienced a supply shortage.⁷³ Producers and importers attributed this supply shortage to a number of conditions such as raw material shortages, production problems, the phasing out of R-22 as a refrigerant and subsequent increased demand for R-134a in non-automotive applications, increased demand for R-134a as the United States emerged from a recession, low inventories, and new applications for R-134a.⁷⁴ Respondents contend, and Petitioner does not dispute, that when supply was tight in 2010 and 2011, the domestic producers chose to fulfill their contractual obligations before selling R-134a to automotive aftermarket purchasers in the

⁶⁵ CR/PR at Table IV-6. Apparent U.S. consumption of R-134a was *** short tons in interim 2013 and *** short tons in interim 2014. *Id.*

⁶⁶ Compare CR/PR at Table IV-8 with Tables III-6 and IV-7.

⁶⁷ CR/PR at Table IV-6. U.S. producers' U.S. shipments as a share of apparent consumption were *** percent in interim 2013 and *** percent in interim 2014. *Id.*

⁶⁸ See CR/PR at Table III-6.

⁶⁹ CR/PR at Table IV-6. Subject imports as a share of apparent consumption were *** percent in interim 2013 and *** percent in interim 2014. *Id.*

⁷⁰ CR/PR at Table IV-7.

⁷¹ CR/PR at Table I-3. Nonsubject imports ***. *Id.* Subject imports were not imported for use as foam expansion agents or pharmaceutical purposes at any point during the POI. Nonsubject imports ***. *Id.*

⁷² CR/PR at Table IV-6.

⁷³ See, e.g. Respondents' Prehearing Brief at Ex. 2.

⁷⁴ Tr. at 13 (Shutzman); 58 (Geosits); 77 (Rubin). ***. CR/PR at Table III-4.

spot market.⁷⁵ Although domestic producers testified that the supply shortage essentially ceased at the end of 2011,⁷⁶ the record indicates that ***, and *** in early 2012.⁷⁷

C. Substitutability and Other Conditions

We find that there is a high degree of substitutability between subject imports and the domestic like product. All of the domestic producers and the great majority of importers and purchasers reported that U.S.-produced R-134a was always or frequently interchangeable with R-134a from China and other countries.⁷⁸ Majorities or pluralities of purchasers found the subject imports and the domestic like product comparable in 11 out of 14 non-price purchasing factors, including those pertaining to quality and availability.⁷⁹

The factors most frequently cited by purchasers as affecting their purchasing decisions were price, quality, and availability.⁸⁰ Price was most frequently cited by purchasers as the most important factor, and 22 out of 35 purchasers reported that they always or usually purchase the lowest-priced R-134a that is offered.⁸¹ Accordingly, we find price to be an important factor in purchasing decisions.

Refrigeration systems are designed for use with a specific refrigerant.⁸² Using a different refrigerant than the one for which the system is designed typically results in reduced efficiency or failure.⁸³ Therefore, there are very few short term substitutes for R-134a, particularly when it is used as a refrigerant.⁸⁴

⁷⁵ Tr. at 54 (Rubin).

⁷⁶ Tr. at 55 (Rubin and Geosits).

⁷⁷ Respondents' Prehearing Brief at Exh. 2. In a letter dated February 15, 2012, ***

⁷⁸ CR at II-26, PR at 16-17, CR/PR at Table II-9. *See also* Tr. at 9 (Greenwald).

⁷⁹ CR/PR at Table II-8. Majorities of purchasers found the domestic like product superior with respect to delivery terms, delivery times, and technical support/service.

⁸⁰ CR/PR at Table II-5.

⁸¹ CR at II-19-20, PR at II-12.

⁸² CR at I-18, PR at I-13.

⁸³ CR at I-18, PR at I-13.

⁸⁴ CR at II-15, PR at II-9-10; Respondents' Prehearing Brief at 6 ("There are no substitutes for R-134a.")

The principal raw materials used in the production of R-134a are hydrogen fluoride (which is made from fluorspar), and trichloroethylene.⁸⁵ Raw material costs for U.S. producers increased by *** percent from 2011 to 2012, then decreased by *** percent from 2012 to 2013.⁸⁶ Raw material costs increased (*** percent) between interim 2013 and interim 2014.⁸⁷
88

6. No Material Injury By Reason of Subject Imports

A. 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.”⁸⁹

The volume of subject imports increased from *** short tons in 2011 to *** short tons in 2012 before decreasing slightly to *** short tons in 2013.⁹⁰ The increase in subject import volume that occurred between 2011 and 2012 is attributable to the effects of a domestic supply shortage that began in 2010 and persisted at least through the end of 2011.⁹¹ Domestic producers responded to the supply shortage by fulfilling their contractual obligations first before offering R-134a on the spot market to purchasers for the automotive replacement aftermarket.⁹² Purchasers for the automotive replacement aftermarket reported that throughout 2010 and 2011, domestic producers informed them that supply was tight, forcing them to turn to imports from China in order to ensure a stable supply of R-134a.⁹³ Petitioners

⁸⁵ CR/PR at V-1.

⁸⁶ CR/PR at Appendix D.

⁸⁷ CR/PR at Appendix D.

⁸⁸ Commissioners Williamson and Schmidlein have reached affirmative determinations and do not join the remainder of this opinion. See their dissenting views.

⁸⁹ 19 U.S.C. § 1677(7)(C)(i).

⁹⁰ CR/PR at Table IV-2. Subject imports also decreased from *** short tons in interim 2013 to *** short tons in interim 2014. The pendency of these investigations affected the subject import volume in interim 2014 because parties anticipated orders would be imposed and therefore purchasers felt it would be “advantageous to keep production in the United States.” Tr. at 190 (Dayton, Marshak). We therefore exercise our discretion to accord less weight to the interim 2014 data. See 19 U.S.C. §1677(7)(I).

⁹¹ Tr. at 208 (Schagrin) (“at the time they entered the market, {subject imports} were not injurious and that’s why no petitions were filed in 2010 or 2011.”). See also Tr. at 134 (Dougan) (observing that the partial shutdown of one U.S. production plant was anticipated for 2012).

⁹² Tr. at 54 (Rubin) (“There’s a dynamic that exists there where you’re going to fulfill your contractual obligations before you fulfill your spot obligations.”). The record also shows that domestic producers did not reduce their export volumes despite supply tightness in the U.S. market. CR/PR at Table III-5.

⁹³ Respondents’ Prehearing Brief at 10-11. The record contains correspondence from *** in April 2010 (***), and *** in January 2011 (“***”). *Id.* A DuPont representative acknowledged at the (Continued...)

agree that the supply shortage occurred through the end of 2011.⁹⁴ As late as February 2012, purchasers for the automotive aftermarket were informed by at least one domestic supplier (***)⁹⁵ (***)⁹⁶ Furthermore, purchasers were aware that (***) had scheduled a plant shutdown in 2012 for maintenance, further decreasing the available supply of domestically produced R-134a in 2012.⁹⁷

Because the duration of the supply shortage was uncertain at the time it was occurring and because purchasers wanted to ensure a stable supply of R-134a, they turned to China as a reliable source of R-134a, both during the shortage and as the shortage began to dissipate.⁹⁸ Purchasers testified at the hearing that they typically place orders in the fall and that these orders are delivered in the late fall and winter months.⁹⁹ Therefore, orders placed in the fall of 2011, when purchasers were still responding to the 2011 supply tightness and continued inability to obtain R-134a from domestic producers, would have been delivered through early 2012. Unsurprisingly, the bulk of subject import volume was sold in the automotive replacement aftermarket,¹⁰⁰ which was the market segment that domestic producers concede was left with the greatest shortages of R-134a.¹⁰¹ We observe that as the market stabilized in 2012, the pace of subject imports slowed. Subject imports on both a relative and absolute basis dropped slightly in 2013.¹⁰²

Subject imports as a share of the U.S. market increased from (***) percent in 2011 to (***) percent in 2012, and then declined to (***) percent in 2013.¹⁰³ U.S. producers' U.S. shipments as

(...Continued)

preliminary phase conference that "during the period in question, 2010/2011 . . . if we were in a constrained supply situation, we fulfilled all of our contractual obligations, but those customers that buy from us on the spot market, if we were constrained, we would have communicated to them that, hey, we're constrained. You may want to find an alternative source." (Prelim. Tr. at 114). See also CR at V-28-29, PR at V-8 (***)

⁹⁴ E.g., DuPont Prehearing Brief at 4. See also Tr. at 51 (Rubin) ("There's no question that the pricing dynamics in 2011 were driven predominantly by the tightness of supply in that period.")

⁹⁵ Respondents' Prehearing Brief at 13 (quoting (***)). Respondents' Prehearing Brief at Exh. 2.

⁹⁶ Respondents' Prehearing Brief at Exh. 2.

⁹⁷ CR at III-4, PR at III-2. Tr. at 134-35 (Dougan).

⁹⁸ Tr. at 121 (Lammers), 156-57 (Dougan)

⁹⁹ Tr. at 127 (Dayton).

¹⁰⁰ CR/PR at Table IV-7.

¹⁰¹ E.g. Tr. at 54 (Rubin) ("There's a dynamic that exists there where you're going to fulfill your contractual obligations before you fulfill your spot obligations.")

¹⁰² CR/PR at Table IV-2. While reported shipments of subject imports increased from 2012 to 2013, we find that this increase was nominal (***) percent), particularly compared to the (***) percent increase in reported subject import shipments from 2011 to 2012. CR/PR at Table IV-7.

¹⁰³ CR/PR at Table IV-6. Subject imports as a share of the U.S. market were (***) percent in interim 2013 and (***) percent in interim 2014.

a share of the market declined from *** percent in 2011 to *** percent in 2012 and then increased to *** percent in 2013.¹⁰⁴

In view of the foregoing, we find the volume of subject imports to be significant in absolute terms and relative to consumption. However, for the reasons we discuss below, we do not find that the subject imports had significant price effects or a significant impact on the domestic industry.

B. Price Effects of the Subject Imports

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

(I) there has been significant price underselling by the imported merchandise as compared with the price of domestic like products of the United States, and

(II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.¹⁰⁵

As previously discussed, price is an important factor in purchasing decisions. There is a high degree of substitutability between the domestic like product and the subject imports. Price was the most important factor cited by purchasers in their purchasing decisions, while quality and availability were the next most important factors.¹⁰⁶

The Commission collected pricing data for seven products, and quarterly price comparisons between subject imports and the domestic like product are possible for five of these products.¹⁰⁷ Subject imports were concentrated in three of the pricing products: Products 4, 5, and 6. Reported pricing data accounted for approximately 60.5 percent of U.S. producers' U.S. commercial shipments and 65.9 percent of U.S. importers' U.S. commercial shipments of imports from China during the POI.¹⁰⁸ Although there are no pricing products that specifically target the automotive aftermarket, the pricing products nevertheless capture

¹⁰⁴ CR/PR at Table IV-6. U.S. producers' U.S. shipments as a share of the market were *** percent in interim 2013 and *** percent in interim 2014.

¹⁰⁵ 19 U.S.C. § 1677(7)(C)(ii).

¹⁰⁶ CR at II-19, PR at II-12.

¹⁰⁷ Product 1 was R-134a sold in bulk to distributors; Product 2 was R-134a sold in bulk to retailers; Product 3 was R-134a sold in bulk to end users for foam expansion, foam blowing, and aerosol applications; Product 4 was R-134a sold in 30 pound containers to distributors; Product 5 was R-134a sold in 30 pound containers to retailers; Product 6 was R-134a sold in 12 ounce containers to distributors; and Product 7 was R-134a sold in 12 ounce containers to retailers. Subject imports were not present in Product 3. The domestic like product was not present in Product 2. CR at V-5-6, PR at V-3-4.

¹⁰⁸ CR at V-5-6, PR at V-3-4.

competition between the domestic like product and subject imports, the majority of which is in the automotive aftermarket. Product 3 is the only use-specific product definition, and there were no subject imports of Product 3.

We find that there are mixed instances of underselling and overselling by subject imports. The record shows more instances of overselling than underselling by subject imports on a quarterly basis and more underselling than overselling by subject imports on a volume basis.¹⁰⁹ Subject imports undersold the domestic like product in 31 of 66 quarterly comparisons, at margins ranging from 0.5 percent to 47.5 percent.¹¹⁰ In the 35 instances in which subject imports oversold the domestic like product, prices for subject imports were between 1.2 percent and 77.2 percent higher than prices for domestically produced R-134a.¹¹¹ The quantity of subject imports in instances of underselling, *** pounds, exceeded the quantity of subject imports in instances of overselling, which was *** pounds.¹¹²

We cannot find any correlation between the observed underselling and shifts in market shares for the subject imports. There were significant quantities of subject imports that undersold the domestic like product during each year of the POI,¹¹³ but the only gains in subject import market share occurred from 2011 to 2012, when subject imports increased their market share from *** percent to *** percent and U.S. producers' U.S. shipments fell from *** percent to *** percent of the U.S. market.¹¹⁴ As noted above, however, we earlier found that this increase in market share was a function of purchasers' response to the supply shortages that persisted through at least the end of 2011.¹¹⁵ Thus, the supply situation of the domestic industry, rather than underselling by subject imports, explains the shifts in market share.¹¹⁶ This, as well as the lack of correlation between underselling and price movements, discussed below, mitigates the significance of the observed underselling.

We acknowledge that the domestic industry's prices declined over the POI. The record shows that prices at the beginning of the POI were at high levels due to the supply squeeze that

¹⁰⁹ See generally, CR/PR at Tables V-3-9, V-11-12.

¹¹⁰ CR at V-22, PR at V-6-7.

¹¹¹ CR at V-22, PR at V-7.

¹¹² CR/PR at Table V-12.

¹¹³ CR/PR at Tables V-6.

¹¹⁴ CR/PR at Table IV-6. From 2012 to 2013, the domestic industry lost market share to the subject imports in the automotive aftermarket but gained it in "other refrigerants," the other market segment with subject import competition in which the domestic industry has greater shipments.

¹¹⁵ See CR/PR at Table IV-6.

¹¹⁶ Petitioner asserts that AUVs in the automotive aftermarket fell from *** due to the presence of subject imports. Petitioner's Prehearing Brief at 14-15. Petitioner acknowledges that in 2011 prices were higher in the automotive aftermarket than in other markets because of the supply shortage. Petitioner also acknowledges that prices in the automotive aftermarket are more responsive to supply and demand because such sales take place in the spot market, compared to other contract-based markets. Petitioner's Prehearing Brief at 36.

began in 2010.¹¹⁷ Prices peaked in 2011.¹¹⁸ As the supply situation normalized in 2012, prices declined.¹¹⁹ Therefore, the decline in prices during the POI is associated with the cessation of the supply shortage that temporarily inflated prices. Because the supply shortage was most acute in the automotive aftermarket, prices therein increased the most, and as a consequence, experienced greater declines over the POI as compared to prices of R-134a sold for other purposes.

Indeed, pricing data on the record demonstrate that price declines occurred whether subject imports oversold or undersold the domestic like product and regardless of whether subject imports were present in the market for a particular pricing product.¹²⁰ Prices declined for five of the seven products (Products 1 and 4-7) at approximately the same rate, even in the presence of overselling by subject imports. Subject import prices for Product 1 oversold the domestic like product in all but two quarterly comparisons,^{121 122} yet prices for the domestic like product peaked in the second quarter of 2011 and continued falling throughout the remainder of the POI.¹²³ Products 5, 6, and 7 all had mixed instances of overselling and underselling, yet exhibited price declines over the POI.¹²⁴ Prices for Product 4, which had the most underselling by subject imports, fell at approximately the same rate as prices for Products 1, 5, 6, and 7.¹²⁵

We have also examined whether the subject imports prevented the domestic industry from instituting price increases that otherwise would have occurred. The domestic industry's ratio of cost of goods sold ("COGS") to net sales increased from 2011 to 2013.¹²⁶ We find, however, that this increase in the COGS to net sales ratio is attributable primarily to changes in net sales value, which decreased from \$*** in 2011 to \$*** in 2012 and then to \$*** in

¹¹⁷ Exhibits to Testimony of Jim Dougan (Oct. 15, 2014) at 1; Respondents' Prehearing Brief at Exhs. 1 (quoting an industry report "Starting mid-2010 and continuing through 2011, HFC-134a has experienced supply shortages and cost increases that seem to escalate month-by-month.") (May 5, 2011) and 2 (quoting letters from ***) (***) .

¹¹⁸ CR/PR at Figures V-1-7. *See also* Exhibits to Testimony of Jim Dougan (Oct. 15, 2014) at 1 (showing prices from Q1 2010 to Q2 2014); DuPont Prehearing Brief at 4.

¹¹⁹ CR/PR at Figures V-1-7.

¹²⁰ CR/PR at Figures V-1-7.

¹²¹ CR/PR at Table V-3.

¹²² DuPont provided an exhibit comparing certain repackagers' annual direct import AUVs to sales AUVs of *** to each of these repackagers. DuPont Posthearing Brief at Exh. 2. We note that these AUVs are not directly comparable to importers' sales prices, as they do not include any sales markup that would typically be made by an importer selling R-134a in the U.S. market.

¹²³ CR/PR at Figure V-1.

¹²⁴ CR/PR at Figures V-5-7.

¹²⁵ Given that the pricing data on the record provides relatively high coverage of both the domestic like product and subject imports, we have relied on such pricing data. Our usual practice is not to rely heavily on AUV data because changes in AUV data over time can be a result of changes in product mix.

¹²⁶ This ratio increased from *** percent in 2011 to *** percent in 2012 and *** percent in 2013. It was *** percent in interim 2013, and *** percent in interim 2014. CR/PR at Appendix D.

2013.¹²⁷ By contrast, on a unit basis, raw material costs and COGS fluctuated within a fairly narrow range throughout the POI. Raw materials were \$*** per short ton in 2011, \$*** per short ton in 2012, and \$*** per short ton in 2013.¹²⁸ Similarly, COGS were \$*** per short ton in 2011, \$*** per short ton in 2012, and \$*** per short ton in 2013.¹²⁹ Demand over the POI was flat, and given that the market was emerging from a supply shortage, price increases were not likely. Consequently, we find that the increase in the COGS/net sales ratio is a function of the high price levels that existed at the beginning of the POI due to supply shortages -- and the subsequent alleviation of those shortages -- rather than the presence of subject imports.^{130 131}

¹²⁷ CR/PR at Appendix D. Net sales were \$*** in interim 2013 and \$*** in interim 2014.

¹²⁸ CR/PR at Appendix D. Raw material costs were \$*** per short ton in interim 2013 and \$*** per short ton in interim 2014.

¹²⁹ CR/PR at Appendix D. Total COGS was \$*** per short ton in interim 2013 and \$*** in interim 2014.

¹³⁰ With respect to petitioner's argument that whether prices were returning to a "natural equilibrium" is irrelevant to the price effects inquiry, Petitioner's Posthearing Brief at 6, the statute does not refer to "equilibrium" prices and we have not purported to compute such prices. Nonetheless, the statute does direct us to ascertain whether the effect of subject imports is to depress prices to a significant degree. 19 U.S.C. §1677(7)(C)(ii)(II). In light of this provision, our responsibility is to determine whether price declines over the POI are due to subject imports or other causes. Therefore, conditions of competition that may cause price levels to be higher or lower than they otherwise would have been are pertinent to our inquiry. In these investigations, the fact that there was an acknowledged supply shortage early in the POI is a factor that caused prices to be higher than they otherwise would have been. *E.g.*, Respondents' Prehearing Brief at Exh. 2, Letter from *** on April 1, 2011 (advising that "***"). The resumption of normal supply conditions is a factor that would tend independently to reduce prices. We have properly considered these conditions of competition in fulfilling our statutory responsibility to ascertain whether subject imports had significant price depressing effects.

¹³¹ During the hearing, various domestic industry witnesses expressed the view that the subject imports had "spillover" effects that caused prices to decline for domestically produced R-134a sold for uses other than the ones for which there was subject import competition. Tr. at 91 (Rubin, Geosits). While we do not question the testimony that purchasers may have used prices of subject imports in the automotive aftermarket in negotiating prices for the R-134a products that they purchased for other uses, neither DuPont nor petitioner provided specific examples of when domestic producers were forced to reduce prices because of "spillover effects." See DuPont Posthearing Hearing Brief, Part II at 24-25; Petitioner's Posthearing Brief at 6-9. The testimony does not outweigh the fact that purchasers had no credible alternative to purchasing R-134a for other non-automotive aftermarket uses from the domestic industry. Consequently, we find that the alleviation of the supply shortage, not "spillover" effects from the subject imports, explains the decline in prices across different uses, including those in which there was limited or no subject import competition.

In light of the foregoing, we find that the subject imports did not have the effect of depressing prices or preventing price increases that would otherwise have occurred to a significant degree.¹³² Because we also find that the observed underselling did not lead to significant shifts in market share, we find that the subject imports did not have significant price effects.

C. Impact of the Subject Imports¹³³

Section 771(7)(C)(iii) of the Tariff Act provides that examining the impact of subject imports, the Commission “shall evaluate all relevant economic factors which have a bearing on the state of the industry.”¹³⁴ These factors include output, sales, inventories, capacity utilization, market share, employment, wages, productivity, profits, cash flow, return on investment, ability to raise capital, research and development, and factors affecting domestic prices. No single factor is dispositive and all relevant factors are considered “within the context of the business cycle and conditions of competition that are distinctive to the affected industry.”

In a market where apparent consumption was largely stable from 2011 to 2013, the domestic industry’s output, shipments, market share, and employment indicators were also relatively stable, showing only minor fluctuations. By contrast, the domestic industry’s operating income steadily declined over the POI, both when subject import volume increased and when subject import volume flattened.

The domestic industry’s average capacity showed little change over the POI, while production and capacity utilization both increased from 2011 to 2013.¹³⁵ Average capacity was

¹³² We acknowledge that there were some instances of confirmed lost sales and revenues. CR/PR at Table V-13-14. These, however, do not outweigh the other data in the record which, taken as a whole, show the lack of significant price effects.

¹³³ The statute instructs the Commission to consider the “magnitude of the dumping margin” in an antidumping proceeding as part of its consideration of the impact of imports. 19 U.S.C. § 1677(7)(C)(iii)(V). In its final determination of sales at less value, Commerce found antidumping duty margins of 280.67 percent for imports of R-134a from China for all exporters. *1,1,1,2 – Tetrafluoroethane from the People’s Republic of China*, 79 Fed. Reg. 62597 (final determination of sales at less than fair value) (“Commerce Final AD Determination”) (Oct. 20, 2014). In its final countervailing duty investigation, Commerce found countervailable subsidies at the following rates: 1.87 to 22.75 percent for individually investigated parties, and 14.23 percent as the all others rate. *1,1,1,2 – Tetrafluoroethane from the People’s Republic of China*, 79 Fed. Reg. 62594 (final affirmative countervailing duty determination) (“Commerce Final CVD Determination”) (Oct. 20, 2014).

¹³⁴ 19 U.S.C. § 1677(7)(C)(iii); see also SAA at 851 and 885 (“In material injury determinations, the Commission considers, in addition to imports, other factors that may be contributing to overall injury. While these factors, in some cases, may account for the injury to the domestic industry, they also may demonstrate that an industry is facing difficulties from a variety of sources and is vulnerable to dumped or subsidized imports.”).

¹³⁵ CR/PR at Table III-3.

*** short tons in 2011, *** short tons in 2012, and *** short tons in 2013.¹³⁶ Production declined from *** short tons in 2011 to *** short tons in 2012, and then increased to *** short tons in 2013.¹³⁷ Capacity utilization was *** percent in 2011, *** percent in 2012, and *** percent in 2013.¹³⁸ The domestic industry's shipments showed minor fluctuations. U.S. shipments were *** short tons in 2011, *** short tons in 2012, and *** short tons in 2013.¹³⁹

As previously discussed, the domestic industry lost market share from 2011 to 2012 because of the supply shortage, but regained some of that loss in 2013. The domestic industry's market share decreased slightly over the entire POI, from *** percent in 2011 to *** percent in 2012, and then increased to *** percent in 2013.¹⁴⁰ We examined data collected concerning sales for different applications. These data indicate that as the domestic industry lost market share in sales to the automotive aftermarket from 2011 to 2013, it gained market share in the "other refrigerants" application in which it faced competition from subject imports.¹⁴¹

The number of production workers, wages paid, productivity, and hours worked remained relatively stable from 2011 to 2013. The number of production workers was *** in 2011, *** in 2012, and *** in 2013.¹⁴² Wages paid increased slightly from \$*** in 2011 to \$*** in 2012 and 2013.¹⁴³ Productivity stayed at *** short tons per 1,000 hours throughout the POI.¹⁴⁴ Hours worked were *** in 2011, *** in 2012, and *** in 2013.¹⁴⁵ Hourly wages increased slightly over the POI, from \$*** per hour in 2011 to \$*** per hour in 2012, and then to \$*** per hour in 2013.¹⁴⁶

¹³⁶ CR/PR at Table III-3. Capacity was *** short tons in both interim 2013 and interim 2014.

¹³⁷ CR/PR, Table III-3. Production was *** short tons in interim 2013 and *** short tons in interim 2014.

¹³⁸ CR/PR at Table III-3. Capacity utilization was *** percent in interim 2013 and *** percent in interim 2014.

¹³⁹ U.S. shipments were *** short tons in interim 2013 and *** short tons in interim 2014. CR/PR at Table C-1. U.S. producers' end of period inventories were *** short tons in 2011, *** short tons in 2012, and *** short tons in 2013. They were *** short tons in interim 2013 and *** short tons in interim 2014. CR/PR at Table III-9. Inventories as a ratio of U.S. production were *** percent in 2011, *** percent in 2012, and *** percent in 2013. They were *** percent in interim 2013 and *** percent in interim 2014. *Id.*

¹⁴⁰ CR/PR at Table IV-6. Domestic producers' market share was *** percent in interim 2013 and *** percent in interim 2014.

¹⁴¹ CR/PR at Tables III-6, IV-7. See n.115.

¹⁴² CR/PR at Table III-11. There were *** production related workers in interim 2013 and *** in interim 2014.

¹⁴³ CR/PR at Table III-11. Wages paid were \$*** in interim 2013 and \$*** in interim 2014.

¹⁴⁴ CR/PR at Table III-11. It remained at *** short tons per hour in interim 2013 and increased marginally in interim 2014.

¹⁴⁵ CR/PR at Table III-11. Hours worked were *** in interim 2013 and *** in interim 2014.

¹⁴⁶ CR/PR at Table III-11. Hourly wages were \$*** in interim 2013 and \$*** in interim 2014.

The domestic industry's net sales quantities showed minor fluctuations during the POI. COGS declined both absolutely and on a per-unit basis. Sales revenues, which in 2011 reflected the increased prices the domestic industry was able to receive that year because of the supply shortage, declined more rapidly than did COGS. As a consequence, the domestic industry's operating income declined from \$*** in 2011 to \$*** in 2012 and \$*** in 2013.¹⁴⁷ Consequently, operating income decreased severely, both from 2011 to 2012, when subject import volume and market share increased, and from 2012 to 2013, when subject import volume and market share declined.¹⁴⁸ The domestic industry's reported capital expenditures

¹⁴⁷ CR/PR at Table D-1. The domestic industry's operating income was \$*** in interim 2013, and it posted an operating loss of \$*** in interim 2014. *Id.*

Mexichem purchases its primary raw material input from a related supplier located in Mexico. It contends that the purchase values it reports in its financial records are the ones that should be used in the Commission's financial analysis. Petitioner's Prehearing Brief at 21-25. Respondents generally disagree. Respondents' Posthearing Brief at Exh. 1, p. 7. In cases where inputs are purchased from a related party (domestic or foreign), the Commission has followed the practice of requiring the elimination of related party profit or loss such that only the related supplier's cost is reflected in the financial results reported to the Commission. Consistent with this approach, Part VI of the Commission Report presented the U.S. industry's financial results with the above-referenced input adjustment. In order to consider this issue more fully, Appendix D also presented the U.S. industry's financial results without the input adjustment. We considered both sets of financial results and arrived at the same general conclusion regarding the financial results and condition of the U.S. industry.

Having considered this issue further, in this case and in general, we believe that the financial results information reported in Appendix D (i.e., without the input adjustment for related party profit or loss) is more useful for purposes of our analysis because it more closely reflects the actual cost of goods sold which directly impacted the U.S. producer's decisions related to revenue, *i.e.* pricing. Based on this conclusion, in future questionnaires the Commission no longer intends, as a standard practice, to require a separate adjustment to eliminate relevant profit or loss on inputs purchased from related parties. Instead, the Commission will require that relevant costs included in reported financial results be consistent with and based on the accounting books and records of the firm responding to the U.S. producer questionnaire.

While this reflects a change in practice with respect to how financial results are to be reported, the Commission will continue to gather relevant information regarding input purchases from related suppliers for its analysis and will examine anomalous patterns, to the extent present, related to such input purchases.

¹⁴⁸ Additionally, although the volume of subject imports was lower and the domestic industry's market share higher in interim 2014 than in interim 2013, this did not result in improvement in the domestic industry's operating performance. The domestic industry's operating income as a ratio to net sales was *** percent in interim 2013 and *** in interim 2014. CR/PR at Table D-1. Petitioner argues that subject imports increased sharply in the beginning of 2014, resulting in abnormally high inventories, and asserts that importers "would have been desperate to unload those inventories before the end of the auto air conditioning season, and would have offered record low prices." Petitioner's Prehearing Brief at 20-21. However, petitioner provides no support for this assertion, and pricing data on the record shows that, with one exception, subject import prices increased during interim 2014. CR/PR at Tables V-3-9.

and research and development (“R&D”) expenses increased from 2011 to 2013.¹⁴⁹ Total capital expenditures were \$*** in 2011, \$*** in 2012, and \$*** in 2013.¹⁵⁰ R&D expenses were \$*** in 2011, \$*** in 2012, and \$*** in 2013.¹⁵¹

In light of the general stability of the domestic industry’s output, sales quantities, and market share, the domestic industry’s severe decline in operating performance from 2011 to 2013 was attributable to the decline in prices that occurred during the POI. As discussed above, these price declines occurred because prices were anomalously high at the beginning of the POI due to the supply shortages of 2010 and 2011 and began to return to their pre-shortage levels as the market stabilized in 2012 and 2013. By contrast, the subject imports did not have significant price depressing effects and did not significantly prevent price increases that otherwise would have occurred. Moreover, there is no correlation between declines in operating performance, which occurred throughout the POI, and changes in subject import volume and market share.¹⁵² In sum, the record does not support a conclusion that the domestic industry’s declines in operating performance were caused by the subject imports.

In view of the foregoing, we find that subject imports have not had significant adverse impact on the domestic industry.

7. No Threat of Material Injury by Reason of Subject Imports

A. Legal Standard

Section 771(7)(F) of the Tariff Act directs the Commission to determine whether the U.S. industry is threatened with material injury by reason of the subject imports by analyzing 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.”¹⁵³ The Commission may not make such a determination “on the basis of mere conjecture or supposition,” and considers the threat factors “as a whole” in making its determination whether dumped or subsidized imports are imminent and whether material injury by reason of subject imports would occur unless an order is issued.¹⁵⁴ In making our determination, we consider all statutory threat factors that are relevant to these investigations.¹⁵⁵

¹⁴⁹ CR/PR at Table VI-4.

¹⁵⁰ CR/PR at Table VI-4. Capital expenditures were \$*** in interim 2013 and \$*** million in interim 2014.

¹⁵¹ CR/PR at Table VI-4. R&D expenses were \$*** in interim 2013 and \$*** in interim 2014.

¹⁵² Petitioner’s counsel appears to concede that subject imports were not injurious in 2011. *See* Tr. at 208 (Schagrin) (“And at the time they entered the market, they were not injurious and that’s why no petitions were filed in 2010 or 2011.”).

¹⁵³ 19 U.S.C. § 1677(7)(F)(ii).

¹⁵⁴ 19 U.S.C. § 1677(7)(F)(ii).

¹⁵⁵ These factors are as follows:

(Continued...)

B. Analysis

1. Likely Volume

As discussed above, we have found the volume of subject imports to be significant during the POI. In particular, we found that subject import volume increased due to supply shortages that occurred in 2010 and 2011, and which forced purchasers for the automotive replacement aftermarket to turn to imported R-134a from China. After the supply shortage was resolved, subject import volume ceased to increase. Consequently, there is no evidence in the record that the U.S. market conditions that led to subject import volume increases from 2011 to 2012 will exist in the imminent future.

The record shows that capacity in China increased throughout the POI, yet subject import volume did not increase accordingly; instead it began to decrease midway through the POI. Reported capacity in China increased from *** short tons in 2011 to *** short tons in

(...Continued)

(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,

(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,

...

(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).

19 U.S.C. § 1677(7)(F)(i). To organize our analysis, we discuss the applicable statutory threat factors using the same volume/price/impact framework that applies to our material injury analysis. Statutory threat factors (I), (II), (III), (V), and (VI) are discussed in the analysis of likely subject import volume. Statutory threat factor (IV) is discussed in the analysis of likely subject import price effects. Statutory factors (VIII) and (IX) are discussed in the analysis of likely impact. Statutory factor (VII) concerning agricultural products is inapplicable to this investigation.

2012 and *** short tons in 2013.¹⁵⁶ It is projected to increase further to *** short tons in 2014, and then remain stable through 2015. Capacity utilization in China decreased between 2012 and 2013, from *** percent to *** percent, and is projected to decrease further to *** percent in 2014 and then increase to *** percent in 2015.¹⁵⁷ However, in light of both the lack of correlation between capacity growth in China and increases in subject imports during the POI and the existence of other markets to absorb such capacity, as discussed below, we do not find that any existing unused capacity or the projected increases in capacity indicate that there is a likelihood of substantially increased imports of subject merchandise into the United States.¹⁵⁸

The majority of R-134a produced in China was shipped either to China or to export markets other than the United States during the POI and we expect that this will likely continue to be the case in the imminent future. Home market shipments as a share of total Chinese shipments increased over the POI from *** percent in 2011 to *** percent in 2012 and *** percent in 2013.¹⁵⁹ The record shows that home market shipments are projected to continue increasing to *** percent in 2014 and *** percent in 2015 and the home market is projected eventually to become the largest market for Chinese R-134a, exceeding exports to markets other than the United States.¹⁶⁰ Exports to markets other than the United States were also substantial during the POI; these accounted for *** percent of total shipments in 2011 and *** percent in 2012 and 2013.^{161 162} By contrast, export shipments to the United States as a share

¹⁵⁶ CR/PR at Table VII-2. Capacity in China was *** short tons in interim 2013 and *** short tons in interim 2014.

¹⁵⁷ CR/PR at Table VII-2. Capacity utilization was *** percent in interim 2013 and *** percent in interim 2014.

¹⁵⁸ We have also examined the potential for product shifting. *** of the five responding Chinese producers of R-134a indicated that they had the ability to shift production between R-134a and other products using the same equipment and/or labor. They indicated that market demand is the primary deciding factor in shifting production. CR at VII-8, PR at VII-5-6. Nevertheless, given that the industry in China already possesses excess capacity, we do not believe that significant product shifting is likely as a practical matter.

¹⁵⁹ CR/PR at Table VII-2. Home market shipments as a share of total shipments were *** percent in interim 2013 and *** percent in interim 2014.

¹⁶⁰ CR/PR at Table VII-2.

¹⁶¹ CR/PR at Table VII-2. Antidumping duties on R-134a from China have been in effect in India since 2011. CR at VII-11, PR at VII-7. Nevertheless, export shipments of subject merchandise to markets other than the United States increased in absolute terms in 2012 and 2013, and such shipments remained a relatively constant share of total shipments. CR/PR at Table VII-2.

¹⁶² CR at I-30, PR at I-20. The EU has issued a directive banning “air conditioning systems and refrigerants designed to use HFCs with a GWP higher than 150, which includes R-134a.” However, “the directive under the current deadline remains in question,” CR at I-32, PR at I-21, and hearing testimony by Mr. Rubin indicated that a phase-down of R-134a in the EU is not imminent, Tr. at 98(Rubin): “even in Europe which has a cap and phase-down reg, there is a long period with which 134a will continue to be used in the European marketplace. So it’s not going to happen next year. The reg comes in next year, but it will actually be a transition over a couple of decades.”

of all shipments decreased over the POI, from *** percent in 2011 to *** percent in 2012 and *** percent in 2013.¹⁶³

End of period inventories of subject merchandise in China increased slightly over the POI, but showed little change as a ratio to production. They were *** short tons in 2011, *** short tons in 2012, and *** short tons in 2013.¹⁶⁴ As a ratio to production, end of period inventories were *** percent in 2011, *** percent in 2012, and *** percent in 2013.¹⁶⁵ U.S. inventories of subject merchandise did increase from *** short tons in 2011 to *** short tons in 2012 and *** short tons in 2013.¹⁶⁶ The available data indicate that any inventory buildup did not persist after the end of 2013.¹⁶⁷

For the foregoing reasons, we conclude that while Chinese production may increase in the imminent future, any such increase is not likely to be directed to the U.S. market.¹⁶⁸ Subject imports did not significantly increase their presence in the U.S. market once the

¹⁶³ CR/PR at Table VII-2. Shipments to the United States as a share of total shipments were *** percent in interim 2013 and *** percent in interim 2014. Shipments by volume to the United States increased slightly over the POI, but were lower at the end of the POI than at the beginning. *Id.*

¹⁶⁴ CR/PR at Table VII-2. End of period inventories were *** short tons in interim 2013 and *** short tons in interim 2014.

¹⁶⁵ CR/PR at Table VII-2.

¹⁶⁶ CR/PR at Table VII-3.

¹⁶⁷ CR/PR at Table VII-3 . U.S. inventories of subject merchandise were *** short tons in June 2014, below both the *** short tons of inventories in June 2013 and the end of year inventory levels in 2012 and 2013.

¹⁶⁸ We also examined the nature of the subsidy programs Commerce found to be countervailable. Commerce found the following 16 subsidy programs to be countervailable:

- 1) Provision of Acidspar for Less Than Adequate Renumeration
- 2) "Two Free/Three Half" Program for Foreign Invested Enterprises
- 3) Preferential Loans for HFC Replacements for CFC Refrigerants
- 4) Preferential Loans for State-Owned Enterprises
- 5) Flurospar Mining Rights for LTAR
- 6) Electricity for LTAR
- 7) VAT and Tariff Exemptions on Imported Equipment for Favored Industries
- 8) Income Tax Credits on Purchases of Domestically Produced Equipment by Domestically Owned Companies
- 9) VAT and Tariff Rebates on Domestically Produced Equipment for Encouraged Projects
- 10) Export Seller's Credits from Export-Import Bank of China
- 11) Enterprise Income Tax Reduction for High and New Technology Enterprises
- 12) Export Performance Grant
- 13) Technological Development and Reconstruction Grant
- 14) Fluorinated Electronic Chemical Industry Technology Grant
- 15) Grant to Promote Transformation and Upgrading
- 16) Grant for Relocation for Urban Renewal in Quzhou City.

CR at I-6-7, PR at I-4-5 ; Commerce Final CVD Determination, 79 Fed. Reg. at 62594.

domestic supply shortage was resolved and we consequently find that there is not a likelihood of substantially increased subject imports in the imminent future.

2. Likely Price Effects

In our discussion above, we found mixed instances of overselling and underselling by the subject imports. We also found that notwithstanding the instances of underselling by subject imports during the POI, the subject imports did not cause significant price effects. Any increases in subject import market share were due to the domestic supply shortage rather than the pricing of the subject imports. Because we do not believe that subject import volume in the imminent future is likely to change appreciably from the levels observed in 2012 and 2013, we believe that the absence of significant price effects that characterized the POI will likely persist in the imminent future. We consequently find that imports of the subject merchandise are unlikely to enter the U.S. market at prices that are likely to have a significant depressing or suppressing effect on domestic prices and that are likely to stimulate demand for further imports.

3. Likely Impact

As we discussed above, during the POI the only indicator of domestic industry performance to show a substantial decline was its operating income, which was not caused by subject imports, but rather, by a decline in prices that occurred as the U.S. market began to stabilize after experiencing supply shortages in 2010 and 2011. As stated above, we do not anticipate in the imminent future any significant change in subject import volumes from those that occurred during the latter portion of the POI or significant price effects. Consequently, the subject imports are unlikely to have significant impact on the domestic industry. The record does not provide evidence of any demonstrable adverse trends that indicate the probability that there is likely to be material injury by reason of subject imports. We further find that subject imports have had no significant actual or 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.¹⁶⁹

In view of the foregoing, we conclude that an industry in the United States is not threatened with material injury by reason of subject imports.

¹⁶⁹ The record indicates that the domestic industry's current research and development efforts are not being devoted to developing advanced or improved versions of the domestic like product, R-134a. Instead, domestic producers are focusing their R&D efforts on developing the next generation of refrigerants – in other words, new products that are intended to replace R-134a. CR at VI-21 n. 37-38, PR at VI-6-7 nn. 37-38.

8. Conclusion

For the reasons stated above, we determine that an industry in the United States is not materially injured or threatened with material injury by reason of subject imports of R-134a from China that are sold in the United States at less than fair value.

Dissenting Views of Commissioners Irving A. Williamson and Rhonda K. Schmidlein

I. Material Injury

We join our colleagues in their findings regarding the domestic like product, the domestic industry, and conditions of competition. As explained below, however, we find that a significant volume of subject imports has undersold the domestic like product, significantly depressed U.S. prices, and caused material injury to the domestic industry producing 1,1,1,2-Tetrafluoroethane (“R-134a”) during the period of investigation (“POI”).

A. 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.”¹

The volume of subject imports increased from *** short tons in 2011 to *** short tons in 2012 and was *** short tons in 2013, for a total increase of *** percent.² Total apparent U.S. consumption was *** short tons in 2011, *** short tons in 2012, and *** short tons in 2013.³ Subject imports accounted for *** percent of apparent U.S. consumption in 2011, *** percent in 2012, and *** percent in 2013.⁴ At the same time, the domestic industry’s share of apparent U.S. consumption was *** percent in 2011, *** percent in 2012, and *** percent in 2013.⁵ Based on the foregoing, we find that the volume of subject imports is significant both in absolute terms and relative to consumption in the United States.

The subject imports were concentrated in the automotive aftermarket segment of the market during the POI, which is also the largest segment of the total R-134a market.⁶ Consequently, an examination of the trends in the automotive aftermarket is also relevant to

¹ 19 U.S.C. § 1677(7)(C)(i).

² Confidential Report (“CR”)/Public Report (“PR”) at Table C-1. The volume of subject imports declined from *** short tons in January—June (“interim”) 2013 to *** short tons in interim 2014. We find that the smaller, though still substantial, volume of subject imports in interim 2014 was due at least in part to the filing of the petition in October 2013 and, thus, give reduced weight to the decline in subject import volume in interim 2014.

³ CR/PR at Table IV-6.

⁴ CR/PR at Table C-1. Subject imports accounted for *** percent of apparent U.S. consumption in interim 2013 and *** percent in interim 2014. *Id.*

⁵ CR/PR at Table C-1. The domestic industry’s market share was *** percent in interim 2013 and *** percent in interim 2014. *Id.*

⁶ See CR/PR at Table I-3. The automotive aftermarket segment’s share of total reported U.S. shipments of R-134a rose from *** percent in 2011 to *** percent in 2012 and *** percent in 2013; the share in interim 2014 was *** percent, compared to *** percent in interim 2013.

our analysis of material injury. The volume of subject imports in this segment increased from *** short tons in 2011 to *** short tons in 2013, for an increase of *** percent.⁷ At the same time, the domestic industry's shipments to this segment declined and lost market share.⁸ In 2011, U.S. producers accounted for *** percent of shipments in this segment of the market and their share declined to *** percent in 2013, while the subject imports' share increased from *** percent to *** percent over the same period.⁹ In interim 2014, after the petition was filed, market shares reverted to near the levels at the beginning of the POI, with subject imports accounting for *** percent of the shipments and the domestic industry accounting for *** percent.¹⁰ Thus, before the petition was filed, the domestic industry had lost significant market share to subject imports in the largest segment of the R-134a market. This further supports our finding that the volume of subject imports was significant during the POI.

B. Price Effects of the Subject Imports

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

(I) there has been significant price underselling by the imported merchandise as compared with the price of domestic like products of the United States, and

(II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.¹¹

As explained in the discussion of conditions of competition, the record indicates that there is a high degree of substitutability between subject imports and domestically produced R-134a, and that price is an important factor in purchasing decisions. The vast majority of questionnaire respondents (domestic producers, importers, and purchasers) reported that the domestic like product and subject imports are always or frequently interchangeable.¹² The

⁷ CR/PR at Table IV-7. Total consumption in the automotive aftermarket increased from *** short tons in 2011 to *** short tons in 2013, for an increase of *** percent. See CR/PR at Table I-3.

⁸ U.S. producers' sales to the automotive aftermarket declined from *** short tons in 2011 to *** short tons in 2013, for a decline of *** percent. CR/PR at Table III-6.

⁹ CR/PR at Table I-3.

¹⁰ CR/PR at Table I-3. The volume of subject imports in the automotive aftermarket was *** short tons in interim 2013 and *** short tons in interim 2014. The domestic industry's volume of sales to that segment of the market was *** short tons in interim 2013 and *** short tons in interim 2014.

¹¹ 19 U.S.C. § 1677(7)(C)(ii).

¹² CR/PR at Table II-9.

majority of purchasers also reported that price is a very important purchasing factor and that they always or usually purchase the lowest-priced R-134a that is available.¹³

The Commission collected pricing data on seven different products.¹⁴ On a quarterly comparison basis, the subject imports undersold the domestic like product in 31 quarters and oversold the U.S.-produced product in 35 quarters.¹⁵ On a volume basis, however, the *** of subject imports undersold the domestic like product. The data show that *** percent of the total volume of subject imports reported for the pricing products undersold the domestic like product.¹⁶ We therefore find the underselling by subject imports to be significant.

The significant volume of low-priced subject imports depressed U.S. prices to a significant degree. The domestic industry's prices for each of its pricing products declined between *** percent and *** percent from the first quarter of 2011 to the second quarter of 2014.¹⁷ We recognize that there was some supply tightness at the beginning of the POI, which resulted in abnormally high prices in 2011.¹⁸ Consequently, we also acknowledge that some aspect of the price declines is likely related to the alleviation of that tightness in the market. We, therefore, find the pricing data after 2011 to be particularly probative, as market conditions were returning to a more normal supply and demand balance. We note that U.S. prices declined consistently throughout the POI, despite the fact that the parties agreed that supply tightness was no longer a real issue after 2011.¹⁹ As explained below, we find that the

¹³ CR/PR at Table II-6; CR at II-20, PR at II-12-13.

¹⁴ The data for these pricing products covered approximately 60.5 percent of the domestic industry's U.S. commercial shipments and about 65.9 percent of U.S. importers' U.S. commercial shipments of R-134a during January 2011-June 2014. CR at V-5-6, PR at V-3-4. These data do not include, however, the substantial volume of sales by firms that directly imported R-134a during the POI. See CR at V-6 n.10, PR at V-4 n.10; see also DuPont Posthearing Brief at Exhibit 2 (showing that in 2012, 2013, and the first half of 2014, repackagers directly imported at least *** short tons of R-134a from China).

¹⁵ CR/PR at Table V-11.

¹⁶ See CR/PR at Tables V-3-9, V-12.

¹⁷ CR/PR at Table V-10.

¹⁸ See, e.g., Respondents' Prehearing Brief at 9-10; Hearing Tr. at 51 (Rubin).

¹⁹ See Hearing Tr. at 47 (Greenwald) (stating there has been ample domestic supply post-2011); Hearing Tr. at 51, 55 (Rubin) (stating that supply tightness ended in 2011 and DuPont has not had problems supplying demand after the 2010-2011 period); Hearing Tr. at 51, 55 (Geosits) (stating that Mexichem has not had problems supplying demand after 2011); Hearing Tr. at 133 (Dougan) (referring to supply shortages in 2010 and 2011); Hearing Tr. at 136 (Dougan) (stating that supply conditions returned to normal in 2012 and 2013). The respondents submitted information showing that *** reported some supply tightness persisted in early 2012, though questionnaire respondents primarily referred to tightness in 2010 and 2011. See Respondents Posthearing Brief at 8; CR at II-8-9, PR at II-5-6 (showing that only three of 35 responding purchasers reported any supply constraints after 2011). To the extent that any domestic supply tightness did exist beyond 2011, this only supports our finding that the U.S. price declines were caused by the subject imports' underselling. If supply was still tight in 2012,

subject imports put significant downward pressure on U.S. prices, exacerbating price declines in the market and contributing to the domestic industry's cost-price squeeze.

The pricing product data show significantly larger price declines in the products where U.S. producers face competition from subject imports. For the five products where subject imports and the domestic like product competed head-to-head, the domestic industry's prices declined between *** percent and *** percent.²⁰ For the one pricing product where U.S. producers did not face import competition (*i.e.*, Product 3), their price declined by *** percent.²¹ Thus, the domestic industry's prices declined far more sharply in the products facing direct subject import competition.²²

The average unit value ("AUV") data for different market segments also support our finding of price depression by subject imports. Although the Commission usually relies on AUV data with caution because differences in product mix can affect the AUVs, we find these data to be probative of the pricing trends in each of the different market segments, as there is no indication of significant changes in product mix over time in the individual segments.²³ As previously noted, the subject imports were focused primarily in the automotive aftermarket segment of the market (the largest market segment), with smaller volumes also present in the

there is no explanation for the price declines between 2011 and 2012 other than the effect of subject imports.

²⁰ CR/PR at Table V-10.

²¹ CR/PR at Table V-10. This product was sold for use in foam expansion, foam blowing, and aerosol applications, which are separate end uses from the automotive aftermarket. See CR at I-22, PR at I-15.

²² For Product 1, we note that the pricing data show that the domestic industry's prices *** and the subject imports primarily *** in the quarterly comparisons. However, these data do not include the substantial direct imports by some large repackagers because those imports are at a different level of trade (*i.e.*, the price of a direct import is a purchase price whereas the data in the pricing tables show the importers' and domestic producers' sales prices). DuPont submitted information showing that the volume of such direct imports was substantial during the POI. See DuPont Posthearing Brief at 8 and Exhibit 2. This information compares *** substantial volumes of R-134a directly from Chinese suppliers. *Id.* at Exhibit 2 (referencing importer questionnaire data from ***). In 2012 and 2013, *** directly from Chinese suppliers at average unit values *** than the prices paid to ***. *Id.* Consequently, the pricing data reported for Product 1 does not fully reflect the level of competition, in terms of volume or pricing, between the subject imports and the domestic like product.

²³ We acknowledge that the domestic industry's AUVs of its shipments in the automotive aftermarket segment were lower than the AUVs of the importers' shipments of subject merchandise in the same segment. Compare CR/PR at Table III-6 with CR/PR at Table IV-7. As noted above, AUVs may reflect differences in product mix. The differences in AUVs between the subject imports and domestically produced R-134a likely reflect the fact that two of the domestic producers *** while subject import shipments ***. See CR at II-23, PR at II-14-15; CR/PR at Tables III-7 and IV-9; see also CR at V-6, PR at V-4 (showing a larger concentration of subject import sales in *** and a larger concentration of the domestic industry's sales in ***).

other refrigerants segment.²⁴ The domestic industry's AUV in the automotive aftermarket declined by *** percent, or by \$*** per short ton, between 2011 and 2013, while the AUVs in the other market segments declined by *** percent (with the absolute decline ranging between \$*** and \$*** per short ton).²⁵ This again shows significantly larger price declines in the products facing direct competition with subject imports.

The respondents tried to explain this decline by arguing that the automotive aftermarket was affected more than other segments by the tight supply at the beginning of the POI, which resulted in higher prices in 2011 and, thus, a larger price decline as prices normalized.²⁶ Although it is true that the automotive aftermarket segment had the highest AUV in 2011, respondents' theory utterly fails to explain why the domestic industry's AUV for its aftermarket sales continued to plummet in 2013, falling well below the AUVs of the other market segments.²⁷ From 2012 to 2013, the domestic producers' AUV in the automotive aftermarket fell by *** percent, similar to the *** percent decline from 2011 to 2012.²⁸ However, the AUV declines in the other segments ranged between only *** percent from 2012 to 2013.²⁹ The domestic industry's AUV for its aftermarket sales was \$*** per short ton in 2013; the next lowest AUV was in the other refrigerants segment at \$*** per short ton, followed by the AUV in the foam expansion agent segment of the market at \$*** per short ton.³⁰ Thus, in the portion of the market where U.S. producers faced significant competition from low-priced subject imports, the domestic industry experienced by far the largest price decline over the POI and its AUV in 2013 was substantially below its prices in other market segments.³¹

²⁴ See CR/PR at Table IV-7 (showing between *** percent of the quantity of subject imports was in the automotive aftermarket segment during the full years of the POI and the remaining *** percent was in the other refrigerants segment).

²⁵ CR/PR at Table III-6. Domestic producers contend that subject import pricing affects the R-134a market beyond just the automotive aftermarket. See Mexichem Posthearing Brief at A-5; DuPont Posthearing Brief, Answers to Questions at 24-25. They point out that there are purchasers who operate in both the automotive aftermarket and other segments of the R-134a market, such as Technical Chemical Company and Weitron who have customers in the automotive aftermarket and the stationary service segment. DuPont Posthearing Brief, Answers to Questions at 24. Similarly, OEMs such as Ford and GM buy R-134a both for use in new vehicles (*i.e.*, the OEM segment) and for their dealers who provide aftermarket services. *Id.*

²⁶ See, *e.g.*, Respondents' Prehearing Brief at 16.

²⁷ See CR/PR at Table III-6.

²⁸ See *id.*

²⁹ See *id.*

³⁰ CR/PR at Table III-6. The domestic industry's remaining AUVs in 2013 were \$*** per short ton in the OEM segment of the market and \$*** per short ton in the pharmaceutical segment. *Id.*

³¹ We note that the segment of the market that experienced the second-largest price declines and the second-lowest AUV in 2013 was the other refrigerants segment, which was the only other

As the domestic industry's prices declined, its ratio of cost of goods sold ("COGS") to net sales increased, from *** percent in 2011 to *** percent in 2012 and *** percent in 2013.³² This ratio increased despite the fact that the industry experienced an overall reduction in per unit COGS, as the price declines far exceeded the declines in production costs.³³

The record also shows that the domestic industry had at least \$*** in confirmed lost sales and \$*** in confirmed lost revenue, which further demonstrates that the domestic industry was losing sales and lowering prices in the face of low-priced subject imports.³⁴

For the reasons discussed above, we find that a significant volume of subject imports undersold the domestic producers' prices, significantly depressed U.S. prices, and contributed to the cost-price squeeze that the domestic industry experienced over the POI.

C. Impact of the Subject Imports

Section 771(7)(C)(iii) of the Tariff Act provides that in examining the impact of subject imports, the Commission "shall evaluate all relevant economic factors which have a bearing on the state of the industry."³⁵ These factors include output, sales, inventories, capacity utilization, market share, employment, wages, productivity, profits, cash flow, return on investment, ability to raise capital, research and development, and factors affecting domestic prices. No single factor is dispositive and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."

As an initial matter, we must decide how to assess Mexichem's financial data, and in particular its raw material costs. Mexichem purchases its primary raw material input from a

segment where subject imports maintained volume throughout the POI, albeit at much lower levels than in the automotive aftermarket segment. See CR/PR at Table I-3.

³² CR/PR at Table D-1.

³³ Total COGS declined from \$*** per short ton in 2011 to \$*** per short ton in 2013, while the industry's net sales value declined from \$*** per short ton in 2011 to \$*** per short ton in 2013. CR/PR at Table D-1. Between the interim periods, the industry's total COGS increased, from \$*** per short ton in interim 2013 to \$*** per short ton in interim 2014, while its total net sales value continued to decline, from \$*** per short ton in interim 2013 to \$*** per short ton in interim 2014. *Id.* Thus, the industry's COGS/net sales ratio increased further in the interim period, from *** percent to *** percent. *Id.*

³⁴ See CR/PR at Tables V-13 and V-14.

³⁵ 19 U.S.C. § 1677(7)(C)(iii); see also SAA at 851 and 885 ("In material injury determinations, the Commission considers, in addition to imports, other factors that may be contributing to overall injury. While these factors, in some cases, may account for the injury to the domestic industry, they also may demonstrate that an industry is facing difficulties from a variety of sources and is vulnerable to dumped or subsidized imports.").

related supplier located in Mexico.³⁶ In cases where inputs are purchased from a related party (domestic or foreign), the Commission has required the elimination of related party profit or loss such that only the related supplier's cost is reflected in the financial results reported to the Commission. Consistent with this approach, Part VI of the Staff Report presented the U.S. industry's financial results with the above-referenced input adjustment. However, petitioners have argued that the Commission should consider Mexichem's financial results without the input adjustment, and these data are presented in Appendix D of the Staff Report.

We considered both sets of financial results and both support our conclusion, discussed below, that subject imports had a significant adverse impact on the domestic industry. However, in these investigations and in general, we believe (and agree with our fellow Commissioners) that the financial data without the input adjustment for related party profit or loss is most relevant for purposes of our analysis. We find that the unadjusted data most closely reflect the costs upon which business decisions, including pricing, would normally be made. It is also our understanding, based on the experience of the Commission's staff that regularly analyzes these financial data, that such adjustments are generally not necessary or indeed appropriate. Thus, we agree that, prospectively, the Commission should no longer require a separate adjustment to eliminate relevant profit or loss on inputs purchased from related parties. Instead, the Commission will expect that relevant costs included in reported financial results are consistent with and based on the accounting books and records of the firm responding to the U.S. producer questionnaire. While this reflects a change in practice with respect to how financial results are to be reported, we agree with our fellow Commissioners that the Commission should continue to gather relevant information regarding input purchases from related suppliers and examine anomalous patterns, to the extent present, connected to such input purchases.

With respect to Mexichem, it has reported costs consistent with its own internal accounting methods, just as all domestic producers are generally expected to do with respect to financial results reported to the Commission, and its costs are in accordance with relevant regulations and guidelines regarding related party transactions and transfer pricing.³⁷ Moreover, the record shows that its transfer prices for related-party inputs are consistent with values that would prevail in arm's-length transactions, and there is an *** for the input purchase.³⁸ Thus, as noted above, the reported data most closely reflect the costs upon which its business decisions would normally be made.

³⁶ CR/PR at VI-1 n.4.

³⁷ See Hearing Tr. at 27 (Pacillo); see also CR at VI-2-3 n.8, PR at VI-2 n.8.

³⁸ See CR at VI-2-3 n.8, PR at VI-2 n.8; Hearing Tr. at 27 (Pacillo).

We find that subject imports had a significant impact on the domestic industry, in particular on its financial condition. As discussed above, subject import volume was significant throughout the POI, both absolutely and relative to U.S. consumption. The main effect of this volume on the domestic industry was through the underselling and price depression discussed above, as the domestic industry maintained most of its production and sales volume but only at sharply lower prices. Consequently, while the industry's volume-based indicators did not show major changes, the industry's financial indicators declined sharply.³⁹

Over the full years of the POI, some indicators of the domestic industry's condition, including capacity, production, and capacity utilization, remained constant or increased slightly.⁴⁰ Over the same period other indicators, including U.S. shipment quantity, market share,⁴¹ the number of production and related workers, and hours worked, declined somewhat, and the industry's inventories increased slightly.⁴² However, in line with the sharp drop in prices in the market, U.S. shipment value fell sharply, by *** percent.⁴³

In stark contrast to the production-related indicators discussed above, the domestic industry's financial condition deteriorated in the face of subject imports and their price-depressing effects.^{44 45} From 2011 to 2013, the industry's gross profit fell by *** percent, from \$*** million to \$*** million.⁴⁶ The industry's operating income fell even more sharply, by *** percent, from \$*** million to \$*** million, and its operating income to net sales ratio fell from *** percent to *** percent.⁴⁷ These declines were primarily due to the sharp decline in prices that we have found to be caused in significant part by subject imports. The industry's costs

³⁹ We note that some of the industry's indicators, such as production and shipments, declined in 2012 due to ***. See CR at III-4 n.4, PR at III-2 n.4. Our analysis is based on the changes from 2011 to 2013; there is no evidence in the record that ***.

⁴⁰ Between 2011 and 2013, the industry's capacity was ***, its production rose by *** percent, and its capacity utilization rose by *** percentage points. CR/PR at Table C-1

⁴¹ We note that, as discussed above, the domestic industry lost substantial share in the auto aftermarket segment of the market, the segment in which subject imports were most heavily present.

⁴² U.S. shipment quantity fell by *** percent, market share fell by *** percentage points, the number of production and related workers fell by *** percent, hours worked fell by *** percent, and inventories rose by *** percent. CR/PR at Table C-1.

⁴³ *Id.*

⁴⁴ We note that the declining trends discussed below are also apparent in the industry data calculated with the adjustments to Mexichem's costs, as presented in Table VI-1 of the Staff Report.

⁴⁵ Respondents argued that certain of *** costs were aberrational, and should be given reduced weight in the Commission's analysis. See Respondents' Prehearing Brief at 39-44. However, *** explained how it reported *** costs; based on these explanations, staff declined to make adjustments to these costs. See CR at VI-16 n.26, VI-20 n.34; PR at VI-5 n.26, VI-6 n.34. We agree with our staff's analysis and assess *** costs as reported.

⁴⁶ CR/PR at Table D-1.

⁴⁷ *Id.*

declined slightly between 2011 and 2013; unit COGS fell by *** percent, or \$*** per short ton.⁴⁸ However, the industry's net sales unit value fell much more sharply, by *** percent, or \$*** per short ton.⁴⁹ As a result, the industry's ratio of COGS to net sales rose from *** percent in 2011 to *** percent in 2013.⁵⁰ The Commission's variance analysis also shows that the declines in total revenue were primarily due to negative price variances.⁵¹

The industry's financial condition continued to decline in interim 2014, in comparison to interim 2013, despite an increase in apparent consumption of *** percent.⁵² Comparing the two interim periods, in interim 2014 gross profit was *** percent lower, operating income was *** percent lower (***), and the operating income to net sales ratio was *** percentage points lower (***).⁵³ While there was some decline in subject import volume in interim 2014 compared to interim 2013, subject import volume remained significant, with a market share of *** percent.⁵⁴ Petitioners indicated that prices began improving within a month of Commerce's preliminary determinations (its countervailing duty determination issued on April 18, 2014),⁵⁵ and the record indicates that this effect started in the second quarter of 2014. Prices for shipments of domestic product for all pricing products were lower in the first quarter of 2014 than in the comparable quarters of prior years; however, for several, the second quarter 2014 price was higher than in the comparable quarter in prior years.⁵⁶ Thus, the benefits of the preliminary duties appear to have begun toward the end of interim 2014, and the financial data for that period continue to reflect the low prices that prevailed for the majority of it.

We have considered whether there are other factors that may have had an adverse impact on the domestic industry during the POI to ensure that we are not attributing injury from such other factors to subject imports. Nonsubject imports had a small and declining presence in the market over the full years of the POI; their share of apparent consumption fell

⁴⁸ *Id.*

⁴⁹ As discussed earlier, the record does not support respondents' argument that the price declines over the POI were simply a return to "normal" prices after the supply shortage of 2010-11. In this regard, we note that the decline in the industry's net sales unit value was sharper in 2013 than in 2012. From 2011 to 2012, the unit value fell by *** percent, or \$*** per short ton; from 2012 to 2013, the decline was *** percent, or \$*** per short ton. From 2011 to 2012, unit COGS rose by *** percent, or \$*** per short ton; from 2012 to 2013, unit COGS fell by *** percent, or \$*** per short ton. See CR/PR at Table D-1.

⁵⁰ CR/PR at Table D-1.

⁵¹ CR at VI-11, PR at VI-3.

⁵² See CR/PR at Tables C-1 and D-1.

⁵³ CR/PR at Table D-1.

⁵⁴ CR/PR at Table C-1.

⁵⁵ Hearing Tr. at 32 (Geotsis).

⁵⁶ See CR/PR at Tables V-3 – V-9.

from *** percent in 2011 to *** percent in 2013.⁵⁷ Demand was effectively steady over the POI, with apparent consumption falling by only *** percent from 2011 to 2013 (it was *** percent higher in interim 2014 compared to interim 2013).⁵⁸

Respondents argued that the domestic industry was either unable or unwilling to adequately supply the automotive aftermarket segment, and that therefore subject imports were necessary in that market segment.⁵⁹ However, in interim 2014, as subject import volume declined and prices began to rise, the domestic industry's shipments to this market segment increased substantially, and domestic producers' share of this market segment rose to *** percent, compared to *** percent in interim 2013.⁶⁰ Thus, the domestic industry demonstrated its ability to serve this market segment and its interest in doing so. Moreover, if supply were indeed tight in the automotive aftermarket segment throughout the POI, we would not expect to see the significant underselling and price declines apparent in the record.

In sum, we find that the significant volume of subject imports, at prices that undersold the domestic like product and depressed domestic prices, adversely impacted the domestic industry, leading to significant declines in that industry's financial performance. We consequently determine that the domestic industry is materially injured by reason of subject imports.

II. Critical Circumstances

In its final antidumping duty determination regarding subject imports from China, the Department of Commerce found that critical circumstances exist with respect to Bluestar, non-individually examined companies, and the PRC-wide entity.⁶¹ Because we have determined that the domestic industry is materially injured by reason of subject imports from China, we must also consider "whether the imports subject to the affirmative {Commerce critical circumstances} determination . . . are likely to undermine seriously the remedial effect of the antidumping {and/or countervailing duty} order{s} to be issued."⁶² The SAA provides that the Commission is to determine "whether, by massively increasing imports prior to the effective date of relief, the importers have seriously undermined the remedial effect of the order" and specifically "whether the surge in imports prior to the suspension of liquidation, rather than the

⁵⁷ CR/PR at Table C-1. Nonsubject imports' market share was *** percent in interim 2013 and *** percent in interim 2014.

⁵⁸ CR/PR at Table C-1

⁵⁹ See, e.g., Sinochem's Prehearing Brief at 1, 12-13.

⁶⁰ CR/PR at Table I-3.

⁶¹ 79 Fed. Reg. 62597, 62598 (October 20, 2014).

⁶² 19 U.S.C. §§ 1671d(b)(4)(A)(ii), 1673d(b)(4)(A)(ii).

failure to provide retroactive relief, is likely to seriously undermine the remedial effect of the order."⁶³

The statute provides that, in making this determination, the Commission shall consider, among other factors it considers relevant,

- (I) the timing and the volume of the imports,
- (II) a rapid increase in inventories of the imports, and
- (III) any other circumstances indicating that the remedial effect of the {order} will be seriously undermined.⁶⁴

In considering the timing and volume of subject imports, the Commission's practice is to consider import quantities prior to the filing of the petition with those subsequent to the filing of the petition using monthly statistics on the record regarding those firms for which Commerce has made an affirmative critical circumstances determination.⁶⁵

Consistent with Commission practice, in these investigations we have considered data for the six months prior to and including the month in which the petition was filed (October 2013) and data for the six months following that month. In the six months prior to the filing of the petition (May – October 2013), the volume of subject imports from China was *** short tons, and in the six months after the petition was filed (November 2013 – April 2014) this volume was *** short tons.⁶⁶ Thus, subject imports from China increased by *** percent in the six months following the filing of the petition. We have also taken into consideration that the market for R-134a is, to some extent, seasonal in nature, with shipments to the auto aftermarket segment increasing early in the year.⁶⁷ Thus, some increase between the first and second six-month periods would be expected. However, we note that the increase between similar periods in the past was lower (6.2 percent in 2011-2012 and 33.4 percent in 2012-2013).⁶⁸

The record shows, however, that this increase in subject imports did not seriously undermine the remedial effects of the orders. At the Commission's hearing, Mexichem's

⁶³ SAA at 877.

⁶⁴ 19 U.S.C. §§ 1671d(b)(4)(A)(ii), 1673d(b)(4)(A)(ii).

⁶⁵ See *Lined Paper School Supplies from China, India, and Indonesia*, Inv. Nos. 701-TA-442-43, 731-TA-1095-97, USITC Pub. 3884 at 46-48 (Sept. 2006); *Carbazole Violet Pigment from China and India*, Inv. Nos. 701-TA-437 and 731-TA-1060-61 (Final), USITC Pub. 3744 at 26 (Dec. 2004); *Certain Frozen Fish Fillets from Vietnam*, Inv. No. 731-TA-1012 (Final), USITC Pub. 3617 at 20-22 (Aug. 2003).

⁶⁶ CR/PR at Table IV-4.

⁶⁷ CR at II-12-13, PR at II-8.

⁶⁸ CR at IV-8, PR at IV-6. We note that these figures are based solely on official import statistics, as monthly importer questionnaire data are not available for those time periods.

representative stated that since Commerce's preliminary determinations, prices in the market had increased, and the company's condition had improved.⁶⁹ The pricing product data also show that in the second quarter of 2014, the domestic industry's prices for several products were higher than they were in the second quarter of 2013.⁷⁰ In addition, U.S. importers' inventories of subject imports were substantially lower in the post-petition period than pre-petition. These inventories were *** short tons in April 2014 and *** short tons in May 2014; the comparable levels were *** short tons in April 2013 and *** short tons in May 2013.⁷¹

Thus, we conclude that the imports subject to Commerce's critical circumstances determination are not likely to undermine seriously the remedial effect of the orders, if they were to be issued.

III. Conclusion

For the foregoing reasons, we find that the domestic industry producing R-134a in the United States is materially injured by reason of subject imports from China. We further find that critical circumstances do not exist with respect to subject imports from China that are covered by Commerce's affirmative critical circumstances determination.

⁶⁹ See Hearing Tr. at 32, 35 (Geosits).

⁷⁰ See CR/PR at Tables V-3, V-6, V-8, and V-9.

⁷¹ CR/PR at Table IV-5. We note that Mexichem argues that the high level of imports in the first quarter of 2014, and the decline in importer inventories, implies that purchasers' inventories were at high levels in the summer of 2014. Mexichem's Posthearing Brief at 13. The record, however, does not contain data on purchaser inventories, and the totality of the record evidence, as discussed herein, does not support a finding of critical circumstances.

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 Mexichem Fluor, Inc. (“Mexichem”), St. Gabriel, Louisiana, on October 22, 2013, alleging that an industry in the United States is materially injured and/or threatened with material injury by reason of imports from China of 1,1,1,2—Tetrafluoroethane (“R-134a”)¹ that are sold in the United States at less-than-fair-value (“LTFV”) and subsidized by the Government of China. The following tabulation provides information relating to the background of these investigations.²

Effective date	Action
October 22, 2013	Petition filed with Commerce and the Commission; institution of the Commission's investigation (78 FR 64243, October 28, 2013)
December 9, 2013	Commerce's notice of initiation of antidumping and countervailing duty investigations (78 FR 73832, December 9, 2013) and (78 FR 73839, December 9, 2013)
December 13, 2013	Commission's preliminary determination (78 FR 76857, December 19, 2013)
April 18, 2014	Commerce's preliminary CVD determination and alignment with AD investigation (79 FR 21895, Apr 18, 2014)
May 29, 2014	Commerce's preliminary AD determination, affirmative preliminary determination of critical circumstances, in part, and postponement of final determination (79 FR 30817, May 29, 2014)
May 29, 2014	Scheduling of final phase of Commission investigation (79 FR 35795, June 24, 2014)
July 1, 2014	Commerce's amended affirmative preliminary determination of critical circumstances (79 FR 37287, July 1, 2014)
October 14, 2014	Commerce's final determinations: CVD (79 FR 62594, October 20, 2014) and AD (79 FR 62597, October 20, 2014)
October 15, 2014	Commission's hearing
November 12, 2014	Commission's vote
December 3, 2014	Commission's views

¹ See the section entitled “The Subject Merchandise” in *Part I* of this report for a complete description of the merchandise subject to these investigations.

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

STATUTORY CRITERIA AND ORGANIZATION OF THE REPORT

Statutory criteria

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

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

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

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, profits, productivity, return on investments, 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.

Organization of report

Part I of this report presents information on the subject merchandise, dumping margins, countervailable subsidies, 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. Critical circumstances data are also included in *part IV*. *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

R-134a is mainly used as a refrigerant for air conditioning ("A/C") systems. It is the primary refrigerant in mobile A/C systems, (i.e., A/C systems installed in automobiles) though it can be blended with other chemicals for use in stationary refrigeration systems. R-134a is also used as a propellant in pharmaceutical, household cleaning, and foam expansion products. The U.S. market for R-134a totaled approximately \$*** million and *** short tons in 2013. The Commission received responses from three firms that produce R-134a in the United States, Arkema, Inc. ("Arkema"), E.I. Du Pont de Nemours & Co., Inc. ("DuPont"), and Mexichem Fluor, Inc. ("Mexichem"), which together accounted for all of the U.S. production of R-134a during the period of investigation. Forty firms reported importing R-134a during the period of investigation, which accounted for the majority of U.S. imports from China. The volume of U.S. imports of R-134a from all nonsubject countries accounted for *** percent of overall imports in 2013. In January to June of 2014 nonsubject imports reached *** percent of overall imports which represents their largest share throughout the period of investigation.

U.S. producers' U.S. shipments of R-134a totaled *** short tons valued at \$*** in 2013, and accounted for *** percent of apparent U.S. consumption by quantity (***) percent by value). U.S. imports of R-134a from China totaled *** short tons in 2013 and accounted for *** percent of apparent U.S. consumption by quantity (***) percent by value). U.S. imports of R-134a from nonsubject countries totaled 838 short tons in 2013, and accounted for *** percent of apparent U.S. consumption by quantity (***) percent by value).

SUMMARY DATA AND DATA SOURCES

A summary of data collected in these investigations is presented in appendix C, table C-1. U.S. industry data are based on questionnaire responses of three U.S. producers of R-134a,

Arkema, DuPont, and Mexichem, which accounted for all U.S. production of R-134a during the period of investigation. Data for U.S. imports from China and nonsubject countries are compiled based on both official Commerce statistics for HTS number 2903.39.2020 and imports of R-134a reported in questionnaire responses under all other HTS categories. Foreign industry data are based on questionnaire responses of five Chinese companies.

PREVIOUS AND RELATED INVESTIGATIONS

The Commission conducted a section 337 investigation on R-134a, which was instituted on December 31, 2007, based on a complaint filed by INEOS Fluor Holdings Ltd.^{3 4} The complaint alleged violations of section 337 by reason of infringement of various process patents used in the manufacture of R-134a. The complaint named the respondent, Sinochem. On December 1, 2008, the ALJ determined that Sinochem had violated section 337. On June 1, 2009, the Commission determined to review the remand determination and reversed the conclusion of nonobviousness of the patent infringement claims finding that the claim would have been obvious to one of ordinary skill in the art and was therefore invalid. With its finding of no patent infringement, the Commission terminated its 337 investigation on R-134 in 2009.⁵

NATURE AND EXTENT OF SUBSIDIES AND SALES AT LTFV

Nature of the subsidies

On October 20, 2014, Commerce published a notice in the *Federal Register* of its final determination of countervailable subsidies for producers and exporters of R-134a from China.⁶ Table I-1 presents Commerce's findings of subsidization of R-134a in China. The following subsidy programs were determined to be countervailable:⁷

1. *Provision of Acidspar for Less Than Adequate Remuneration*
2. *"Two Free/Three Half" Program for Foreign Invested Enterprises (FIEs)*
3. *Preferential Loans for HFC Replacements for CFC Refrigerants*

³ *In the Matter of Certain R-134a Coolant (Otherwise Known as 1,1,1,2-Tetrafluoroethane)*, ITC Publication No. 4150 (December 2010).

⁴ In April 2010, INEOS Fluor Holdings, Ltd. sold its refrigerant business to Mexichem.

⁵ *In the Matter of Certain R-134a Coolant (Otherwise Known as 1,1,1,2-Tetrafluoroethane); Notice of Commission Determination To Reverse the Remand Determination of the Presiding Administrative Law Judge and To Terminate the Investigation in Its Entirety With a Finding of No Violation*, 74 FR 39968, August 10, 2009.

⁶ *Countervailing Duty Investigation of 1,1,1,2-Tetrafluoroethane From The People's Republic Of China: Final Affirmative Determination and Alignment of Final Determination With Final Antidumping Determination*, 79 FR 62594, October 20, 2014.

⁷ DOC, *ITA Issues and Decision Memorandum for the Final Determination*, pp. 19-35, October 14, 2014.

4. *Preferential Loans for State-Owned Enterprises*
5. *Fluorospar Mining Rights for LTAR*
6. *Electricity for LTAR*
7. *VAT and Tariff Exemptions on Imported Equipment for Favored Industries*
8. *Income Tax Credits on Purchases of Domestically Produced Equipment by Domestically Owned Companies*
9. *VAT and Tariff Rebates on Domestically Produced Equipment for Encouraged Projects*
10. *Export Seller's Credits from Export-Import Bank of China ("China ExIm")*
11. *Enterprise Income Tax Reduction for High and New Technology Enterprises*
12. *Export Performance Grant*
13. *Technological Development and Reconstruction Grant*
14. *Fluorinated Electronic Chemical Industry Technology Grant*
15. *Grant to Promote Transformation and Upgrading*
16. *Grant for Relocation for Urban Renewal in Quzhou City*

Table I-1
R-134a: Commerce's final subsidy determination with respect to imports from China

Entity	Final countervailable subsidy margin (percent)
T.T. International Co., Ltd	22.75
JUHUA (including Zhejiang Quhua Fluor-Chemistry Co., Ltd., and other Juhua Stock Companies)	5.71
Jiangsu Bluestar Green Technology Co., Ltd	1.87
All others	14.23

Source: 79 FR 62594, October 20, 2014.

Sales at LTFV

On October 20, 2014 Commerce published a notice in the *Federal Register* of its final determination of sales at LTFV with respect to imports from China.⁸ Table I-2 presents Commerce's dumping margins with respect to imports of R-134a from China.

⁸ 1,1,1,2 –Tetrafluoroethane From The People's Republic Of China: Antidumping Duty Investigation, Final Determination of Sales at Less Than Fair Value, 79 FR 62597, October 20, 2014.

Table I-2**R-134a: Commerce's final weighted-average LTFV margins with respect to imports from China**

Exporter	Producer	Final dumping margin (percent)
Jiangsu Bluestar Green Technology Co., Ltd	Jiangsu Bluestar Green Technology Co., Ltd	280.67
Shandong Dongyue Chemical Co., Ltd	Shandong Dongyue Chemical Co., Ltd	280.67
T.T. International Co., Ltd	Sinochem Environmental Protection Chemicals (Taicang) Co., Ltd	280.67
T.T. International Co., Ltd	Zhejiang Quhua Fluor-Chemistry Co., Ltd	280.67
T.T. International Co., Ltd	Jiangsu Bluestar Green Technology Co., Ltd	280.67
T.T. International Co., Ltd	Zhejiang Sanmei Chemical Ind, Co., Ltd.	280.67
T.T. International Co., Ltd	Zhejiang Pujiang Bailian Chemical Co., Ltd	280.67
T.T. International Co., Ltd	Jiangsu Jinxue Group Co., Ltd	280.67
T.T. International Co., Ltd	Zhejiang Quzhou Lianzhou Refrigerants Co., Ltd	280.67
Zhejiang Sanmei Chemical Industry Co.,Ltd.	Zhejiang Sanmei Chemical Industry Co., Ltd	280.67
Zhejiang Sanmei Chemical Industry Co.,Ltd.	Jiangsu Sanmei Chemicals Co., Ltd	280.67
PRC-Wide Entity		280.67

Source: 79 FR 62597, October 20, 2014.

THE SUBJECT MERCHANDISE

Commerce's scope

Commerce has defined the scope of these investigations as follows:⁹

The product subject to this investigation is 1,1,1,2-Tetrafluoroethane, R-134a, or its chemical equivalent, regardless of form, type, or purity level. The chemical formula for 1,1,1,2-tetrafluoroethane is CF₃-CH₂F, and the Chemical Abstracts Service ("CAS") registry number is CAS 811-97-2.

1,1,1,2-Tetrafluoroethane is sold under a number of trade names including Klea 134a and Zephex 134a (Mexichem Fluor); Genetron 134a

⁹ 1,1,1,2 –Tetrafluoroethane From The People's Republic Of China: Antidumping Duty Investigation, Final Determination of Sales at Less Than Fair Value, 79 FR 62597, October 20, 2014.

(Honeywell); Suva 134a, Dymel 134a, and Dymel P134a (DuPont); Solkane 134a (Solvay); and Forane 134a (Arkema). Generically, 1,1,1,2-tetrafluoroethane has been sold as Fluorocarbon 134a, R-134a, HFC-134a, HF A-134a, Refrigerant 134a, and UN3159.

Merchandise covered by the scope of this investigation is currently classified in the Harmonized Tariff Schedule of the United States (“HTSUS”) at subheading 2903.39.2020. Although the HTSUS subheading and CAS registry number are provided for convenience and customs purposes, the written description of the scope is dispositive.

Tariff treatment

R-134a is imported under HTS subheading 2903.39.20 and shipments are reported under statistical reporting number 2903.39.2020, an *eo nomine* product category that includes only the subject tetrafluoroethane (enumerated with the alternate short-form name “HFC-134a”).¹⁰ The 2014 general rate of duty for this subheading is 3.7 percent *ad valorem*.

Petitioners contend that some U.S. imports of R-134a may have entered the United States during the period of investigation misclassified under incorrect HTS subheadings.¹¹ Respondents observed that the current HTS statistical reporting number is relatively new and a number of importers may not have begun entry under the current HTS number.¹²

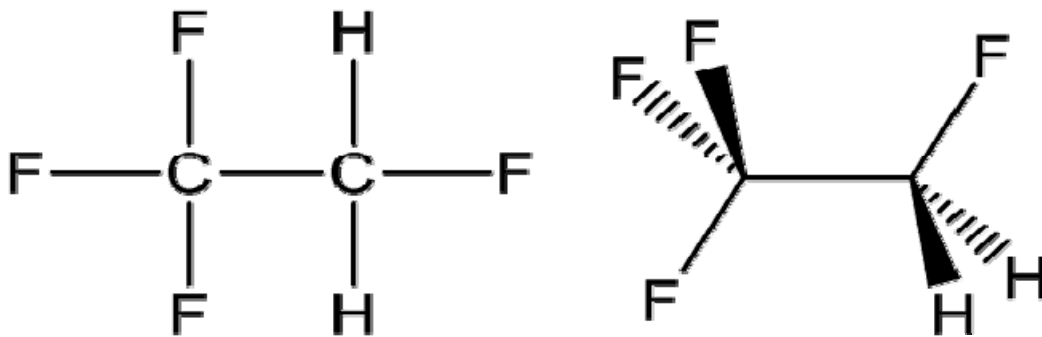
Manufacturing processes

The subject product is 1,1,1,2-tetrafluoroethane (a.k.a. HFC-134a or R-134a). It is a clear, colorless liquid or gas, which is gaseous at normal atmospheric conditions. It has a boiling point of -15 F and a freezing point of -153 F. It is relatively nontoxic and nonflammable. As can be seen in the diagrams below, it is composed of two carbon atoms, two hydrogen atoms, and four fluorine atoms.

¹⁰ U.S. Harmonized Tariff Schedule (2014 Revision 1).

¹¹ Petition, pp. 4-5; hearing transcript, pp. 100-102 (Schagrin).

¹² Preliminary conference transcript, pp. 132-133 (Waite). The current HTS statistical reporting number was created in 2009. See “Change Record” for HTSUS 2009 – Supplement 1 (<http://www.usitc.gov/publications/docs/tata/hts/bychapter/0910chgs.pdf>). Prior to 2009, R-134a was properly classified under HTS 2903.39.2015, which was a broader “other” category that included other fluorinated hydrocarbons. Both the current and prior HTS statistical reporting numbers carried a tariff rate of 3.7 percent. U.S. Harmonized Tariff Schedule (2009).

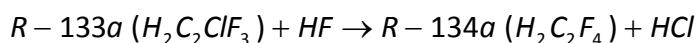
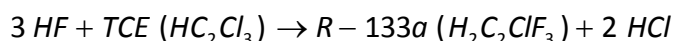


Source: <http://www.chm.bris.ac.uk/motm/hfc134/hfch.htm>

There are multiple methods used to produce R-134a. Generally, they involve reacting hydrogen fluoride (HF) with a compound containing carbon and chlorine. The fluorine replaces the chlorine. The reaction with HF may have to be repeated multiple times to reach the desired end product. Generally, a fluorocarbon plant is designed to make one compound and cannot be used to make a different compound in response to changing market conditions.¹³

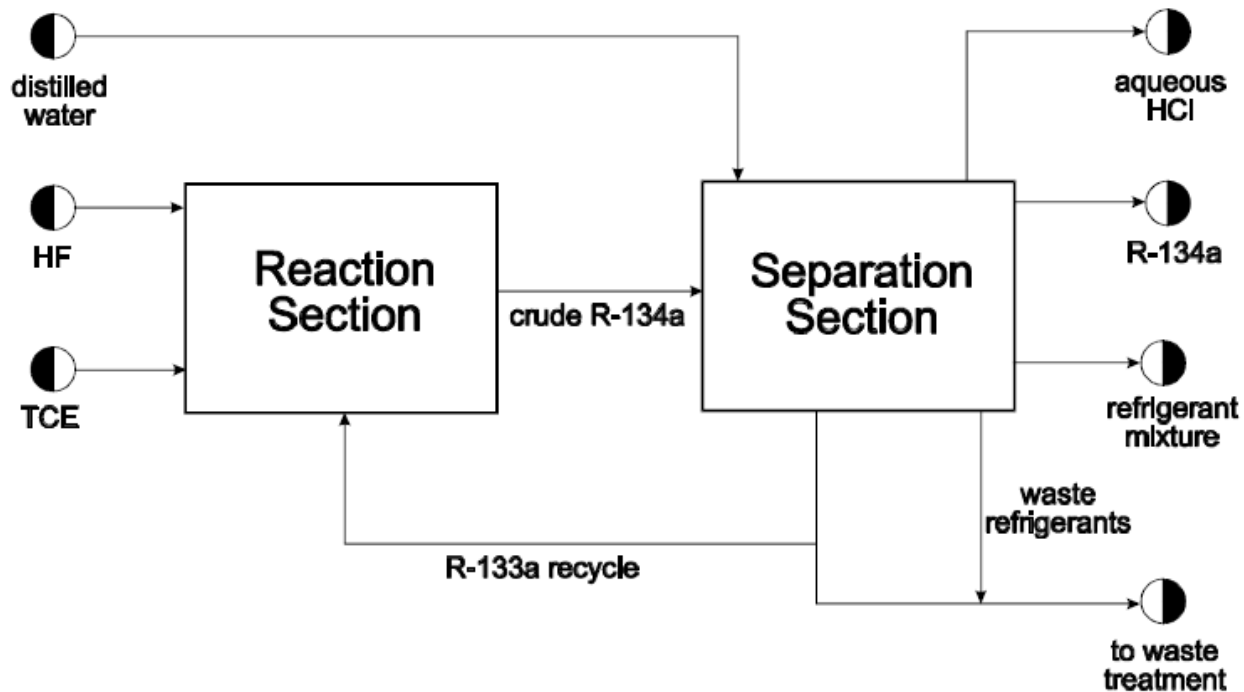
The petitioner uses a two-stage process. Its first stage involves an exothermic, vapor phase reaction of trichloroethylene (TCE) with HF over a chromium-based catalyst to produce 1-chloro-2,2,2-trifluoroethane (R-133a). The second stage is an endothermic, vapor phase reaction of R-133a with HF over a chromium-based catalyst again to produce HFC-134a. HFC-134a is separated out of the recycle stream by distillation. Hydrochloric acid (HCl), the byproduct of the reactions, has to be either disposed of or sold on the market.¹⁴

The petitioner's production process is expressed by the following series of reaction equations and illustrated in the figure that follows:



¹³ Hearing transcript, pp. 23 and 26 (Pacillo).

¹⁴ Petition, vol. I, p. 3., Mexichem Fluor, Inc., hearing transcript, p. 23 (Pacillo). DuPont uses a *** to manufacture HFC-134a. DuPont's post-conference brief, Part II, pp. 1-2.



R-134a Production Block Flow Diagram

Fluorspar, one of the primary inputs to HF, is distributed throughout the world. The bulk of the identified reserves are in South Africa (17.1 percent), Mexico (13.3 percent), China (10.0 percent), and Mongolia (9.2 percent). However, China and Mexico, combined accounted for almost 81.0 percent of global production in 2012 and 2013. China accounted for 62.2 percent and 64.2 percent of global production in 2012 and 2013, respectively. Mexico produced 17.0 percent and 18.5 percent of global production in those years, respectively.¹⁵

Description and applications

Physical characteristics of refrigerants

Refrigerants need to have a number of specific properties to be used in the various applications. Boiling point and vapor pressure are two such properties essential for their functionality.¹⁶ Any compound used on a mass commercial scale also needs to be noncorrosive

¹⁵ U.S. Geological Survey, Mineral Commodity Summaries 2014, Fluorspar, February 2014.

¹⁶ Preliminary conference transcript, p. 63-66 (Pacillo and Rubin).

to minimize equipment maintenance costs. Safety concerns require other properties such as being nonflammable and nontoxic.

Early refrigeration systems used compounds such as ammonia, methyl chloride or sulfur dioxide. Given that these compounds were either highly flammable or toxic, alternatives were sought for them early in the twentieth century.¹⁷ In 1931, a joint venture between DuPont and General Motors discovered an economical method to produce chlorofluorocarbons (CFCs). These CFCs had good refrigerant properties and were neither flammable nor toxic, in most uses. One of the most commonly used CFCs was R-12 (dichlorodifluoromethane).¹⁸ For half a century these CFCs were used extensively as they were relatively cheap to produce, were effective in refrigeration and other applications, and were relatively safe. As environmental concerns became more important, CFCs such as R-12 have been replaced by hydrofluorocarbons (HFCs), including R-134a.^{19 20}

Fluorinated, organic (i.e., carbon-containing) compounds that are related to R-134a are classified into three groups: chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and hydrofluorocarbons (HFCs).²¹

CFCs, which contain only chlorine, fluorine, and carbon atoms, have an excellent combination of physical properties such as a low boiling point and a low vapor pressure making them ideal for many refrigerant applications. These compounds are nonreactive, nontoxic, and nonflammable. The lack of reactivity means that the compound is stable and noncorrosive. While these characteristics are desirable when the compound is being used as a refrigerant or a propellant, the stability contributes to the compound's effect on the ozone layer. The CFC has a

¹⁷ Ammonia is still used in many food industry applications because it is a very efficient refrigerant. It is also being developed further because it is a naturally occurring compound that has no negative effect on the environment.

¹⁸ Many people used to refer to this product with the generic term "Freon" but that is the trade name for DuPont's line of CFC refrigerants. Preliminary conference transcript, pp. 49-50 (Rubin).

¹⁹ "In roughly 1994, R12 refrigerant was phased out due to the environmental regulations, and then all vehicles began using 134a." Preliminary conference transcript, p. 118 (Klein).

²⁰ The White House recently released a statement regarding private sector commitments and executive actions aimed at the reduction and eventual replacement of HFCs, including R-134a. Arkema committed to develop and supply environmentally friendly alternatives while reducing emissions from their fluorochemical facilities. DuPont's pledge involves a reduction of 245 million tons of greenhouse gas emissions worldwide by 2025 through use of its new refrigerants and foam expansion products, some of which are already on the market. Mexichem was not mentioned in the White House press release. "Obama Administration Partners with Private Sector on New Commitments to Slash Emissions of Potent Greenhouse Gases and Catalyze Global HFC Phase Down," White House press release, <http://www.whitehouse.gov/the-press-office/2014/09/16/fact-sheet-obama-administration-partners-private-sector-new-commitments->, retrieved September 16, 2014.

²¹ Almost all of these compounds are man-made as fewer than a dozen fluorinated, organic compounds occur in nature. *Fluorine Compounds, Organic*. Kirk-Othmer Encyclopedia of Chemical Technology (2004), vol. 11, p. 858.

sufficiently long lifecycle that much of it is eventually carried up into the stratosphere, where it damages the ozone.

Hydrochlorofluorocarbons (HCFCs) contain hydrogen atoms in addition to the chlorine, fluorine and carbon atoms. Hydrogen atoms may be introduced into the CFC structure to lower the chlorine content of the CFC (to reduce the impact on the ozone layer). The HCFCs (and HFCs) have shorter lifecycles in the lower atmosphere so they are less likely to reach the stratosphere and damage the ozone. However, introducing a hydrogen atom into a one-carbon CFC lowers the boiling point, too low for some applications. Therefore, two- and three-carbon HCFCs are more attractive substitutes. Another drawback of replacing chlorine with hydrogen is that flammability increases as the hydrogen content increases.²²

Hydrofluorocarbons (HFCs) have completely replaced the chlorine atoms with either fluorine or hydrogen. These compounds still retain enough of the desirable properties (nontoxic, nonflammable, nonreactive, low boiling point, and low vapor pressure) while eliminating the effect on the ozone layer.

Flammability

Flammability is a significant safety concern for a refrigerant. Potential fires, whether inside a closed system (which might then explode) or outside the system when the refrigerant leaks, would require the system and the area around it to be modified substantially. Systems made strong enough to contain any pressure build up from an internal fire would be more expensive. Systems that ensured zero refrigerant leakage would also be more expensive and still require significant fire suppression gear in case of failure.²³

Toxicity

The problems caused by toxicity are similar to those for flammability. The cost of designing and installing a system that has zero leakage would be prohibitive. Additional monitors would be required to check for any incidental leakage. Also, the cost of health monitoring or potential liability would have to be added to the cost of the system.

Vapor pressure

An ideal refrigerant would have a low vapor pressure. The higher the vapor pressure, the stronger the equipment required to contain it. The stronger, heavier equipment would cost more initially and, for portable A/C systems like those on automobiles, would increase the operating costs, too. Installing a heavier A/C system would be counter to numerous recent moves to improve vehicle fuel efficiency.

²² *Fluorine Compounds, Organic*. Kirk-Othmer Encyclopedia of Chemical Technology (2004), vol. 11, p. 859.

²³ Preliminary conference transcript, pp. 105-106 (Rubin).

Form (liquid vs. gas)

The physical form of the refrigerant determines the design and operation of the system. Many systems combine liquid and gas components to take advantage of the phase transformation to transfer a significant amount of energy without requiring a large temperature swing in the refrigerant.

Nomenclature and classification conventions

The designation R-134a follows the naming convention for refrigerants: the “R” implies that it is a refrigerant and the numbers and their positions identify the chemical composition. In this case, the “4” indicates that there are four fluorine atoms; the “3” shows that the compound contains two hydrogen atoms; and the “1” means that there are two carbon atoms. The hydrogen digit is one more than the number of hydrogen atoms in the compound; the carbon digit is one less than the number of carbon atoms.²⁴ The “a” specifies a certain isomer of this compound. All 400 and 500 series refrigerants (R-4xx and R-5xx) are blends.

The safety classification of compounds follows a convention prescribed by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and the International Institute of Refrigeration (IIFIR). Under this convention the toxicity of the compound is designated by the letter “A” or “B.” “A” compounds are less toxic; “B” compounds are more toxic.²⁵

Flammability of refrigerants follows a similar designation, this time using the numbers 1 through 3. The refrigerants increase in flammability as the number increases.²⁶ R-134a has a safety classification of “A1” which means that it is relatively nontoxic and nonflammable.²⁷

Environmental concerns have caused a transition away from the CFCs and their collection of excellent properties to alternatives with less ideal properties. As more of the halogens (chlorine and fluorine) have been replaced in these refrigerants, it has become more difficult for producers to find the right collection of properties in a single compound. Thus, the industry has combined different compounds into blends to get the essential or desired properties for the given application. For example, one refrigerant might have the ideal vapor pressure while another has the ideal boiling point. When combined their performance might suffer some, but the blend is able to meet the overall performance requirements for the

²⁴ International Institute for Refrigeration, “Classification of Refrigerants,” pp. 1-2.

²⁵ Class “A” refrigerants have no or unidentified toxicity at concentrations at or below 400ppm. Class “B” refrigerants have been identified as toxic at concentrations below 400ppm. International Institute for Refrigeration, “Classification of Refrigerants,” p. 2.

²⁶ Class 1 refrigerants do not “propagate flame” at standard room temperature and pressure. Class 2 refrigerants have a flammability limit of at least 0.10 kg/cubic meter at standard room temperature and pressure and have a heat of combustion of less than 19 kJ/kg. Class 3 refrigerants are even more flammable. International Institute for Refrigeration, “Classification of Refrigerants,” p. 3.

²⁷ International Institute for Refrigeration, “Classification of Refrigerants,” Annex.

specific application.²⁸ In some cases the blend may have superior properties to either of the component refrigerants.

Refrigerant end use market segments

There are numerous applications for refrigerants including “automotive air conditioning, appliances, small stationary equipment, medium temperature supermarket cases, and industrial and commercial chillers.”²⁹ Multiple refrigerant types could potentially be used for each of these applications; however, cost effectiveness appears to be the primary factor in determining the refrigerant used in each application.³⁰

Generally, the refrigerant and system are chosen together. Using a different refrigerant than what the system is designed for will either reduce the unit’s efficiency or render it non-functional. In general, it is not possible to put a different refrigerant into a machine and have that machine work effectively. Any number of components would have to be changed to accommodate the new refrigerant in order to make the system as effective as with the intended refrigerant.

Automotive air conditioning

Automotive A/C is the primary use for R-134a. Within the automotive A/C sector there are two sub-categories of users. These end users are: (1) the original equipment manufacturers (“OEMs”) (automobile manufacturers) and (2) the automotive aftermarket which includes automobile repair shops, dealerships, and auto retail stores.

Almost all vehicles on the road now use R-134a and their systems cannot use another refrigerant.³¹ The cost of replacing the entire A/C system on existing vehicles would be prohibitively expensive. Therefore, according to an industry expert, some demand for R-134a in the aftermarket will continue after another refrigerant becomes the standard in new automotive A/C units.³²

The following diagram illustrates how a car A/C unit works. The diagram lists the relative temperature and phase of the refrigerant as it travels through the system. A refrigeration system will generally have four main components: a compressor, a condenser, an expansion valve, and an evaporator.

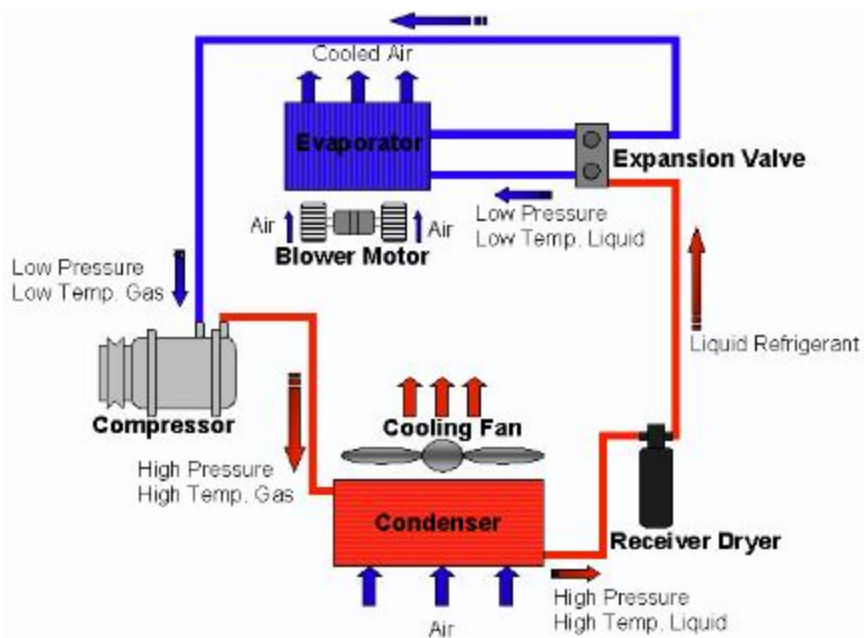
²⁸ Preliminary conference transcript, pp. 63-66 (Pacillo and Rubin).

²⁹ Hearing transcript, pp. 28-30 (Geosits). DuPont, Technical Information Brochure, “DuPont HFC-134a: Properties, Uses, Storage, and Handling.”

³⁰ Preliminary conference transcript, p. 105 (Rubin).

³¹ Petitioner’s prehearing brief, p. 19. Hearing transcript, p. 26 (Pacillo).

³² Petitioner’s prehearing brief, p. 19. Hearing transcript, p. 26 (Pacillo).



Source: http://www.tmkautoaircon.com/Refrigeration_Cycle.html

The compressor is a pump that draws the refrigerant gas from the evaporator to maintain the desired low temperature and pressure in the evaporator. The compressor increases not only the pressure but also the temperature of the refrigerant gas. The increased pressure drives the refrigerant flow through the system. The increased temperature ensures that the refrigerant is at a higher temperature than the air passing over the condenser to allow energy to be removed from the system.

The condenser is generally a set of many small, thin-walled pipes where the A/C unit transfers energy (heat) from the system to the heat sink (the outside air). The cooler outside air takes away enough energy for the refrigerant gas to condense into a liquid. This phase transformation allows a large amount of energy to be transferred even though the temperature change of the refrigerant may not be that great.

The expansion valve reduces the refrigerant pressure and regulates the liquid–refrigerant flow to the evaporator. The lower pressure allows the refrigerant to boil at a lower temperature. The valve is designed to adjust the amount of refrigerant flowing into the evaporator to correspond to the amount of heat being removed from the refrigerated space.

The evaporator captures or absorbs heat from the car interior. A fan blows air from inside the car over a set of thin-walled coils, which have cool refrigerant liquid entering them. The hotter air boils the low-pressure refrigerant inside the coils, transferring heat from inside the car to the refrigerant. Again, this phase transformation allows a considerable amount of energy to be transferred even though the refrigerant temperature may change only slightly.³³

³³ *Refrigeration*. Kirk-Othmer Encyclopedia of Chemical Technology (2006), vol. 21, pp. 11-15.

Domestic refrigeration

R-134a may also be used in household appliances such as refrigerators, freezers, and dehumidifiers.³⁴ Residential central A/C systems, however, generally do not use R-134a. Older residential A/C systems, both central and wall/window units, generally use R-22 and newer systems use R410A.³⁵

Commercial refrigeration

R-134a may also be used in large, self-contained commercial refrigeration systems such as supermarket display cases and freezers in supermarkets and large A/C systems in office buildings, stores, and airports.³⁶ R-134a may also be used in commercial food refrigeration systems and in transport refrigeration systems in trucks, trains, or ships.

Propellant and pharmaceutical applications

In addition to its primary use as a refrigerant, R-134a is used as a propellant in various applications such as aerosol cans, foam-blowing of building insulation, and pharmaceutical uses like asthma inhalers.³⁷ The nontoxicity, nonflammability, or other physical properties of the subject product make it preferable to alternatives in these applications.³⁸ The product needs to be nontoxic when it is being used as a blowing agent in an open environment and nonflammable if it is being used near or to clean energized electronic circuits. R-134a is used to deliver pharmaceuticals into the lungs via metered dose inhalers in order to treat chronic obstructive pulmonary disease (COPD) and asthma.³⁹ R-134a for use in pharmaceutical products has to be further purified than standard R-134a and requires chain of custody documentation.⁴⁰

U.S. shipment data of R-134a by end use market segment

Table I-3 presents U.S. producers' and U.S. importers' U.S. shipments by end use market segment.

³⁴ Hearing transcript, p. 30 (Geosits).

³⁵ Preliminary conference transcript, p. 64 (Pacillo).

³⁶ Hearing transcript, p. 30 (Geosits). Blends such as R-404A are also frequently used in supermarket refrigeration. Preliminary conference transcript, p. 65 (Rubin).

³⁷ Hearing transcript, p. 30 (Geosits).

³⁸ *Ibid.*, pp. 30-31 (Geosits).

³⁹ *Ibid.*

⁴⁰ *Ibid.*, pp. 66, 96 (Rubin).

Table I-3

R-134a: U.S. shipments by U.S. producers and U.S. importers by segment, 2011-13, January-June 2013 and January-June 2014

* * * * *

Table I-4 presents the major applications of fluorocarbons including R-134a and similar refrigerants.

Table I-4

R-134a: Major applications of fluorocarbons or refrigerants, by segment

Major applications	Major fluorocarbons or refrigerants
<u>Refrigeration:</u> Automobile A/C Home/commercial A/C Industrial plant cooling and processing Retail store chilled and frozen foods Home refrigerators and freezers Refrigerated transport	HFC-134a (R-134a)¹ Recycled HCFC-22 HFC-32 HFC-125 HFC-143a Recycled CFCs Refrigerant Blends (e.g., R-410A, R-404A) HFO-1234yf ¹ Ammonia Carbon dioxide (R-744)
<u>Foam blowing:</u> Insulation for appliances and buildings Packaging foams, thermal containers	HFC-134a (R-134a) HFC-245fa HFC-365mfc HFO-1234ze
<u>Electronics:</u> Gases, etching, solvent cleaning	HFC-116 HFC-14 HFC-23 Carbon dioxide (R-744)
<u>Chemical inputs:</u> For fluoropolymers/fluoroelastomers	HCFC-22 HCFC-142b HFC-152a
<u>Propellants:</u> Personal care and commercial products Metered-dose inhalers	HFC-227ea HFC-152a HFC-134a (R-134a) Carbon dioxide (R-744)
<u>Fire extinguishing</u>	HFC-227ea HFC-23 HFC-236fa

¹ Used in automobile A/C applications.

Source: Ray K. Will, "CEH Marketing Research Report: Fluorocarbons," 543.7000 A, September 2011.

The regulatory history of automotive refrigerants

R-12 “FREON”

Prior to the 1930s, refrigeration systems commonly used ammonia and sulfur dioxide as refrigerants, both of which are toxic and flammable. Chlorofluorocarbons (CFC’s) were developed as a safer alternative and widely used in all refrigeration systems. The most common CFC was R-12 and was marketed under the DuPont trademark, “Freon.™” R-12 was used for decades as the refrigerant in home and automobile air conditioning systems and in aerosol can production.

Montreal Protocol

In 1985, the discovery of a hole in the earth’s ozone layer led to an international environmental agreement to reduce substances with high “ozone depleting potential (‘ODP.’)”⁴¹ This international agreement, the Montreal Protocol on Substances that Deplete the Ozone Layer (“Montreal Protocol”), entered into force in 1989 and has been ratified by 197 states, including the United States, Japan, China, and the European Union.⁴² Among those substances deemed with a high ODP was all CFCs, including R-12 refrigerants. The Montreal Protocol began to schedule the worldwide phase-out of the production and use of ozone-depleting CFCs. A later amendment to the Montreal Protocol accelerated the phase-out of Class I substances, which included CFCs (including R-12), to the end of 1995.⁴³ The Montreal Protocol is incorporated into U.S. statutory law through Title VI of the Clean Air Act, which is implemented by U.S. Environmental Protection Agency (“EPA”) regulations.

The EPA, pursuant to Section 612(c) of the Clean Air Act, is authorized to identify and publish lists of acceptable and unacceptable substitutes for class I or class II ozone-depleting substances.⁴⁴ This program, known as the Significant New Alternatives Policy (“SNAP”)

⁴¹ The ODP of a chemical compound is the relative amount of degradation to the ozone layer it can cause, with trichlorofluoromethane (R-11 or CFC-11) being fixed at an ODP of 1.0, which is the maximum ODP of Class I and II substances with the exception of halons. R-12 has an ODP of 1.0 whereas R-134a has an ODP of 0.

⁴² The list of signatories may be found at: http://ozone.unep.org/new_site/en/treaty_ratification_status.php retrieved November 20, 2013.

⁴³ The Montreal Protocol included two phase-out deadlines, one for Class I substances and the other for Class II substances. Class I substances are defined as chemicals with an ozone-depletion potential of 0.2 or higher and include: CFCs, halons, carbon tetrachloride, and methyl chloroform, HBCFs, and methyl bromide. Class II substances are chemicals with an ozone-depletion potential of less than 0.2 and include all HCFCs, which includes R-22 a popular refrigerant for home air conditioning units. By January 1, 2020, the U.S. is required to reduce its consumption of Class II substances by 99.5% below the U.S. baseline and chemical manufacturers will no longer be able to produce R-22 to service existing air conditioners and heat pumps.

⁴⁴ EPA evaluates the refrigerants using the following factors: (1) atmospheric effects (the ODP and GWP); (2) exposure assessments (estimate concentration levels to which people may be exposed); (continued...)

Program, regulates substitutes for the ozone-depleting chemicals that are being phased out pursuant to the Montreal Protocol.⁴⁵

Recently, parties to the Montreal Protocol have turned their attention to curbing the use of HFCs, which initially replaced ozone depleting CFCs, because of their high global warming potential. An amendment to the Protocol was drafted in May 2014 and will be decided upon at the 26th meeting of the parties on November 17-21, 2014. The amendment calls for reduction of HFC emissions to 90 percent of the baseline 2008-2010 levels by 2018, 65 percent by 2023, and 30 percent by 2029 for industrialized nations. Developing nations, covered under Article 5 of the Protocol, will be allowed slightly more time and higher shares of 2011-2012 baseline emissions.⁴⁶

Transition from R-12 to R-134a

In 1995, under the EPA's SNAP program, R-134a was deemed an acceptable substitute for CFC-12 in retrofitted and new motor vehicle air conditioners in the United States.⁴⁷ Since its approval by the EPA, R-134a has become the most used refrigerant for automotive air conditioning in the United States and globally. By 2004, all automobiles produced or sold in North America, Japan, and the Europe used R-134a as a refrigerant.⁴⁸

Kyoto Protocol

Signed by 183 nations in 1997, the Kyoto Protocol to the United Nations Framework Convention on Climate Change ("Kyoto Protocol") is an international treaty that sets binding obligations on industrialized countries to reduce emissions of greenhouse gases.⁴⁹ The protocol set national reduction targets for a number of gases with high Global Warming Potential

(continued...)

(3) Toxicity; (4) Flammability; and (5) Other environmental impact.

<http://www.epa.gov/ozone/snap/about.html> retrieved on November 20, 2013.

⁴⁵ In order for a refrigerant to be used in the U.S. marketplace it must be on the EPA's list of approved refrigerant for the end use specified. Section 612(d) of the Clean Air Act grants the right to any person to petition EPA to add a substance to or delete a substance from the lists. The Agency has 90 days to grant or deny a petition. See 59 FR 13044, March 18, 1994 (EPA promulgation of SNAP regulations).

⁴⁶ <http://www.epa.gov/ozone/intpol/mpagreement.html>, retrieved on September 26, 2014.

⁴⁷ 60 FR 31092, June 13, 1995 (SNAP list of acceptable substitutes for R-12 in 1995).

⁴⁸ "Refrigerants for Light-Duty Passenger Vehicle Air Conditioning Systems," Working paper 2011-3, International Council on Clean Transportation, July 2011, p. 1.

⁴⁹ Although 103 nations have signed the Kyoto Protocol only 83 nations have ratified it and are therefore bound to its requirements. The United States has signed, but not ratified the Kyoto Protocol.

http://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-a&chapter=27&lang=en, retrieved November 20, 2013.

("GWP");⁵⁰ among those were hydrofluorocarbons (HFCs). Developed nations that ratified the Kyoto Protocol agreed to phase-out the manufacture and use of HFCs with a GWP of greater than 150. R-134a has a GWP of 1,430.

Corporate Average Fuel Economy ("CAFE") standards⁵¹ in the United States

Although the United States has not ratified the Kyoto Protocol, in 2009, the NHTSA and EPA announced proposed CAFE standards that would regulate greenhouse gas emissions of automobiles, among which were HFC refrigerants.⁵² The agencies described the two mechanisms by which mobile air conditioning ("MAC") systems contribute to the emissions of greenhouse gases: (1) through leakage of refrigerant into the atmosphere and (2) through the consumption of fuel to provide mechanical power to the MAC system. The regulation did not provide a ban or a phase-out schedule, but rather gave CAFE credits⁵³ to any automobile manufacturer that produced automobiles that used a refrigerant with a GWP less than 150. The EPA, pursuant to its SNAP program, approved a number of refrigerants with a GWP less than 150, including R-152a (GWP=124), R-744 (GWP=1), and HFO-1234yf (GWP=4).⁵⁴ General Motors announced that it would produce automobiles for model year 2013 that would use the HFO-1234yf refrigerant. Presently, General Motors is the only U.S. automobile manufacturer installing HFO-1234yf.⁵⁵ Petitioner stated that almost 99 percent of the motor vehicles operating in the United States use R-134a as their refrigerant.⁵⁶

EU regulations on R-134a

Subsequent to the European Union's ratification of the Kyoto Protocol, in May 2006, the EU promulgated regulations relating to emissions from air conditioning systems in motor

⁵⁰ GWP is defined as the ratio of the warming caused by a substance to the warming caused by a similar mass of carbon dioxide. Thus, the GWP of CO₂ is defined to be 1.0. CFC-12 has a GWP of 10,900.

⁵¹ CAFE are regulations in the United States, first enacted in 1975 and now promulgated by the National Highway Traffic Safety Administration ("NHTSA"), intended to reduce energy consumption by improving the average fuel economy of cars and light trucks sold in the United States. In 2010, the NHTSA, jointly with the EPA, issued greenhouse gas ("GHG") emissions standards. For the first time, these GHG standards were part of the CAFE regulation.

⁵² *Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards; Final Rule*, 75 FR 25324, May 7, 2010 (CAFE standards for model years 2012 to 2016); *2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards*, 77 FR 62624, October 15, 2012 (CAFE standards for model years 2017 to 2025).

⁵³ CAFE provides for a credit trading and transferring system that allows manufacturers to transfer credits between automobile categories, as well as, sell them to other manufacturers.

⁵⁴ 73 FR 33304, June 12, 2008 (R-152a); 76 FR 17488, March 29, 2011 (HFO-1234yf); 77 FR 33315, June 6, 2012 (R-744 or CO₂).

⁵⁵ "GM First to Market Greenhouse Gas-Friendly Air Conditioning Refrigerant," RP News Wires, <http://www.reliableplant.com/Articles/Print/25709> retrieved on October 22, 2013.

⁵⁶ Hearing transcript, p.28 (Geosits).

vehicles.⁵⁷ The EU regulation provided for a total ban on air conditioning systems and refrigerants designed to use HFCs with a GWP higher than 150, which includes R-134a (GWP=1,430). The ban covers all new automobile platforms introduced after January 1, 2011 and applies to all new automobiles after January 1, 2017.⁵⁸ In order to comply with the EU F-gas regulation, manufacturers attempted to develop a refrigerant that would have a GWP of less than 150, but keep the positive physical characteristics of R-134a with regard to toxicity and flammability. In 2007, the product HFO-1234yf was developed through a joint venture of DuPont and Honeywell.⁵⁹ HFO-1234yf has a GWP of 4 and appeared to have favorable toxicity and flammability characteristics.

EU transition from R-134a to HFO-1234yf

With the development of HFO-1234yf and the EU MAC directive deadline (January 1, 2011) approaching, a number of automobile manufacturers in Europe began preliminary testing and implementation of the new refrigerant. In September 2012, Mercedes-Benz announced that testing of HFO-1234yf showed safety issues such as flammability and recalled 3,500 automobiles in which it had installed air conditioning systems that used the new refrigerant. It also notified regulators that it intended to continue the use of R-134a subsequent to the January 1, 2011 deadline for new automobile production.⁶⁰ Shortly thereafter, BMW and Volkswagen joined Mercedes-Benz and citing safety concerns called for a return to R-134a as

⁵⁷ EU Directive 2006/40/EC; Also referred to as the “MAC Directive” or “F-gas Regulation.” http://europa.eu/legislation_summaries/internal_market/single_market_for_goods/motor_vehicles/intentions_industry_policies/l24280_en.htm, retrieved on November 20, 2013.

⁵⁸ From January 1, 2017, the Directive stipulates a total ban of the use of fluorinated greenhouse gases with a GWP higher than 150 in all new vehicles put on the EU market. From that date on new vehicles with MAC systems using these gases cannot be registered, sold and enter into service in the EU. http://ec.europa.eu/enterprise/sectors/automotive/environment/macs/index_en.htm#h2-3, retrieved October 30, 2014.

⁵⁹ China is expected to be the largest producer of HFO-1234yf as DuPont, Honeywell, Arkema, and DAIKIN have announced that they are building manufacturing facilities in China. “Arkema to build production capacity for the novel refrigerant gas HFO-1234yf,” Chemical Week, September 4, 2013; “China expected to be largest production base of HFO-1234yf worldwide,” PRLOG, December 28, 2012.

Mexichem stated that it is also developing a HFO-1234yf product. Preliminary conference transcript, p. 67 (Pacillo)(stating that the product is in the “testing” phase and not yet available commercially).

⁶⁰ “Mercedes-Benz wishes to continue using the tried-and-tested R134a refrigerant in passenger cars,” Mercedes-Benz Press Release, September 25, 2012. Mercedes-Benz specifically announced that “the refrigerant is dynamically dispersed at high pressure near to hot components of the test vehicle’s exhaust system. This corresponds to a serious head-on collision in which the refrigerant line is severed and the reproducible results demonstrate that refrigerant which is otherwise difficult to ignite under laboratory conditions can indeed prove to be flammable in a hot engine compartment. Similar tests of the current R134a refrigerant did not result in ignition.”

the automotive refrigerant.⁶¹ Honeywell and the EU have disputed the safety claims and provided their own safety tests to refute the Mercedes-Benz safety test results.^{62 63} The effect of the directive under the current deadline remains in question because manufacturers have introduced uncertainty over what constitutes a new automobile platform.⁶⁴

DOMESTIC LIKE PRODUCT ISSUES

No issues with respect to the definition of the domestic like product have been raised in the preliminary or final phase investigations.⁶⁵ Petitioner argued that the definition of the domestic like product should be co-extensive with the definition of the scope in these investigations.⁶⁶

⁶¹ "Debate about air conditioning refrigerant R1234yf heats up," Auto Industry Insider, February 18, 2013, <http://www.autoindustryinsider.com/?p=5697>, retrieved on October 22, 2013.

⁶² "Honeywell and BAM refute risky HFO-1234yf claims," ACR-news.com, February 23, 2010.

⁶³ The EU published a report dismissing the safety concerns cited by the industry related to HFO-1234yf on March 3, 2014 and the deadlines outlined above still remain in place. "JRC technical and scientific support to the research on safety aspects of the use of refrigerant R1234yf on MAC systems," March 7, 2014, <http://ec.europa.eu/enterprise/sectors/automotive/environment/macs>, retrieved on September 26, 2014.

⁶⁴ Hearing transcript, pp. 99-100 (Rubin).

⁶⁵ During the preliminary phase of these investigations, respondents stated that they have no issues to raise with regard to the definition of the domestic like product. Preliminary conference transcript, p. 152 (McConkey).

⁶⁶ Petition, p. 2.

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

U.S. MARKET CHARACTERISTICS

The primary use for R-134a is as a refrigerant gas in vehicle A/C systems. There are two primary distribution channels for vehicle A/C systems, vehicle manufacturers (OEMs) and the automotive aftermarket. Vehicle manufacturers purchase R-134a in bulk tank trucks directly from U.S. producers on a long-term contract basis.¹ The automotive aftermarket, which is estimated to be three times larger than the automotive OEM market, is primarily served by distributors. These distributors purchase bulk product and repackage it into 30-pound cylinders and 12-ounce containers for resale to auto dealerships, service centers, service stations, and auto parts retailers.²

R-134a is also used as a refrigerant in large commercial A/C units and in appliances (refrigerators, freezers, and dehumidifiers).³ There are also a number of non-refrigerant uses for R-134a: the installation of insulating foams, as an aerosol propellant in sprays, in aerosol dusters for electronics, and in pharmaceuticals (for inhalers).

Data reported by U.S. producers and importers indicate that in 2013, ***percent of U.S. shipments were to the automotive aftermarket, *** percent to automotive OEMs, *** percent to the foam expansion market, *** percent to pharmaceutical uses, and *** percent to “other” uses.⁴ Petitioner estimates that the automotive aftermarket accounts for about *** of the U.S. market.⁵

U.S. producers reported sales to all markets whereas subject importers’ sales were much more concentrated in the automobile aftermarket. Importers of Chinese R-134a reported

¹ Although Chinese imports have very little presence in the automotive OEM market, OEMs are reportedly aware of Chinese spot market prices when negotiating contracts since they purchase R-134a for their dealers that provide aftermarket service. Hearing transcript, pp. 28-29 (Geosits), DuPont’s posthearing brief, p. 24. Automotive OEMs purchase domestic product because of reliability of supply, limited storage capacity, preference for a shorter supply chain, and the very small cost of R-134a relative to the price of a new car. Automotive OEMs also have stringent qualification procedures. Conference transcript, p. 44 (Rubin), Hearing transcript, p. 196 (Dayton).

² Some of the distributors that serve the automotive aftermarket also supply the HVAC aftermarket. Hearing transcript, pp. 29-30 (Geosits).

³ Some applications such as supermarket refrigerators may use R-134a blends whereas automobiles use unblended R-134a. Conference transcript, pp. 65-66 (Rubin).

⁴ “Other” includes stationary refrigerators/air conditioners, non-automotive OEMs, propellants, refrigerant blends, and miscellaneous applications.

⁵ DuPont notes that “other” includes ***, some of which then went to the automotive aftermarket. DuPont’s prehearing brief, p. 9. Mexichem estimates that the share of R-134a sold in each end-use market in the United States is as follows: automotive OEM- *** percent, automotive aftermarket *** percent, stationary OEM-*** percent, stationary aftermarket *** percent, domestic refrigeration (appliance)- *** percent, foam-*** percent, propellants- *** percent, and pharmaceutical/medical-*** percent. Mexichem’s posthearing brief, p. A-4.

no shipments to automotive OEMs, to the foam expansion market, or to the pharmaceutical market.⁶ U.S. producers, in contrast, sell relatively large amounts to other market segments including foam expansion, automotive OEMs, and “other” uses.

R-134a is sold in various bulk sizes as well as packaged in smaller size containers. For bulk sales, U.S. producers can supply R-134a in large truckloads while importers sell the product in ISO containers.⁷ Typical smaller size containers are 30-pound containers and 12-ounce cans. The 12-ounce cans are sold at retail for do-it-yourself customers while 30-pound containers typically go to repair shops.⁸

Apparent U.S. consumption of R-134a decreased by *** percent from 2011 to 2013. Between the interim periods, apparent U.S. consumption was higher by *** percent.

U.S. PURCHASERS

The Commission received 35 questionnaire responses from U.S. purchasers of R-134a.⁹ In 2013, these purchasers bought approximately 52,000 short tons of R-134a from U.S. producers and importers. Fourteen of the 35 purchasers also imported R-134a during the period of investigation.

Fifteen responding purchasers are distributors, five auto parts retailers, five chemical/pharmaceutical manufacturers, three automotive OEMs, and eleven “other.”¹⁰ Eight purchasers reported that they repackage bulk R134a into smaller size containers. The largest responding purchasers of R-134a were ***.¹¹ Almost half of the responding firms (13 of 28) reported that they compete with the manufacturers from which they buy R-134a and about 30 percent (8 of 27) reported that they compete with the importers from which they buy R-134a. Distributors reported selling to automobile aftermarket warehouse distributors, auto centers and dealers, auto and truck repair shops, truck fleets, installers, aerosol producers, non-auto HVAC users, power plants, and retailers.

⁶ Purchaser *** reported that imported product is used by the auto aftermarket while domestic product also is used in non-refrigerant applications.

⁷ Deliveries in tanker trucks have an advantage of over ISO containers since the tankers have pumps attached and the R-134a can be easily pumped into the purchasers’ tanks. Hearing transcript, p. 195 (Dayton).

⁸ Hearing transcript, p. 197 (Lammers). *** reported that the U.S. Department of Transportation (DOT) has only approved one type of 12-ounce can, the “Sexton” can, and that these cans are only supplied by U.S. packagers, and that because of this, it cannot import R-134a in 12-ounce cans from China. Estimates are that *** of R-134a sales are to professional service providers that use 30-pound or larger containers and *** are to do-it-yourself customers that purchase cans. DuPont’s posthearing brief, p. 23.

⁹ Of the 35 responding purchasers, 31 purchased domestic R-134a, 11 purchased R-134a imported from China, and 3 purchased R-134a imported from other sources (Germany and Mexico).

¹⁰ Other types of firms include aerosol packager, renewable energy equipment supplier, repackager, HVAC OEM, appliance OEM, and general retailer such as ***.

¹¹ ***.

CHANNELS OF DISTRIBUTION

U.S. producers and importers sold R-134a mainly to distributors, with *** percent or more of U.S. producers' shipments and import shipments from China going through this channel (table II-1). Shipments of imported Chinese R-134a by retailers such as *** are included under "end users."

Table II-1

R-134a: U.S. producers' and importers' U.S. shipments, by sources and channels of distribution, 2011-13, January-June 2013, and January-June 2014

* * * * *

GEOGRAPHIC DISTRIBUTION

U.S. producers and importers reported selling R-134a to all regions in the United States (table II-2). For U.S. producers, 2 percent of sales were within 100 miles of their production facility, 77 percent were between 101 and 1,000 miles, and 21 percent were over 1,000 miles. Importers sold about 15 percent within 100 miles of their U.S. point of shipment, 57 percent between 101 and 1,000 miles, and 27 percent over 1,000 miles.

Table II-2

R-134a: Geographic market areas in the United States served by U.S. producers and importers, by number of responding firms

Region	U.S. producers	U.S. importers
		China
Northeast	3	26
Midwest	3	25
Southeast	3	29
Central Southwest	3	24
Mountains	3	22
Pacific Coast	3	23
Other ¹	1	12
All regions in the continental United States	3	17

¹ All other U.S. markets, including AK, HI, PR, and VI, among others.

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

SUPPLY AND DEMAND CONSIDERATIONS

U.S. supply

Domestic production

Based on available information, U.S. producers of R-134a have the ability to respond to changes in demand with moderate changes in the quantity of shipments of U.S.-produced R-134a to the U.S. market. The main contributing factors to this degree of responsiveness of supply are the existence of alternate markets and some available unused capacity tempered by a lack of production alternatives.

Industry capacity

U.S. production of R-134a increased irregularly from *** short tons in 2011 to *** short tons in 2013. Domestic capacity utilization increased from *** percent in 2011 to *** percent in 2013. This level of capacity utilization suggests that U.S. producers may have some capacity to increase production in response to an increase in prices.

Alternative markets

All three producers export R-134a; principal markets include ***.¹² U.S. producers' exports, as a percentage of total shipments, increased slightly over the period of investigation, from *** percent in 2011 to *** percent in 2013. This fairly high level of exports indicates that U.S. producers may have the ability to shift shipments between the U.S. market and other markets in response to price changes.

Inventory levels

U.S. producers' inventories, as a ratio to total shipments, increased irregularly from *** percent in 2011 to *** percent in 2013. These inventory levels suggest that U.S. producers may have a limited ability to use inventories to respond to changes in demand.

U.S. producers reported that they typically build up inventories at the beginning of the year in anticipation of the large shipments made in January to March to supply the needs of the A/C replacement markets.¹³

Production alternatives

U.S. producers stated that they could not switch production from R-134a to other products.¹⁴

¹² ***.

¹³ Conference transcript, p. 111 (Geosits).

¹⁴ Conference transcript, p. 69 (Rubin), hearing transcript, p. 23 (Pacillo). ***.

Supply constraints

Petitioner and respondents agree that there were shortages of domestic R-134a in 2010 and 2011. Respondents report that the supply constraints were because of three major factors: recovery of the automotive markets in the United States, Europe, and Asia; the foam blowing industry moving from R-22 to R-134a; and raw material shortages.¹⁶

Mexichem and DuPont reported that there were problems with supply in 2010 and 2011 caused by inventory drawdowns during the recession and problems getting deliveries of the raw material trichloroethylene (TCE).¹⁷ The domestic industry reported that although the supply tightness impacted all end-use markets, the greatest impact was on the automotive aftermarket. Two reasons were cited: (1) sales to the automotive aftermarket are primarily on a spot basis whereas suppliers have contractual commitments in other end-use markets, and (2) the automotive aftermarket uses only R-134a whereas the stationary A/C market purchases multiple fluorochemical products.¹⁸ Domestic industry representatives reported they have had no supply shortages or inability to supply customers since the end of 2011.¹⁹

Seven of 38 responding importers and 11 of 35 responding purchasers reported supply constraints, particularly supply shortages in 2011.²⁰ AutoZone reported that from late 2009 until 2011, the repackagers from which it purchased R-134a had difficulty obtaining the product from domestic producers, and that therefore it began importing bulk ISO containers from China.²¹ *** reported that it was unable to purchase adequate supply from Mexichem so began purchasing additional volume from a different "U.S. based source." *** reported that U.S. suppliers often cannot deliver the requested quantity during peak season and that *** refuses to sell to them because they are a competitor.

Only a few purchasers reported supply constraints after 2011. *** reportedly was unable to secure sufficient supply from its main domestic supplier in 2014.²² *** reported that

¹⁵ ***.

¹⁶ Chinese respondents' prehearing brief, p. 9.

¹⁷ Conference transcript, pp. 73-75 (Pacillo and Rubin).

¹⁸ Hearing transcript, pp. 53-55 (Rubin).

¹⁹ Hearing transcript, p. 55 (Rubin and Geosits). In final phase questionnaire responses, only one of the three responding producers, ***, reported supply constraints, ***.

²⁰ Respondents cited letters from U.S. producers reporting R-134a supply shortages and price increases. These letters described difficulty obtaining R-134a inputs (chlorocarbons and hydrogen fluoride), increased demand for R-134a because of phased out use of R-22 (automotive A/C) and HCFC (foam insulating market), increased R-134a demand in China and by OEMs, and high demand for R-125 (facilities producing R-125 could produce R-134a). Chinese respondents' postconference brief, exh. 1. Chinese respondents' prehearing brief, exh. 2.

²¹ AutoZone reported that it negotiated with U.S. repackagers to package the imported product into 12-ounce cans. It also purchases 30-pound cylinders from repackagers that source from both domestic producers and Chinese producers of R-134a. Hearing transcript, pp. 116-120 (Lammers).

²² Chinese respondents' prehearing brief, p. 9, and exh. 3.

DuPont was unable to supply product pre-2012 selling season. *** reported that in April 2014, Honeywell issued a \$0.50 per pound price increase and stated it is not accepting new customers.

Subject imports from China²³

Based on available information, Chinese R-134a producers have the ability to respond to changes in demand with moderate changes in the quantity of shipments of R-134a to the U.S. market. The main contributing factors to the moderate degree of responsiveness of supply are some available capacity and the existence of alternate markets.

Industry capacity

Reported R-134a production capacity in China increased from *** short tons in 2011 to *** short tons in 2013. Production also increased over the same period from *** short tons to *** short tons. Capacity utilization increased from *** percent in 2011 to *** percent in 2012 and then declined to *** percent in 2013. This level of utilization indicates that Chinese producers may have excess capacity with which to increase shipments to the United States.

Alternative markets

Over one-third of Chinese producers' shipments went to the home market. Chinese producers' shipments to the home market increased over the period, both in absolute terms and as a share of total shipments, from *** percent in 2011 to *** percent in 2013. The percentage of shipments to other (non-U.S.) markets was stable at *** percent. Chinese producers reported shipping to markets throughout the world: Europe, Asia, Latin America, the Middle East, Canada, and South Africa. R-134a producers in China may be able to shift sales from other markets to the U.S. market in response to relative price changes.

Inventory levels

Chinese producers' R-134a inventories, as a share of total shipments, decreased slightly from *** percent in 2011 to *** percent in 2013. These data indicate that producers in China may have a limited ability to use inventories to increase sales to the United States.

Production alternatives

*** of the five responding Chinese producers reported that they could shift production between R-134a and other products, depending on market demand. These other products include R-32, R-125, R-143a, chlorodifluoroacetic acid, and 2,2-difluoroethanol.

²³ The Commission received questionnaire responses from five Chinese producers of R-134a; their reported exports to the U.S. market represented approximately *** percent of imports from China in 2013.

Nonsubject imports

Nonsubject imports declined from *** percent of U.S. apparent consumption of R-134a in 2011 to *** percent in 2013. The largest sources of nonsubject imports during 2011-13 were the UK and Germany. Combined, these countries accounted for 86.3 percent of nonsubject imports in 2013. Importers of nonsubject R-134a reported that *** of their shipments in 2013 went to ***. As discussed in part IV, Mexichem exports R-134a to the UK where it is purified and then imported back into the U.S. market for use in pharmaceutical applications.

New suppliers

Eleven of 35 purchasers indicated that new suppliers entered the U.S. market since 2011. New suppliers listed by purchasers included Chinese and Indian producers.

U.S. demand

Based on available information, the overall demand for R-134a would likely experience small changes in response to changes in price. The main contributing factors are the lack of substitute products for R-134a and the very small cost share of R-134a in most of its end uses.

End uses

U.S. demand for R-134a depends on the demand for U.S.-produced downstream products and services. As noted earlier, end uses include automobile A/C (new and repairs), refrigerant blends, refrigerators, stationary A/C units, propellants, industrial aerosol products, foam blowing, and pharmaceuticals.

Automotive OEM demand is based on U.S. new vehicle production. The number of new vehicles made in the United States fell during the recent recession but has rebounded in the last few years.²⁴ OEM demand is affected more immediately than aftermarket demand by any changes in regulations, car design, or the state of the economy.

The A/C aftermarket is substantially larger than the OEM subdivision, constituting about 70 to 80 percent of the overall automotive A/C refrigerant market.²⁵ Although R-134a is not consumed by the A/C unit operation, some of the product leaks out of the system over time, degrading cooling performance. Automotive A/C units typically need to be recharged with

²⁴ New car sales dipped to approximately 9 million in 2009 during the recession but rebounded to approximately 16 million in 2013, still below the 17-18 million in annual sales in 2007-08. Conference transcript, pp. 93-94 (Schagrin). U.S. light vehicle sales increased from 10.6 million in January-August 2013 to 11.2 million in January-August 2014. These data include imported vehicles. Market Data Center, The Wall Street Journal, http://online.wsj.com/mdc/public/page/2_3022-autosales.html, retrieved September 19, 2014.

²⁵ Questionnaire data indicate that during 2011-13, the share was around *** percent. Industry witnesses estimated 70 to 75 percent. Conference transcript, pp. 44, 52 (Rubin, Geosits).

refrigerant about every 5 years.²⁶ System damage in a vehicle accident also creates demand for R-134a in the aftermarket.

Business cycles

R-134a demand tends to be seasonal since A/C repairs occur most often at the end of spring or beginning of the summer. *** noted that while demand in the A/C aftermarket is seasonal, demand by OEMs and in the foam expansion market is not. Most firms (all three U.S. producers, 31 of 39 importers, and 25 of 33 purchasers) indicated that the market was subject to business cycles. Firms noted that such cycles are typically based on the weather with higher demand in the summer, especially during hotter years. Distributors may stock up early in the year to supply aftermarket customers in spring and summer. The large retailers reportedly tend to stock up the first and fourth quarter of the year.

Fewer firms (one producer, 9 importers, and 7 purchasers) reported other conditions of competition. Several firms noted supply conditions including the importance of availability, price spikes due to shortages of R-134a and containers, Mexichem's acquisition of INEOS in 2010 (and subsequent domestic supply shortage), and capacity expansion in China. Firms also noted that regulations were a distinctive condition of competition in this industry.²⁷ One firm also noted that demand is affected by the housing market.

One producer, 13 importers, and 13 purchasers reported changes in the conditions of competition since 2011. A number of firms mentioned availability and other supply factors, noting shortages and high prices starting in 2010, followed by increased supply and lower prices.²⁸ Other changes include: weather changes (year-to-year variations, warmer season in the Northeast, hot weather increasing demand, current cooler summer weather, and lower demand in the fall), automotive market changes (increased vehicle age has increased demand), and changes in regulations (EU phase out of R-22 increased demand for R-134a).

Demand trends

There was little consensus on changes in U.S. demand for R-134a since 2011 (table II-3). Two producers reported a decrease and one reported no change. Although most importers reported that demand had not changed or had fluctuated, five reported an increase and four

²⁶ Hearing transcript, p. 76 (Rubin).

²⁷ Specifically firms noted the following: new regulations are expected to be developed that switch consumption away from R-134a because of its high global warming potential; possible EPA excise tax on HFCs to prevent future stockpiling; auto manufacturers in the United States, Canada, Japan, and EU switching away from R-134a in new vehicles; and potential regulations in California on R-134a cans.

²⁸ There were differing reports of when the shortages occurred with some firms mentioning 2010 and 2011, and other reporting shortages and high prices as late as 2012. Some firms also reported that the domestic supply shortages in 2010 and 2011 brought in imports from China; that the large volume of imports reduced pricing most significantly in the auto segment; and that prices have fallen significantly due to oversupply. *** reported that it began importing bulk R-134a in ISO tanks as they were not available from U.S. producers to the retail channel.

reported a decrease. Purchasers were somewhat more likely to report increased demand although most reported “no change” or “fluctuated.” U.S producers reported that R-134a was a mature market with unit growth tempered by more efficient systems and the introduction of R-1234yf into automotive air conditioners. Importers noted factors including weather, world demand for other uses (construction/foam insulation), no demand increase in medical uses, increasing vehicle age, and proposed HFC regulations.

Purchasers reported the following factors related to decreased demand for R-134a: pending EPA efforts to delist R-134a as an aerosol propellant, compressors are built better so less need for refrigerant, customers stocked up in 2011, cooler temperatures in 2013 and 2014, a slight reduction in sales of chillers, and automotive OEMs moving to R-1234yf. Purchasers reported the following factors related to increased demand for R-134a: improved economy, growth in the automotive sector including aftermarket service, more class 8 trucks in service, growth in building sector demand for A/C and refrigeration, higher demand in 2012 with hot temperatures, aging vehicles, and replacement of previously-used chemicals with R-134a.

Most firms reported that demand outside the United States had “increased,” had “not changed,” or had “fluctuated.” Factors cited by firms related to increased demand were global GDP growth, the increased number of cars, and conversion of older vehicles from R-12 to R-134a. One factor related to a decline in demand was the introduction of 1234yf into automobiles sold in the EU.

Table II-3

R-134a: Firms’ responses regarding demand, by number of responding firms

	Number of firms reporting			
	Increase	No change	Decrease	Fluctuate
Demand inside the United States:				
U.S. producers	0	1	2	0
Importers	5	12	4	11
Purchasers	8	10	4	9
Demand outside the United States:				
U.S. producers	1	1	1	0
Importers	8	8	2	6
Purchasers	5	8	0	4
Demand for purchasers' final products:				
Purchasers	3	3	4	7

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

Substitute products

Substitutes for R-134a are very limited. In the short term, substitution is not possible in most end uses. Other refrigerant gases cannot be used in air conditioners and refrigerators

without modifying the system design to use a different refrigerant gas.²⁹ Nearly all automobiles in the United States currently use R-134a and cannot use a substitute product.³⁰ Over the longer term, new systems are designed as new gases are developed and as regulations discourage use of certain chemicals. U.S. automobile manufacturers may switch to HFO-1234yf to help meet Corporate Average Fuel Economy (CAFE) standards.³¹

Two of the three U.S. producers but only 5 of 37 responding importers and 4 of 33 purchasers reported that there were substitutes for R-134a. Reported substitutes include: HFC-152a in foam and propellant applications;³² R-1234yf in mobile air conditioners; hydrocarbons in foam and domestic refrigerators; 404A in medium temperature commercial refrigeration; cyclopentane and 245fa as blowing agents in refrigerators; and HFO-1234ze and HFO-1233zd in foam blowing, chiller, and aerosol applications. No firm reported that the cost of substitutes affected the demand for R-134a.

Cost share

R-134a accounts for a small share of the cost of most of the end-use products in which it is used.³³ Reported cost shares for some uses were as follows:³⁴

- New car or truck (nearly 0 percent)
- Non-automotive refrigerant uses: refrigerators (0.1 to 0.3 percent), chillers (1 to 8 percent)
- Refrigerant blends (4 to 52 percent)
- Foam: polyurethane foam (10 percent); styrofoam (18 percent); foam adhesive (19 percent)
- Aerosol: aerosol propellant (80 percent), aerosol pet products (46 percent)
- Medical: medical device (62 percent), inhaler (5 percent)

²⁹ Conference transcript, pp. 56-57 (Rubin).

³⁰ Ninety-nine percent of automobiles in the United States currently use R-134a. Hearing transcript, p. 28 (Geosits).

³¹ Parties estimate that about 1 percent of new automobiles produced in the United States have air conditioning systems that use R-1234yf. Conference transcript, pp. 81, 93-94, 152 (Rubin, Schagrin, and Klein). General Motors has begun producing some vehicles that use R-1234yf. *GM First to Market Greenhouse Gas-Friendly Air Conditioning Refrigerant in U.S.* http://media.gm.com/content/media/us/en/gm/news.detail.html/content/Pages/news/us/en/2010/July/0723_refrigerant.html, July 23, 2010, retrieved Nov. 4, 2013.

The EU began phasing out the use of R-134a. German Auto producer Daimler is resisting the shift to HFO-1234yf, reporting that the new refrigerant is a fire hazard. Automotive Airconditioning Reporter, Latest News, updated September 5, 2013, retrieved Nov. 5, 2013.

³² Use of HFC-152 is limited by its flammability.

³³ ***.

³⁴ No firm provided estimates for the cost of R-134a in the cost of repairing an automobile air conditioner.

SUBSTITUTABILITY ISSUES

The degree of substitution between domestic and imported R-134a depends upon such factors as relative prices, quality (e.g., impurities, reliability of supply, etc.), and conditions of sale (e.g., price discounts/rebates, lead times between order and delivery dates, product services, etc.). Based on available data, staff believes that there is a high degree of substitutability between domestically produced R-134a and R-134a imported from China.

Lead times

R-134a is primarily sold from inventory. U.S. producers sold over 99 percent from inventories with lead times of 7 to 16 days ***.³⁵ Importers reported that the majority of sales (52 percent) were from U.S. inventories with most firms reporting lead times of 1 to 7 days; 36 percent of sales were from overseas inventories with lead times of up to 60 days; and 12 percent of sales were produced-to-order with lead times of up to 90 days.

Knowledge of country sources

Thirty-two of 33 purchasers indicated they had marketing/pricing knowledge of domestic product, 22 of Chinese product, and 9 of nonsubject countries.³⁶

As shown in table II-4, most purchasers and their customers only sometimes or never make purchasing decisions based on the producer or country of origin. Among the purchasers that make decisions based on the manufacturer, *** reported that it evaluates producers based on production capacity, quality, lead times, terms, and pricing; *** reported that all suppliers must be qualified; *** reported considering long-term supply relationships, ease of delivery, quality, availability, and terms; *** reported that reliable quality and supply are important; and *** reported that it always visits the factory before purchasing. Even fewer firms reported that they make purchase decisions based on the country of origin of the product. A few firms noted a preference for U.S. product. *** stated that since it requires bulk R-134a, it would be difficult to purchase from a supplier without U.S. production facilities and logistics infrastructure; and *** reported that supply lead time is of concern.

³⁵ ***.

³⁶ Nonsubject countries or regions listed were the EU including Belgium, France, Germany, and UK; India, and the Middle East.

Table II-4**R-134a: Purchasing decisions based on producer and country of origin, by number of reporting firms**

Decision	Always	Usually	Sometimes	Never
Purchaser makes decision based on producer	7	4	11	13
Purchaser's customers make decision based on producer	1	1	16	12
Purchaser makes decision based on country	2	5	13	16
Purchaser's customers make decision based on country	1	2	15	12

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 R-134a were price (33 firms), quality (22 firms), and availability (22 firms) as shown in table II-5. Price was the most frequently cited first-most important factor (14 firms), followed by quality (12 firms); price was also the most frequently reported second-most important factor (11 firms) followed by availability (10 firms); and availability and price were the most frequently reported third-most important factors (8 firms each).

Table II-5**R-134a: Ranking of factors used in purchasing decisions as reported by U.S. purchasers, by number of reporting firms**

Factor	First	Second	Third	Total
Price	14	11	8	33
Quality	12	7	3	22
Availability	4	10	8	22
Ability to supply/production capability	3	1	2	6
Delivery/delivery terms/lead time	0	3	5	8
Credit terms	0	0	3	3
Other ¹	6	1	4	11

¹ Other factors include brand, meeting specification, range of product line, reliability, vendor relationship, and traditional/tested supplier for first factor; service for second factor; and brand name, packaging/ease of use, product consistency, and service for third factor.

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

The majority of purchasers (22 of 35) reported that they “always” or “usually” purchase the lowest-priced R-134a that is offered. Reasons reported by purchasers for buying R-134a from one source although a comparable product was available at a lower price from another source included: availability, lead time, supply chain convenience, quality (including higher purity), logistics, security of supply, build loyalty with supplier, customer preference for

domestic product and DuPont brand,³⁷ qualified source, and bulk delivery. Only 7 of 29 purchasers reported that certain types of product were only available from a single source.³⁸

Importance of specified purchase factors

Purchasers were asked to rate the importance of 15 factors in their purchasing decisions (table II-6). The factors rated as “very important” by more than half of responding purchasers were product consistency (34), quality meets industry standards (34), availability (33), reliability of supply (32), price (31), and delivery time (25).

Supplier certification

Nineteen of 34 responding purchasers require supplier certification. Thirteen purchasers reported the time to qualify a new supplier: eight firms reported 28 to 90 days, three reported 180 days or longer, one reported 10 days, and one reported 90 to 120 days. No purchaser reported that any domestic or foreign supplier had failed to qualify product, or had lost its approved status since 2011.

Table II-6
R-134a: Importance of purchase factors, as reported by U.S. purchasers, by number of responding firms

Factor	Number of firms reporting		
	Very important	Somewhat important	Not important
Availability	33	2	0
Delivery terms	16	17	1
Delivery time	25	10	0
Discounts offered	9	17	9
Extension of credit	7	15	13
Minimum quantity requirements	6	11	18
Packaging	8	16	11
Price	31	4	0
Product consistency	34	1	0
Product range	4	13	18
Quality exceeds industry standards	9	15	11
Quality meets industry standards	34	1	0
Reliability of supply	32	3	0
Technical support/service	7	18	10
U.S. transportation costs	8	19	8

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

³⁷ ***.

³⁸ *** reported it purchases domestic for non-refrigerant applications; *** reported that imported product is not available in ton, half-ton and 125 pound cylinders; *** mentioned the lack of availability of 12-ounce cans from Chinese suppliers; *** reported that pharmaceutical grades are not available from China; and***.

Changes in purchasing patterns

Purchasers' responses regarding changes in their purchasing patterns from different sources since 2011 are shown in table II-7; reasons reported for changes in sourcing included availability and pricing. Almost half of responding purchasers (17 of 35) reported that they had changed suppliers since 2011. Most often cited reasons for changing suppliers were price and availability. *** reported its domestic supplier was unable to meet customer demands; *** added *** (import) and *** (domestic) because of price; ***, ***,. *** noted that it negotiates with many suppliers each year and makes decisions based on availability, quality and price.

Table II-7

R-134a: Changes in purchase patterns from U.S., subject, and nonsubject countries

Source of purchases	Did not purchase	Decreased	Increased	Constant	Fluctuated
United States	1	4	8	14	8
China	10	3	9	2	7
All other sources	22	0	1	1	2

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

Importance of purchasing domestic product

Very few purchasers reported that they require U.S.-produced R-134a. Purchasers reported that 9 percent of their R-134a purchases required domestic product. Specifically, for 1 percent of their purchases their customers required domestic product, and for the remaining 8 percent, purchases of domestic product were required for reasons other than their customers or laws/regulations. These other reasons cited for preferring domestic product included: customer preference and product quality, purity, and immediate availability. ***.

Packaging

In serving the automotive aftermarket, DuPont sells R-134a in packaged form with DuPont brand labels. On the other hand, Mexichem and Arkema mostly supply bulk product to repackagers.³⁹ Importers may import bulk R-134a for repackaging or may import R-134a in packaged form.⁴⁰

U.S. producers were asked several questions regarding their ability to supply R-134a in bulk and in 12-ounce cans, and to supply customers' brands. Only *** reported declining to supply bulk product, stating ***.

³⁹ DuPont's posthearing brief, p. 5.

⁴⁰ DuPont reported that it is less expensive to ship 30-pound cylinders from China to the U.S. market than it is to ship ISO containers or 12-ounce cans. It reported that it costs *** per pound to ship an ISO container from China to a U.S. port and *** per pound to ship a 30-pound cylinder. DuPont's posthearing brief, p. 6.

None of the U.S. producers reported producing R-134a in 12-ounce containers, although two producers *** arrange for sales of these sizes through distributors. ***.

All three producers reported they are able to supply 12-ounce cans with customers' labels through a repackager. Only *** actually supplied any R-134a in a 12-ounce can with a customer label, and did so through repackagers. Only one of the three U.S. producers, ***, reported that it declined to supply 12-ounce cans with customer labels. ***,***.

A minority of responding purchasers (9 of 31) reported differences in the types of packaging available from U.S. producers and from importers. Specifically, purchasers reported the following: U.S. producers can deliver bulk in tank trucks and 1-ton cylinders while importers deliver in ISO tanks which take weeks; U.S. manufacturers offer a larger variety of sizes and packaging; R-134a from China is not available in 12-ounce DOT approved cans; returnable cylinders (ton, half ton, 125 pounds) are typically only offered in the United States; private label 12-ounce cans not directly available from U.S. producers; ISO tanks not available from U.S. producers; and R-134a with additives not available from importers.

Eighteen of 32 responding purchasers reported purchasing 12-ounce cans of R-134a. When asked if they were able to purchase U.S. produced 12-ounce cans of R-134a during the period of investigation; 7 of 24 responding purchasers replied "no", 9 replied "yes from a U.S. producer", and 10 replied "yes from a distributor." Seven of 24 purchasers reported that they purchase 12-ounce cans with their company label. Eight purchasers reported that U.S.-produced 12-ounce cans were not available with their company label; three reported that such cans were available directly from a U.S. producer; and five reported that such cans were available through a distributor.⁴¹

Comparisons of domestic products, subject imports, and nonsubject imports

Purchasers were asked a number of questions comparing R-134a produced in the United States, subject countries, and nonsubject countries. First, purchasers were asked for a country-by-country comparison on the same 15 factors (table II-8) for which they were asked to rate the importance.

A majority of purchasers reported that U.S. and imported product from China were comparable on 8 of the 15 factors, including quality. A plurality rated them comparable on availability, reliability of supply, and U.S. transportation costs, although many purchasers rated the U.S. products as superior in these areas. A majority rated the U.S. product as superior on delivery terms and delivery time, and technical support/service. More than half of purchasers (17 of 28) rated the Chinese product as superior with regard to price (i.e., it was priced lower than domestic product).

⁴¹ ***.

Table II-8

R-134a: Purchasers' comparisons between U.S.-produced and imported product

Factor	Number of firms reporting								
	U.S. vs. China			U.S. vs. Nonsubject Countries			China vs. Nonsubject Countries		
	S	C	I	S	C	I	S	C	I
Availability	11	14	4	5	5	0	2	7	4
Delivery terms	16	11	3	6	3	1	0	7	5
Delivery time	21	6	3	6	3	1	1	5	6
Discounts offered	3	18	5	1	7	0	2	8	0
Extension of credit	9	15	3	1	8	0	0	7	3
Minimum quantity requirements	7	19	2	3	6	0	0	10	1
Packaging	4	24	1	2	8	0	0	12	0
Price ¹	1	11	17	3	7	0	5	7	0
Product consistency	3	25	0	2	7	0	0	10	1
Product range	6	20	2	0	9	0	0	9	2
Quality exceeds industry standards	4	25	0	2	8	0	0	11	1
Quality meets industry standards	4	25	0	2	8	0	0	11	1
Reliability of supply	11	14	4	5	5	0	2	8	2
Technical support/service	18	10	0	3	5	1	0	7	4
U.S. transportation costs ¹	12	14	2	6	3	0	1	9	1

¹ A rating of superior means that price/U.S. transportation costs 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 R-134a

In order to determine whether U.S.-produced R-134a 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-9, all three producers, and the vast majority of importers and purchasers reported that U.S.-produced R-134a and imported R-134a from China and other countries were "always" or "frequently" interchangeable. Only a few purchasers reported differences; specifically, *** reported that impurities in Chinese product can be an issue;⁴² *** reported that any Chinese source would need to prove adherence to purity standards, and *** reported that China does not have pharmaceutical grade product.

⁴² ***.

Most responding purchasers reported that U.S.-produced R-134a and R-134a imported from China “always” met minimum quality specifications (table II-10).

Table II-9

R-134a: Perceived interchangeability between R-134a produced in the United States and in other countries, by country pairs

Country pair	U.S. producers				U.S. Importers				U.S. purchasers			
	A	F	S	N	A	F	S	N	A	F	S	N
United States vs. China	1	2	0	0	25	9	2	1	20	6	3	0
United States vs. Other	1	2	0	0	15	6	0	1	13	5	0	1
China vs. Other	1	2	0	0	15	6	0	1	12	2	2	0

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

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

Table II-10

R-134a: Ability to meet minimum quality specifications, by source and number of reporting firms¹

Source of purchases	Always	Usually	Sometimes	Rarely or never	Don't know
United States	32	0	0	0	2
China	19	5	1	0	8
All other sources	4	1	0	0	13

¹ Purchasers were asked how often domestically produced or imported R-134a meets minimum quality specifications for their own or their customers' uses.

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

In addition, producers, importers, and purchasers were asked how often differences other than price were significant in sales of R-134a for U.S., subject, or nonsubject product. As seen in table II-11, most U.S. producers and importers reported that differences other than price between R-134a from any of the listed sources were only “sometimes” or “never” a factor in their sales. However, the majority of purchasers reported that such differences were “always” or “frequently” a factor in their purchase decisions. Purchasers cited the following advantages of U.S. product compared to Chinese product: availability, delivery time, security of supply, brand, freight terms, few impurities, and perceived higher quality refrigerant.

Table II-11

R-134a: Significance of differences other than price between R-134a produced in the United States and in other countries, by country pair

Country pair	U.S. producers				U.S. importers				U.S. purchasers			
	A	F	S	N	A	F	S	N	A	F	S	N
United States vs. China	0	0	2	1	6	6	14	10	11	6	8	2
United States vs. Other	0	0	2	1	3	2	7	7	8	2	3	3
China vs. Other	0	0	2	1	3	2	7	7	4	3	4	2

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

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

ELASTICITY ESTIMATES

U.S. supply elasticity

The domestic supply elasticity⁴³ for R-134a measures the sensitivity of the quantity supplied by U.S. producers to changes in the U.S. market price of R-134a. 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 R-134a. Analysis of these factors earlier indicates that the U.S. industry has the ability to moderately increase or decrease shipments to the U.S. market; an estimate in the range of 3 to 6 is suggested. U.S. demand elasticity.

The U.S. demand elasticity for R-134a measures the sensitivity of the overall quantity demanded to a change in the U.S. market price of R-134a. This estimate depends on factors discussed earlier such as the existence, availability, and commercial viability of substitute products, as well as the component share of R-134a in the production of any downstream products. Based on the available information, the aggregate demand for R-134a is likely to be inelastic; a range of -0.25 to -0.50 is suggested. DuPont noted that it agreed that R-134a demand does not change significantly with changes in its price.⁴⁴

Substitution elasticity

The elasticity of substitution depends upon the extent of product differentiation between the domestic and imported products.⁴⁵ 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 R-134a and imported R-134a is likely to be in the range of 3 to 5. DuPont noted that "as near-perfect substitutes, the Commission staff has correctly concluded that elasticity of substitution between subject imports and the domestic like product is high."⁴⁶

⁴³ A supply function is not defined in the case of a non-competitive market.

⁴⁴ DuPont's prehearing brief, p. 3.

⁴⁵ 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.

⁴⁶ DuPont's prehearing brief, p. 3.

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 100 percent of U.S. production of R-134a during the period of investigation.

U.S. PRODUCERS

The Commission issued a U.S. producer questionnaire to three firms based on information contained in the petition and responses received during the preliminary phase of the investigation.^{1 2} All three firms provided useable data on their productive operations. These three responses represent 100 percent of U.S. production of R-134a.

Table III-1 lists U.S. producers of R-134a, their production locations, positions on the petition, and shares of total production over the period of investigation.

Table III-1

R-134a: U.S. producers of R-134a, their positions on the AD and CVD petitions, production locations, production, and shares of reported production, January 2011-June 2014

Firm	Position on petition	Production location(s)	Share of production (percent)
Arkema Inc.	***	King of Prussia, PA	***
E.I. du Pont de Nemours and Company	***	Wilmington, DE	***
Mexichem Fluor Inc.	Petitioner	St. Gabriel, LA	***
Total			100.0

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

Table III-2 presents information on U.S. producers' ownership and related and/or affiliated firms. Arkema is owned by a French producer of R-134a and Mexichem's parent company is based in Mexico, however, ***.³ None of the U.S. producers report being related to U.S. importers of R-134a, though ***. *** U.S. producers directly import R-134a, while only *** imports subject R-134a from China.

¹ Staff sent a producer questionnaire to Mexichem, Arkema, DuPont and ***.

² Petition, p. 2.

³ Hearing transcript, p. 33 (Geosits).

**Table III-2
R-134a: U.S. producers of R-134a, ownership and related and/or affiliated firms**

Firm	Ownership	Related and/or affiliated firms
Arkema	Arkema is a wholly owned subsidiary of Arkema S.A. of Colombe Cedex, France, a producer of R-134a.	No related or affiliated firms reported.
DuPont	DuPont is a publicly traded corporation on the New York Stock Exchange under ticker symbol "DD". In October 2013, DuPont announced that it is spinning off into a separate company its performance chemicals unit, a unit that includes production of R-134a and all refrigerants. DuPont stated that it would take approximately 18 months to complete the transaction.	DuPont owns DuPont Trading (Shanghai) Co., Ltd., an exporter of R-134a.
Mexichem	Mexichem is owned by: <ul style="list-style-type: none"> • Mexichem Fluor SA de CV of San Luis Potosi, Mexico (***) ownership), • Mexichem Resinas Vinilicas SA de CV of Altimira, Tamaulipas, Mexico (***) ownership), • Mexichem Derivados SA de CV of Tlalnepantla De Baz, Mexico (***) ownership). <p>Mexichem purchased its R-134a production facilities in North America from the INEOS Group of Rolle, Switzerland in April 2010.</p>	Mexichem is related by common ownership to: <ul style="list-style-type: none"> • Mexichem Fluor Japan, Ltd. of Tokyo, Japan, a producer of R-134a, • Mexichem UK, Ltd. of Cheshire, United Kingdom, a producer of R-134a.

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

U.S. PRODUCTION, CAPACITY, AND CAPACITY UTILIZATION

Table III-3 presents U.S. producers' R-134a production, capacity, and capacity utilization. Total U.S. producers' capacity decreased by *** percent from 2011 to 2012 due to *** plant shutdown for scheduled maintenance in part of that year.⁴ Capacity remained steady from 2011 to 2013.⁵ U.S. production⁶ of R-134a increased from 2011 to 2013 by *** percent and was *** percent higher in January-June 2014 than in January-June 2013. Annual capacity utilization rates increased from *** percent in 2011 to *** percent in 2013. Capacity utilization increased

⁴ ***

⁵ Petitioners acknowledge that capacity increases in China and regulations, which will eventually lead to obsolescence of R-134a, have had a negative impact on decisions to expand capacity. Petitioner's posthearing brief, p. A-6.

⁶ Arkema and Mexichem reported that they ***. U.S. producer questionnaires, question II-3a. DuPont reported that it ***. U.S. producer preliminary phase questionnaire response, question II-3. DuPont also noted, "****." U.S. producer questionnaire response, question II-7d.

from *** percent during interim 2013 to *** percent during interim 2014, despite the fact that Mexichem reported production curtailments in February and March 2014.⁷ Demand from automotive aftermarket distributors and retailers is higher early in the year in anticipation of end-user demand in the spring and early summer.⁸ This likely contributes to U.S. producers' high capacity utilization rates in the first half of the year.

Table III-3

R-134a: U.S. producers' R-134a production, capacity, and capacity utilization, 2011-13, January-June 2013, and January-June 2014¹

* * * * *

*** experienced either prolonged shutdowns or production curtailments during the period of investigation. *** noted revised labor contracts and *** noted that its fluorochemical business is under corporate review. Each firm's reported changes in operations are listed in table III-4 exactly as described in their questionnaire responses.

Table III-4

R-134a: Changes in operations reported by U.S. producers, 2011-13, January-June 2013, and January-June 2014

* * * * *

*** U.S. producers reported that they cannot switch production (capacity) between R-134a and other products using the same equipment and labor. *** noted with respect to its plant that, "significant additional capital would be required to convert to a "swing" plant that would produce other HFCs."⁹ The producers reported that capacity is constrained by the limitations on plant equipment (e.g. distillation capacity) and the regular regeneration of the catalyst.¹⁰ No U.S. producer reported production in a free trade zone or involvement in a toll agreement during the period of investigation.^{11 12}

⁷ Hearing transcript, pp. 24-25 (Pacillo). Mexichem's capacity utilization rate in the first half of 2014 was *** percent according to their U.S. producer questionnaire response, table II-7a.

⁸ AutoZone, a purchaser of both domestic and Chinese R-134a, typically negotiates purchases in the fall to build inventories from the end of the year through the spring in anticipation of demand during spring and summer months. Hearing transcript, p. 116 (Lammers).

⁹ U.S. producers questionnaire responses, question II-3e.

¹⁰ *Ibid.*, question II-3d.

¹¹ *Ibid.*, questions II-4 and II-5.

¹² Despite indicating otherwise in its questionnaire responses, DuPont uses tollers. According to a corporate representative, "We do not private label, so our product is packaged by tollers for us into our packages and is placed on the market through the same retail chains, but it'll be a DuPont can in the marketplace," Hearing transcript p. 67 (Rubin).

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

Table III-5 presents U.S. producers' U.S. shipments, export shipments, and total shipments. The quantity of U.S. producers' U.S. shipments of R-134a decreased by *** percent from 2011 to 2013 but was *** percent higher in January-June 2014 than in January-June 2013. The value of U.S. shipments decreased by *** percent from 2011 to 2013, and was *** percent lower in January-June 2014 than in January-June 2013.

The quantity of U.S. producers' export shipments of R-134a increased by *** percent from 2011 to 2013 but was *** percent lower in January-June 2014 than in January-June 2013. Arkema and Mexichem's export quantities *** The value of the industry's exports decreased by *** percent from 2011 to 2013, and was *** percent lower in January-June 2014 than in January-June 2013. Again, DuPont reported a ***.

The unit value of U.S. producers' total U.S. shipments of R-134a decreased by *** percent from 2011 to 2013 and was *** percent lower in January-June 2014 than in January-June 2013. The unit value of U.S. producers' exports of R-134a decreased by *** percent from 2011 to 2013 and was *** percent lower in January-June 2014 than in January-June 2013.

***¹³

Table III-5
R-134a: U.S. producers' U.S. shipments, export shipments, and total shipments, 2011-13, January-June 2013, and January-June 2014

* * * * *

U.S. PRODUCERS' U.S. SHIPMENTS BY SEGMENT

Table III-6 presents U.S. producers' U.S. shipments by the following industry segments:

- automotive refrigerant to original equipment manufacturers (OEMs),
- automotive refrigerants to the aftermarket,
- pharmaceuticals,
- foam expansion agents, and
- other refrigerants.¹⁴

Shipment quantities of aftermarket automobile refrigerants, foam expansion agents, and other refrigerants have decreased modestly from 2011 to 2013. However, over the same period, shipment quantities of automotive refrigerants to OEMs have increased *** percent.

Unit values of automotive refrigerant (OEMs), pharmaceuticals, foam expansion agents, and other refrigerants have decreased by *** percent respectively from 2011 to 2013. However, over the same period, automotive aftermarket refrigerant shipment unit values have

¹³ U.S. producers questionnaire responses, question II-7a.

¹⁴ The U.S. producers reported the following other refrigerants: ***. Compiled responses to U.S. producer questionnaires, question II-8.

decreased from *** per short ton, or by *** percent. The automotive aftermarket and other refrigerants are the only market segments in which subject imports appear to substantively compete with U.S. producers.¹⁵

Table III-6

R-134a: U.S. producers' U.S. shipments by industry segment, 2011-13, January-June 2013, and January-June 2014

* * * * *

Table III-7 presents U.S. producers' U.S. shipments to the automotive refrigerant aftermarket by package type in 2013.

Table III-7

R-134a: U.S. producers' U.S. shipments to the automotive refrigerant aftermarket, by package type

* * * * *

Table III-8 presents U.S. producers' U.S. shipments to the other refrigerant market by type of shipment in 2013.

Table III-8

R-134a: U.S. producers' U.S. shipments to other refrigerant markets, by type

* * * * *

U.S. PRODUCERS' INVENTORIES

Table III-9 presents U.S. producers' end-of-period inventories and the ratio of these inventories to U.S. producers' production, U.S. shipments, and total shipments. The quantity of U.S. producers' inventories of R-134a increased by *** percent from 2011 to 2013 and were *** percent higher in January-June 2014 than in January-June 2013. The ratios of inventories to shipments and production also decreased in 2012 compared to 2011 but all measures increased in 2013 and January to June 2014 compared to January to June 2013.

Table III-9

R-134a: U.S. producers' inventories, 2011-13, January-June 2013, and January-June 2014

* * * * *

¹⁵ This is based on responses to importer questionnaires compiled in table IV-7 of this report.

U.S. PRODUCERS' IMPORTS AND PURCHASES

Of the U.S. producers, only *** reported purchasing domestically-sourced R-134a during the period of investigation. *** purchased *** short tons in 2011 and *** short tons in January-June 2014, accounting for roughly *** percent of its R-134a production in each period. *** reported purchasing R-134 from *** because of "operating issues."¹⁶ None of the U.S. producers purchased R-134a from domestic sources.¹⁷

Tables II-10a-c present U.S. producers' production and import data. There are two instances in which a producer imported more than one percent of its R-134 production in the same period. In 2012 *** imported *** short tons of R-134a from China (*** percent of its production that year) and in January-June 2014 *** imported *** short tons of R-134a from *** (*** percent of its production during that period).

Mexichem exports R-134a to a sister company in the United Kingdom that purifies the product for use in metered dose inhalers for the treatment of COPD and asthma. Mexichem then imports the same R-134a after it has been processed to pharmaceutical grade from its sister company and distributes it in the United States.¹⁸

Table III-10a-c

R-134a: U.S. producers' U.S. production and imports 2011-13, January-June 2013, and January-June 2014

Table III-10a: Arkema

* * * * * * *

Table III-10b: Mexichem

* * * * * * *

Table III-10c: DuPont

* * * * * * *

U.S. EMPLOYMENT, WAGES, AND PRODUCTIVITY

Table III-11 shows U.S. producers' employment-related data during the period of investigation. *** reduced its production related workforce (PRW) by ***; *** reduced its PRW by ***; and *** added *** to its PRW over the period of investigation. Mexichem

¹⁶ *** U.S. producer questionnaire response, question II-10.

¹⁷ U.S. producer questionnaire responses, questions I-5 and 6.

¹⁸ Hearing transcript pp. 30-31 (Geosits).

estimates that its St. Gabriel plant is responsible for generating 300 jobs indirectly through maintenance, support, and other economic activity.¹⁹

Table III-11

R-134a: Average number of production and related workers, hours worked, wages paid to such employees, hourly wages, productivity, and unit labor costs, 2011-13, January-June 2013, and January-June 2014

* * * * *

¹⁹ Hearing transcript. p. 25 (Pacillo).

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

U.S. IMPORTERS

The Commission issued importer questionnaires to 102 firms believed to be importers of R-134a, as well as to all U.S. producers of R-134a.¹ Usable questionnaire responses were received from 40 companies,² representing ***³ percent of total adjusted official U.S. Customs import statistics in 2013.⁴ Table IV-1 lists all responding U.S. importers of R-134a from China and other sources, their locations, and their shares of U.S. reported imports during the period of investigation.

¹ The Commission issued questionnaires to those firms identified in the petition as well as those identified by import data collected by U.S. Customs and Border Protection (“Customs”). Staff notes that the U.S. importer list provided in the petition contains the names of numerous firms that are not U.S. importers of record or consignees of R-134a, but rather are firms which provide logistics services such as freight forwarding and shipping companies. In the final phase of the investigation the following firms indicated they had not imported R-134a during the period of investigation: ***.

*** provided an importer questionnaire response in the preliminary phase but refused to participate in the final. Their responses in the preliminary cannot be included in the final dataset because, without knowing whether they imported R-134a under HTS other than 2903.39.2020, we must assume that their imports are included in official Customs import data under the appropriate HTS.

² The respondent importers are comprised of 24 distributors, 10 repackagers, 7 retailers and 12 “other” types of importers. The numbers do not sum to 40 because respondents were allowed to identify as more than one type of importer.

³ The discrepancy between adjusted official imports and reported imports is likely due to two issues: 1) Some of the imports and shipments reported in questionnaires are estimates because companies lacked adequate records to distinguish between imports and domestically-sourced product; 2) it’s unlikely that questionnaire responses captured all imports of R-134a to the U.S. under an HTS other than 2903.39.2020.

⁴ Because of the likelihood that official Customs import statistics understate the true volume of R-134a imports during the period of investigation because of misclassified entries, staff requested importers report all R-134a that entered the U.S. under HTS numbers other than 2903.39.2020. These data have been combined with official Customs import statistics to arrive at the estimated total imports of R-134a during the period of investigation.

Table IV-1
R-134a: U.S. importers by source, January 2011 - June 2014

Firm	Headquarters	Share of imports by source (percent)		
		China	All other sources	All Sources
Advance Stores Company, Incorporated	Roanoke, VA	***	***	***
Airgas Refrigerants, Inc.	Lawrenceville, GA	***	***	***
Altair Partners LP	Millburn, NJ	***	***	***
Arkema, Inc.	King Of Prussia, PA	***	***	***
Autopart International, Inc.	Norton, MA	***	***	***
AutoZone Parts Inc.	Memphis, TN	***	***	***
BBC Biochemical	Mount Vernon, WA	***	***	***
C & D Fair Trading Usa Inc	Flushing, NY	***	***	***
Coolgas, Inc.	Magnolia, TX	***	***	***
CRC Industries	Warminster, PA	***	***	***
DYK Automotive, LLC	Medina, MN	***	***	***
E. I. duPont de Nemours and Company	Wilmington, DE	***	***	***
Elliott Auto Supply Co., Inc., d/b/a Factory Motor Parts	Eagan, MN	***	***	***
Energent Corporation	Santa Ana, CA	***	***	***
First Continental International (NJ) Inc.	Glen Rock, NJ	***	***	***
Fleetpride, Inc.	Irving, TX	***	***	***
Foosung Usa, Inc.	Cleveland, TN	***	***	***
Galpa Export Corp	Doral, FL	***	***	***
General Motors LLC	Detroit, MI	***	***	***
GlaxoSmithKline LLC	Philadelphia, PA	***	***	***

Table continued on next page.

Table IV-1--continued

R-134a: U.S. importers by source, January 2011 - June 2014

Firm	Headquarters	Share of imports by source (percent)		
		China	All other sources	All Sources
Global Automotive Parts, LLC (GAP,LLC)	Decatur, AL	***	***	***
Honeywell International, Inc.	Morristown, NJ	***	***	***
Hudson Technologies Company	Pearl River, NY	***	***	***
ICOR International Inc.	Indianapolis, IN	***	***	***
IDQ Holdings, Inc.	Garland, TX	***	***	***
Kivlan and Company, Inc.	Carlisle, PA	***	***	***
Mag Wholesale Corp.	Hialeah, FL	***	***	***
Mariel USA Inc.	Bensalem, PA	***	***	***
Mexichem Fluor, Inc.	St. Gabriel, LA	***	***	***
Mondy Global, Inc.	San Antonio, TX	***	***	***
National Refrigerants, Inc.	Philadelphia, PA	***	***	***
O'Reilly Auto Parts	Springfield, MO	***	***	***
Old World Industries, LLC	Northbrook, IL	***	***	***
Reclamation Technologies, Inc. d/b/a A-Gas RemTec	Bowling Green, OH	***	***	***
Rig Tough, Inc.	San Antonio, TX	***	***	***
Technical Chemical Company	Cleburne, TX	***	***	***
Tulstar	Tulsa, OK	***	***	***
USA United Suppliers of America, Inc.	Sarasota, FL	***	***	***
Walmart	Bentonville, AR	***	***	***
Weitron, Inc.	Elkton, MD	***	***	***
Total		***	***	***

Source: Compiled from responses to Commission questionnaires.

U.S. IMPORTS

Respondents claim that imports of R-134a from China were drawn into the market by U.S. purchasers because U.S. producers were unable to provide them with the necessary volume of R-134a in 2010 and 2011.⁵ Respondents point to a “perfect storm” of supply and demand factors pushing prices up and limiting supply during this period. They attribute this to; 1) the automotive market rebound, 2) the foam blowing industry’s shift to R-134a, and 3) supply shortage in raw materials.⁶ AutoZone sourced all of its R-134a from domestic packagers until 2010 when it looked to China for additional supply citing shortages from late 2009 to 2011.⁷ AutoZone also claims that it was motivated to import from China because U.S. producers would not sell it bulk R-134a directly. They believe that U.S. producers did not want to undercut packagers who are some of their most important customers.⁸ Petitioners concede that R-134a supply was tight during 2010 and 2011 which caused prices to rise sharply.⁹ Mexichem disputes AutoZone’s contention that all U.S. producers would refuse to sell to them directly in bulk, claiming that only DuPont has such a policy.¹⁰

Table IV-2 presents data for U.S. imports of R-134a from China and all other sources. The lines labeled “U.S. Imports, primary HTS...” present data from official import statistics and the lines labeled “U.S. Imports, other HTS...” are compiled from importer questionnaire responses.

As shown, the volume of U.S. imports of R-134a from China increased by *** percent from 2011 to 2013, but was *** percent lower in January-June 2014 than in January-June 2013. The value of U.S. imports of R-134a from China decreased by *** percent from 2011 to 2013 and was *** percent lower in January-June 2014 than in January-June 2013. The volume of U.S. imports of R-134a from nonsubject countries decreased by *** percent from 2011 to 2013, but was *** percent higher in January-June 2014 than in January-June 2013. The value of U.S. imports of R-134a from nonsubject countries decreased by *** percent from 2011 to 2013, but was *** percent higher in January-June 2014 than in January-June 2013. The top five nonsubject sources of U.S. imports in descending order of 2013 volume is as follows: (1) United Kingdom, (2) Germany, (3) Russia, (4) Italy, and (5) Canada.¹¹

⁵ Chinese Respondents’ prehearing case brief, pp. 9-14 exhs.2 and 3

⁶ *Ibid.*, p. 9.

⁷ Hearing transcript, pp. 116 (Lammers).

⁸ *Ibid.*, p. 118 (Lammers).

⁹ DuPont’s posthearing brief, pp. 5-6 and hearing transcript, p. 50.

¹⁰ Petitioner’s posthearing brief, pp. 5-6.

¹¹ The largest sources of nonsubject imports during 2011-13 were the UK and Germany. Combined, these countries accounted for 86.3 percent of nonsubject imports in 2013. Importers of nonsubject R-134a reported that *** of their shipments in 2013 went to ***.

Table IV-2
R-134a: U.S. imports by source, 2011-13, January-June 2013 and January-June 2014

Item	Calendar year			January to June	
	2011	2012	2013	2013	2014
Quantity (short tons)					
U.S. imports, primary HTS, from-- China	11,465	12,868	11,419	6,843	8,623
All other sources	1,333	1,206	838	521	1,200
U.S. imports, other HTS, from-- China	***	***	***	***	***
All other sources	***	***	***	***	***
Total imports from China	***	***	***	***	***
Total imports from all other sources	***	***	***	***	***
Total imports	***	***	***	***	***
Value (1,000 dollars)					
U.S. imports, primary HTS, from-- China	91,719	57,644	40,338	26,430	28,062
All other sources	9,630	7,263	5,764	3,401	5,671
U.S. imports, other HTS, from-- China	***	***	***	***	***
All other sources	***	***	***	***	***
Total imports from China	***	***	***	***	***
Total imports from all other sources	***	***	***	***	***
Total imports	***	***	***	***	***
Unit value (dollars per short ton)					
U.S. imports, primary HTS, from-- China	8,000	4,480	3,532	3,862	3,254
All other sources	7,226	6,022	6,878	6,523	4,725
U.S. imports, other HTS, from-- China	***	***	***	***	***
All other sources	***	***	***	***	***
Total imports from China	***	***	***	***	***
Total imports from all other sources	***	***	***	***	***
Total imports	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires and official import statistics.

Table IV-3 presents data regarding the ratios of U.S. imports to production by source.

Table IV-3
R-134a: Ratios of U.S. imports to production by source of imports, 2011-13, January-June 2013 and January-June 2014

* * * * *

CRITICAL CIRCUMSTANCES

On October 20, 2014 Commerce issued its final affirmative determination of “critical circumstances” with regard to Chinese imports of R-134a sold at less than fair value by Bluestar, non-individually examined companies, and the PRC-wide entity.¹² In this investigation, if both Commerce and the Commission make affirmative final critical circumstances determinations, certain subject imports may be subject to antidumping duties retroactive by 90 days from May 29, 2014, the effective date of Commerce’s preliminary affirmative LTFV determination. Table IV-4 presents import data by month in the six months preceding the filing of the October 22, 2013 petition (May-October) as well as the following six months (November-April).

Because of the seasonality of the R-134a market described in Parts II and III of this report, an increase in imports from the November to April timeframe versus the May to October timeframe could be the result of increased demand of aftermarket distributors from winter through the early spring.¹³ The import volume of R-134a measured by official import statistics from China increased 6.2 percent from May 2011-October 2011 to November 2011-April 2012 and increased 33.4 percent from May 2012-October 2012 to November 2012-April 2013.¹⁴ The six month period before the petition was filed (May 2013-October 2013) compared to the six months afterward (November 2013-April 2014) shows a *** percent increase in volume measured by adjusted official data for imports from China.

Table IV-4
R-134a: U.S. imports from China, by month May 2013 – April 2014

* * * * *

Table IV-5 presents data on importers’ inventories in the months around the date antidumping duties were imposed (May 29, 2014), as well as, the same months in 2013.

Table IV-5
R-134a: U.S. importers’ inventories of R-134a from China, April-May 2013 and 2014

* * * * *

¹² 79 FR 62597, October 20, 2014 referenced in app. A. When petitioners file timely allegations of critical circumstances, Commerce examines whether there is a reasonable basis to believe or suspect that (1) either there is a history of dumping and material injury by reason of dumped imports in the United States or elsewhere of the subject merchandise, or the person by whom, or for whose account, the merchandise was imported knew or should have known that the exporter was selling the subject merchandise at LTFV and that there was likely to be material injury by reason of such sales; and (2) there have been massive imports of the subject merchandise over a relatively short period.

¹³ Hearing transcript, p. 127 (Dayton), p. 116 (Lammers), p. 15 (Schutzman) and Petitioner’s prehearing brief, p. 37.

¹⁴ Official U.S. Imports under HTS 2903.39.2020, without adjustments, increased 136.4 percent from May 2013-October 2013 to November 2013-April 2014.

NEGLIGENCE

The statute requires that an investigation be terminated without an injury determination if imports of the subject merchandise are found to be negligible.¹⁵ Negligible imports are defined in the Tariff Act of 1930, as amended, as imports from a country of merchandise corresponding to a domestic like product where such imports account for less than 3 percent of the volume of all such merchandise imported into the United States in the most recent 12-month period for which data are available that precedes the filing of the petition or the initiation of the investigation. However, if there are imports of such merchandise from a number of countries subject to investigations initiated on the same day that individually account for less than 3 percent of the total volume of the subject merchandise, and if the imports from those countries collectively account for more than 7 percent of the volume of all such merchandise imported into the United States during the applicable 12-month period, then imports from such countries are deemed not to be negligible.¹⁶ Imports from China between October 2012 and September 2013 accounted for 92.2 percent of total imports of R-134a by volume.¹⁷

APPARENT U.S. CONSUMPTION AND MARKET SHARES

Table IV-6 presents data on apparent U.S. consumption of R-134a. From 2011 to 2013, the quantity of apparent U.S. consumption of R-134a decreased by *** percent, but was *** percent higher in January-June 2014 than in January-June 2013. From 2011 to 2013, the value of apparent U.S. consumption decreased by *** percent, and was *** percent lower in January-June 2014 than in January-June 2013. Apparent U.S. consumption of R-134a in 2013 by volume was equivalent to *** percent of reported U.S. capacity.¹⁸

Data on U.S. market shares for R-134a are also presented in table IV-6. From 2011 to 2013, U.S. producers' market share decreased by *** percentage points based on quantity but increased by *** percentage points based on value. U.S. producers' market share in January-June 2014 was *** percentage points higher than in January-June 2013 based on quantity and *** percentage points higher based on value. Market share of U.S. imports from China increased by *** percentage points from 2011 to 2013 based on quantity but decreased by *** percentage points based on value. Market share of U.S. imports from China in January-June 2014 was *** percentage points lower than in January-June 2013 based on quantity and *** percentage points lower based on value. Market share of U.S. imports from nonsubject countries decreased by *** percentage points of U.S. market share from 2011 to 2013 based on quantity and *** percentage points based on value. Market share of U.S. imports from

¹⁵ 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)).

¹⁶ Section 771 (24) of the Act (19 U.S.C § 1677(24)).

¹⁷ Monthly official Commerce statistics for HTS 2903.39.2020.

¹⁸ U.S. producers report capacity of *** short tons in 2013, Table III-3.

nonsubject countries in January-June 2014 was *** percentage points higher than in January-June 2013 based on quantity and *** percentage points higher based on value.

Table IV-6
R-134a: U.S. shipments of domestic R-134a, U.S. imports, and apparent U.S. consumption and market shares, 2011-13, January-June 2013, and January-June 2014

* * * * *

U.S. shipments of imports from China by market segment are presented in table IV-7. The automotive refrigerant aftermarket is the primary segment for imports from China, accounting for no less than *** percent of total U.S shipment volume throughout the period of investigation. The “other refrigerants” segment accounts for all of the remaining U.S. shipments of imports from China during the same period.¹⁹ U.S. shipments of imports from all other sources by segment are presented in table IV-8.²⁰

Table IV-7
R-134a: U.S. shipments of imports from China by segment, 2011-13, January-June 2013, and January-June 2014¹

* * * * *

Table IV-8
R-134a: U.S. shipments of imports from all other sources by segment, 2011-13, January-June 2013, and January-June 2014

* * * * *

U.S. shipments of imports to the automotive aftermarket by packaging type in 2013 are presented in table IV-9.

Table IV-9
R-134a: U.S. importers’ shipments of automotive aftermarket sales from China by packaging type

* * * * *

U.S. importer shipments to the automotive aftermarket by nature of operations and packaging type in 2013 are presented in table IV-10.

¹⁹ The U.S. producers reported the following other refrigerants: ***. Compiled responses to U.S. producer questionnaires, question II-8.

²⁰ See table I-3 for comparison of import shipments versus domestically produced shipments.

Table IV-10
R-134a: U.S. importers' shipments to the automotive aftermarket by nature of operations and packaging type

* * * * *

PART V: PRICING DATA

FACTORS AFFECTING PRICES

Raw material costs

The primary raw materials used in the production of R-134a are hydrogen fluoride (HF) which is made from fluorspar, and the chlorocarbon, trichloroethylene (TCE).¹ U.S. producers' aggregate per-unit raw material costs increased by *** percent from 2011 to 2012, then decreased by *** percent from 2012 to 2013. Costs increased slightly, by *** percent between January-June 2013 and January-June 2014.²

All three U.S. producers reported that input prices had affected R-134a prices. Petitioner also reported that China had imposed export quotas and a tax on fluorspar, since removed, and now has imposed an export tax on HF, making these inputs more expensive outside China.³ Respondents reported that in 2010 and in 2011 both HF and chlorocarbons were in short supply resulting in rising prices.⁴ All three producers reported that raw material prices increased during the period and also reported being unable to recover costs by raising their R-134a prices. ***.⁵ One importer reported that there was an HF/fluorspar shortage in 2011 which drove up R-134a prices, but that after 2011 prices fell and then leveled off. *** reported that HF prices have increased while TCE prices have fluctuated.

U.S. inland transportation costs

All three responding U.S. producers and 31 of 34 responding importers reported that they typically arrange transportation to their customers. U.S. producers reported that their U.S. inland transportation costs ranged from 2 to 6 percent while most responding importers reported costs of 5 percent or less.

¹ ***.

² Individual producer trends varied, ***.

³ Conference transcript, p. 9 (Schagrin). As noted in part I, China accounted for over 60 percent of global production of fluorspar in 2011 and 2012, and Mexico accounted for 16 to 18 percent.

⁴ Chinese respondents' postconference brief, p. 5. Chinese respondents' prehearing brief, exh. 2, ***. citing global shortages of PCE, TCE, and HF.

⁵ It reported ***.

PRICING PRACTICES

Pricing methods

Most firms reported using transaction-by-transaction sales. All three responding producers reported setting prices on both transaction-by-transaction and contract bases, one reported set price lists, and one reported setting price competitively. Most responding importers (23 of 35) reported setting prices on a transaction-by-transaction basis, nine reported using contracts, nine reported using set price lists, and seven reported using “other” methods including meeting competition and retail market prices (table V-1).

Table V-1

R-134a: U.S. producers’ and importers’ reported price setting methods, by number of responding firms¹

Method	U.S. producers	U.S. importers
Transaction-by-transaction	3	23
Contract	3	9
Set price list	1	9
Other	2	7

¹ The sum of responses down will 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.

Most import sales and the majority of U.S. producers’ sales were on a spot basis (table V-2). All three U.S. producers also reported sales via short-term contracts with a typical duration of one year. *** producers *** reported long-term contract sales in 2013, with a typical duration of three years. Twelve of 34 purchasers reported entering into contracts for R-134a of one year or longer.⁶ As noted in part II, automotive OEMs typically purchase R-134a via annual or multi-year contracts while aftermarket sales are typically on a spot basis.

Table V-2

R-134a: U.S. producers’ and importers’ shares of U.S. commercial shipments by type of sale, 2013

Type of sale	U.S. producers	U.S. importers
		China
Long-term contracts	12.2	0.0
Short-term contracts	36.2	24.7
Spot sales	51.6	75.3

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

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

⁶ Purchasers were asked to report the year and quarter in which they most recently entered into contracts for R-134a. ***.

Sales terms and discounts

All three U.S. producers and most responding importers (21 of 30) reported quoting prices on a delivered basis. One producer (***) reported no discounts while the other two producers reported rebate programs and/or early payment discounts.⁷ The majority of responding importers (20 of 34) reported offering no discounts, although 12 reported quantity discounts and 6 reported total volume discounts. All U.S. producers and 18 of 30 responding importers reported sales terms of net 30 days, although producers and importers also offer other sales terms.

Price leadership

Purchasers reported that the following suppliers were price leaders in the R-134a market: DuPont (listed by 15 purchasers), Mexichem (8), Chinese suppliers (4), and Arkema (4). In addition, purchasers also named major manufacturers in general, and distributors including Honeywell, IDQ, National Refrigerant, and Technical Chemical. *** reported that while OEM bulk pricing is not published; Arkema, DuPont, Honeywell, and Mexichem periodically issue general market price letters regarding aftermarket refrigerants.

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 R-134a products shipped to unrelated U.S. customers during January 2011-June 2014:

Product 1.-- R-134a in bulk sold to distributors.

Product 2.-- R-134a in bulk sold to retailers.

Product 3.-- R-134a in bulk sold to end users for foam expansion, foam blowing, and aerosol applications.

Product 4.-- R-134a in 30-pound containers sold to distributors.

Product 5.-- R-134a in 30-pound containers sold to retailers.

Product 6.-- R-134a in 12-ounce containers sold to distributors.

Product 7.-- R-134a in 12-ounce containers sold to retailers.

Three U.S. producers⁸ and 22 importers⁹ provided usable pricing data, although not all firms reported pricing for all products for all quarters. Price data reported by these firms accounted for approximately 60.5 percent of U.S. producers' U.S. commercial shipments of R-

⁷ ***.

⁸ All three U.S. producers reported sales of products ***.; ***. also reported sales of products ***.; and no U.S. producer reported sales of product 2 (bulk sales to retailers).

134a and 65.9 percent of U.S. importers' U.S. commercial shipments of imports from China during January 2011-June 2014.¹⁰

The following tabulation shows the distribution of quantities of pricing data reported by U.S. producers and by importers, by pricing product.

* * * * *

Price data for products 1-7 are presented in tables V-3 to V-9 and figures V-1 to V-7. Sales quantities of most products were much higher in the first half of each of the year than in the second half of the year, reflecting seasonality in sales of R-134a used in air conditioners. Sales of product 3, R-134a for certain non-refrigerant uses, did not show these seasonal trends.

Table V-3

R-134a: Weighted-average f.o.b. prices and quantities of domestic and imported product 1¹ and margins of underselling/(overselling), by quarter, January 2011-June 2014

* * * * *

Table V-4

R-134a: Weighted-average f.o.b. prices and quantities of domestic and imported product 2¹ and margins of underselling/(overselling), by quarter, January 2011-June 2014

* * * * *

Table V-5

R-134a: Weighted-average f.o.b. prices and quantities of domestic and imported product 3¹ and margins of underselling/(overselling), by quarter, January 2011-June 2014

* * * * *

Table V-6

R-134a: Weighted-average f.o.b. prices and quantities of domestic and imported product 4¹ and margins of underselling/(overselling), by quarter, January 2011-June 2014

* * * * *

(...continued)

⁹ Importers reported pricing data for all products except product 3 (bulk sales to end users for foam expansion, foam blowing, and aerosol applications). Useable price data were received from importers ***.

¹⁰ Price data for nonsubject countries were not collected since such imports account for a relatively small percentage of total imports. Subject import price data were not collected for sales of R-134a to automotive OEMs and other refrigerant OEMs and for sales to consumers by retailers that import R-134a. Import value data were also not collected for the pricing products; therefore retailers and other firms that import R-134a directly and either do not resell the product or sell directly to consumers did not provide pricing data.

Table V-7

R-134a: Weighted-average f.o.b. prices and quantities of domestic and imported product 5¹ and margins of underselling/(overselling), by quarter, January 2011-June 2014

* * * * *

Table V-8

R-134a: Weighted-average f.o.b. prices and quantities of domestic and imported product 6¹ and margins of underselling/(overselling), by quarter, January 2011-June 2014

* * * * *

Table V-9

R-134a: Weighted-average f.o.b. prices and quantities of domestic and imported product 7¹ and margins of underselling/(overselling), by quarter, January 2011-June 2014

* * * * *

Figure V-1

R-134a: Weighted-average prices and quantities of domestic and imported product 1, by quarter, January 2011-June 2014

* * * * *

Figure V-2

R-134a: Weighted-average prices and quantities of imported product 2, by quarter, January 2011-June 2014

* * * * *

Figure V-3

R-134a: Weighted-average prices and quantities of domestic product 3, by quarter, January 2011-June 2014

* * * * *

Figure V-4

R-134a: Weighted-average prices and quantities of domestic and imported product 4, by quarter, January 2011-June 2014

* * * * *

Figure V-5

R-134a: Weighted-average prices and quantities of domestic and imported product 5, by quarter, January 2011-June 2014

* * * * *

Figure V-6

R-134a: Weighted-average prices and quantities of domestic and imported product 6, by quarter, January 2011-June 2014

* * * * *

Figure V-7

R-134a: Weighted-average prices and quantities of domestic and imported product 7, by quarter, January 2011-June 2014

* * * * *

Price trends

Prices for all products generally declined over the period of investigation. The largest price declines were typically in the second half of 2011. As noted earlier in Part II, 2010 and 2011 were reportedly periods of high R-134a prices because of tight supply and raw material shortages. Petitioner and respondents both reported that prices increased more in the automotive aftermarket than they did in other markets.¹¹

Table V-10 summarizes the price trends, by country and by product. As shown in the table, prices for all products except products 2 and 3 declined by approximately *** to *** percent between the first quarter of 2011 and the second quarter of 2014. For product 3, the non-refrigerant product for which there were no reported Chinese sales, U.S. producers' prices declined by approximately *** percent. For product 2 (bulk sales to retailers), Chinese import prices declined by *** percent from first quarter 2011 to first quarter 2014;¹² U.S. producers reported no sales to this segment.

AutoZone provided its average annual retail sales prices for R-134a in 30-pound cylinders and in 12-ounce cans.¹³ It reported that its retail prices are benchmarked to its costs of sourcing products. It also reported that 12-ounce can prices are impacted less by changes in the price of R-134a than are cylinder prices because of higher packaging costs for 12-ounce cans. From 2011 to 2014, AutoZone's retail prices for 30-pound cylinders *** and its prices for 12-ounce cans ***.

Table V-10

R-134a: Summary of weighted-average f.o.b. prices for products 1-7 from the United States and China

* * * * *

Price comparisons

As shown in table V-11, prices for R-134a imported from China were below those for U.S.-produced product in 31 of 66 instances; margins of underselling ranged from 0.5 to 47.5

¹¹ Hearing transcript, p. 11 (Rubin).

¹² No sales were reported in second quarter 2014.

¹³ AutoZone's posthearing brief, pp. 1-3.

percent. In the remaining 35 instances, prices for R-134a from China were between 1.2 and 77.2 percent above prices for the domestic product.

As shown in table V-12, the number of instances of underselling and overselling, and the associated import volumes varied considerably by pricing product (i.e., packaging and channel of distribution). Imported product was priced lower than domestic product in most instances on the highest volume import products (products 4 and 6). Imports of product 4 (30-pound containers sold to distributors), which accounted for almost two-thirds of the volume of quarterly pricing data reported by importers, and product 6 (12-ounce cans sold to distributors), which accounted for approximately 14 percent of import pricing data, undersold domestic product in the majority of instances. Product 5 (30-pound containers sold to retailers), which accounted for 14 percent of import pricing data, showed more mixed underselling and overselling by imports. Product 1 (bulk sales to distributors) and product 7 (12-ounce cans sold to retailers) showed more instances of overselling by imports than underselling.

Table V-11

R-134a: Instances of underselling/overselling and the range and average of margins, January 2011-June 2014

Source	Underselling			Overselling		
	Number of instances	Range (percent)	Average margin (percent)	Number of instances	Range (percent)	Average margin (percent)
China	31	0.5 to 47.5	9.4	35	(1.2) to (77.2)	(21.2)

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

Table V-12

R-134a: Underselling/overselling import quantities, by product, January 2011-June 2014

* * * * *

LOST SALES AND LOST REVENUE

All three U.S. producers reported instances of lost sales and lost revenue due to competition from imports of R-134a from China.¹⁴ The *** lost sales allegations totaled \$*** and involved ***short tons of R-134a and the *** lost revenue allegations totaled \$*** and involved *** short tons of R-134a. Staff received responses to the allegations from 14 of the 27 named purchasers. Allegations and responses from purchasers are shown in tables V-13 and V-14; additional information is provided in the text.

¹⁴ ***

***.

***15

***.

***.

***.

***.

***.

***.

*** 16

***.

***.

***.

*** 17

***18

15 ***.

16 ***.

17 ***.

18 ***.

***¹⁹ ***²⁰

Table V-13

R-134a: U.S. producers' lost sales allegations

* * * * *

Table V-14

R-134a: U.S. producers' lost revenue allegations

* * * * *

¹⁹ ***

²⁰ ***

PART VI: FINANCIAL EXPERIENCE OF U.S. PRODUCERS

BACKGROUND

Three U.S. producers, Arkema, DuPont, and Mexichem, reported their financial results on R-134a.¹ While no U.S. producer represented the majority of overall R-134a revenue, *** accounted for the largest share of total sales volume (*** percent), followed by *** (*** percent), and *** (***). As indicated in a previous section of this report, the U.S. producers of R-134a are all subsidiaries of multinational corporations.^{2 3}

Mexichem was the *** U.S. producer to report that it purchased an input from a related party.⁴ While acknowledging the Commission's request that the cost of the input be adjusted to eliminate relevant inter-company profit or loss, Mexichem stated that ***.⁵ As further described by Mexichem, ***.⁶ See also footnote 8.

With regard to input purchases from related parties in general, the Commission's standard practice requires the elimination of the related party's profit or loss from the relevant COGS reported in the financial section of the U.S. producer questionnaire. The intent of this adjustment is for the related company's actual cost to be recognized in determining the financial

¹ All three U.S. producers reported their annual financial results on a calendar-year basis. Arkema and DuPont's financial results were reported on the basis of GAAP, while Mexichem reported its financial results on the basis of International Financial Reporting Standards (IFRS).

² Arkema's U.S. R-134a operations are part of the company's Fluorochemicals business unit and Industrial Specialties segment. Arkema 2013 Annual Report, p. 6. DuPont's U.S. R-134a operations are part of its Chemicals and Fluoroproducts business unit Performance Chemicals segment. DuPont 2013 10-K, p. 2 and pp. 4-5. Mexichem's U.S. R-134a operations are part of the company's Fluorine Chain segment. Mexichem 2012 Annual Report, p. 26.

³ DuPont's Performance Chemicals business unit will be spun-off (or otherwise separated from the company) in mid-2015. As described by a public source, "in order to reduce the impact of . . . cyclical volatility, which is inherent to the performance chemicals business, on its portfolio, DuPont decided to spin-off the division into a separate company in October last year {2013}. During the first quarter {2014} earnings call, the company officials announced that the spin-off process is on-track and is expected to complete by mid-next year. DuPont expects to spend around \$170 million in the planned separation of its performance chemicals business this year. Most of the expense would be incurred to prepare audited financial statements, build the necessary standalone information technology systems, and create separate legal structures around the world." *Shift In Agricultural Sales Timing, Lower Chemical Prices Weigh On DuPont's Earnings Growth*, <http://www.forbes.com/sites/greatspeculations/2014/04/24/shift-in-agricultural-sales-timing-lower-chemical-prices-weigh-on-duponts-earnings-growth/>, retrieved August 27, 2014.

⁴ ***. Mexichem U.S. producer questionnaire, response to III-7. As described in Mexichem's 2012 Annual Report, "Mexichem is the only company in the world that has a fully vertically integrated value-added chain, from the extraction of fluorospar through to the production of hydrofluoric acid, to the refrigerant gases produced by Mexichem in America, Europe and Asia." Mexichem's 2012 Annual Report, p. 26.

⁵ ***. *** U.S. producer questionnaire, response to question III-8.

⁶ September 9, 2014 e-mail with attachment from *** to USITC auditor.

results reported to the Commission. As described in footnote 7 and as presented in this section of the report, ***.^{7 8} Appendix D presents the industry’s financial results without the Commission’s input adjustment for related party profit or loss (see footnote 8).

OPERATIONS ON R-134A

Income-and-loss data for the U.S. industry’s R-134a operations are presented in table VI-1. Selected company-specific financial information is presented in table VI-2. A variance analysis of these financial results is presented in table VI-3.⁹ Appendix D presents these tables without the Commissions input adjustment for related party profit or loss (see footnote 7 and 8).

**Table VI-1
R-134a: Results of operations of U.S. producers, 2011-13, January-June 2013, and January-June 2014**

* * * * *

**Table VI-2
R-134a: Results of operations of U.S. producers, by firm, 2011-13, January-June 2013, and January-June 2014**

* * * * *

**Table VI-3
R-134a: Variance analysis on the operations of U.S. producers, 2011-13, January-June 2013, and January-June 2014**

* * * * *

⁷ ***. August 29, 2014 submission (including revised table III-9 and III-10a) by Schagrin Associates on behalf of ***. ***. September 9, 2014 e-mail with attachment to *** from USITC auditor. ***.

⁸ ***. Ibid.

⁹ The Commission’s variance analysis is calculated in three parts: sales variance, cost of goods sold (COGS) variance, and SG&A expenses variance. Each part consists of a price variance (in the case of the sales variance) or a cost variance (in the case of the COGS and SG&A expenses variances) and a volume (quantity) variance. The sales or cost variance is calculated as the change in unit price/cost times the new volume, while the volume variance is calculated as the change in volume times the old unit price/cost. Summarized at the bottom of table VI-3, the price variance is from sales, the cost/expense variance is the sum of those items from COGS and SG&A, respectively, and the net volume variance is the sum of the price, COGS, and SG&A volume variances. All things being equal, a stable overall product mix enhances the utility of the Commission’s variance analysis. In general, the information reported to the Commission does not appear to indicate that there were substantial changes in product mix during the period.

Revenue

R-134a revenue primarily reflects commercial sales (***) of total sales volume during the full-year period), followed by transfers (***) of total sales volume during the full-year period).¹⁰ Internal consumption, the smallest revenue category, ranged from (***) of total sales volume during the full-year period).¹¹

An important feature of the U.S. industry's financial results is the consecutive declines in total R-134a revenue. The revenue section of the variance analysis (table VI-3) shows that the declines in total revenue were primarily due to negative price variances; i.e., while a negative sales volume variance between 2011-12 compounded the decline average sales value, modest positive sales volume variances partially offset continued negative price variances in subsequent periods.

Sales Volume

As shown in table VI-2, the directional trend of company-specific sales volume was not uniform: ***,¹² ***,¹³ while ***. As described by Mexichem, ***.¹⁴

Sales Value

With the exception of ***, the directional trend of company-specific average sales values were uniformly negative which in turn generally explains the negative price variances noted above.

As shown in table VI-2 and when considering commercial sales, *** reported the *** average value for most of the period, *** for the full-year period was consistently *** compared to its average ***,¹⁵ while *** was consistently *** than its ***.¹⁶ ***.

¹⁰ ***. August 29, 2014 submission (including revised table III-9 and III-10a) by Schagrín Associates on behalf of Mexichem. ***. September 3, 2014 submission (including revised table III-10a) by Cassidy Levy on behalf of ***.

¹¹ ***. August 28, 2014 e-mail with attachment from *** to USITC auditor. ***. September 3, 2014 submission (including revised table III-10a) by Cassidy Levy on behalf of ***.

¹² ***. *** U.S. producer questionnaire, response to question II-2. ***. September 3, 2014 submission (including revised table III-10a) by Cassidy Levy on behalf of ***.

¹³ ***. August 28, 2014 e-mail with attachment from *** to USITC auditor.

¹⁴ ***. *** U.S. producer questionnaire, response to II-2. ***. September 9, 2014 submission by Schagrín Associates on behalf of ***.

¹⁵ *** (see also footnote 10). September 9, 2014 e-mail with attachments (incl. revised table II-7a, II-8, III-10a) from *** to USITC auditor.

¹⁶ ***. August 29, 2014 submission (including revised table III-9 and III-10a) by Schagrín Associates on behalf of ***.

Cost of goods sold and gross profit

*** reported that R-134a is effectively the only product produced at the relevant manufacturing facilities.¹⁷ ***.¹⁸ ***.¹⁹

Raw material

*** as the primary raw materials in the production of R-134a,²⁰ while ***.²¹

As shown in table VI-1, total raw material costs as a share of COGS declined somewhat during the period: from a high of *** percent of COGS in 2011 to a low of *** percent of COGS in interim 2014. This pattern generally reflects a combination of somewhat lower average raw material costs after 2012 and a corresponding increase in average direct labor and other factory costs.

Table VI-2 shows that company-specific average raw material costs were not directionally uniform; e.g., *** reported higher average raw material costs in interim 2014 compared to interim 2013, while *** average raw material cost was somewhat lower. Additionally and although company-specific average raw material costs were generally in a similar range, *** average raw material cost tended to be somewhat *** compared to the other U.S. producers. ***.

Direct labor and other factory costs

Arkema's description of its primary other factory costs indicated that the majority ***.²² DuPont stated that its other factory costs ***.²³ As described by Mexichem ***.²⁴ At the Commission's hearing, U.S. industry witnesses reiterated that the high level of fixed costs, in conjunction with changes in throughput, plays an important role in determining average R-134a COGS.²⁵

¹⁷ ***. September 8, 2014 e-mail from *** to USITC auditor. *** treatment of byproduct revenue is an accepted method (see *Cost Accounting Using a Cost Management Approach*, fifth edition, p. 261, p. 263), ***. September 9, 2014 e-mail with attachment from *** to USITC auditor. September 9, 2014 e-mail with attachment to *** from USITC auditor.

¹⁸ ***. *** U.S. producer questionnaire, response to question III-5.

¹⁹ ***. September 3, 2014 submission (including revised table III-10a) by Cassidy Levy on behalf of ***.

²⁰ ***. August 28, 2014 e-mail with attachment from *** to USITC auditor.

²¹ ***. September 3, 2014 submission (including revised table III-10a) by Cassidy Levy on behalf of ***.

***. August 29, 2014 submission (including revised table III-9 and III-10a) by Schagrín Associates on behalf of ***.

²² ***. September 3, 2014 submission (including revised table III-10a) by Cassidy Levy on behalf of Arkema. ***. Ibid.

²³ August 28, 2014 e-mail with attachment from *** to USITC auditor.

²⁴ August 29, 2014 submission (including revised table III-9 and III-10a) by Schagrín Associates on behalf of ***. *** (see footnote 17).

²⁵ Hearing transcript, p. 22 (Pacillo), p. 41 (Rubin).

As shown in table VI-1, other factory costs and direct labor were similar in terms of their share of total COGS which, in large part, is ***.²⁶ Also and as noted previously, the adjustment to recognize *** reduces total other factory costs.

Gross profit

The contraction in the industry's gross profit ratio (total gross profit or loss divided by total revenue) reflects consecutive declines in average sales value combined with a fluctuating average COGS which ended somewhat higher as compared to the beginning of the period. As shown in table VI-2, *** consistently reported the highest gross profit ratios, followed by *** which was also *** company to report a gross loss during the period.²⁷ Given the range of gross profit ratios reported, U.S. producers were asked to comment on the pattern and indicate what they considered a normal/expected range in terms of gross profit ratio for R-134a. Their responses were as follows:

Arkema stated that ***.²⁸

DuPont stated that ***.²⁹

As described by Mexichem, ***.³⁰

²⁶ ***. August 28, 2014 e-mail with attachment from *** to USITC auditor.

²⁷ Appendix D shows that, without the Commission's input adjustment for related party profit, ***.

²⁸ September 3, 2014 submission (including revised table III-10a) by Cassidy Levy on behalf of ***.

²⁹ August 28, 2014 e-mail with attachment from *** to USITC auditor. DuPont also referenced p. 31 of its 2014 10-Q (Q2) which described the relevant business as follows: "Performance Chemicals - Second quarter 2014 segment sales of \$1.7 billion decreased \$0.1 billion, or 8 percent, due primarily to lower prices in refrigerants for mobile and stationary applications as well as titanium dioxide and the impact of portfolio changes. Second quarter refrigerant prices for mobile and stationary applications were lower as prices for R22 have not recovered from the prior year following the increase in production allocations granted by the U.S. Environmental Protection Agency. In addition, HFC prices, principally 134a, were under pressure due to heavy imports. Slightly higher titanium dioxide volumes were more than offset by lower volumes in Chemicals and Fluoroproducts. PTOI {pre-tax operating income} of \$232 million decreased \$36 million, or 13 percent, due to lower prices and charges of \$19 million relating to the 2014 restructuring plan, partially offset by productivity improvements." DuPont 2014 10-Q (Q2), p. 31. With regard to the above-referenced "2014 restructuring plant", DuPont's 10-Q also stated that "{i}n the second quarter 2014, DuPont commenced a restructuring plan to reduce residual costs associated with the separation of its Performance Chemicals segment and to improve productivity across all businesses and functions. The restructuring plan is a part of the company's broad-based redesign initiative to streamline and further leverage global business support for its more focused portfolio of businesses post the separation of Performance Chemicals." DuPont 2014 10-Q (Q2), p. 8 (note 3). With regard to the "spin-off" of this segment (see footnote 3), DuPont's 10-Q stated that "{d}uring the three and six months ended June 30, 2014, the company incurred \$35 {million} and \$51 {million} of costs associated with the transaction which were reported in other operating charges in the interim Consolidated Income Statements. These transaction costs primarily relate to professional fees associated with preparation of regulatory filings and separation activities within finance, legal and information system functions." DuPont 2014 10-Q (Q2), p. 8 (note 2).

***. September 9, 2014 e-mail with attachments (incl. revised table II-7a, II-8, III-10a) from *** to USITC auditor.

With regard to differences in company-specific profitability (see table VI-2), ***. Dupont also noted that, while it sells branded R143a 12-oz. cans and incurs associated costs for cans and can-filling lines, Arkema and Mexichem do not. Related to this point ***.³¹

SG&A expenses and operating income

As shown in table VI-2, the relatively ***.³² As indicated in footnote 29, ***.

Table VI-2 shows that *** generally reported SG&A expense ratios which were in a similar range, while *** SG&A expense ratios were consistently higher. In addition to describing the composition of reported SG&A expenses, U.S. producers generally indicated that they considered their SG&A expense ratios to be within the expected range.^{33 34 35}

CAPITAL EXPENDITURES AND RESEARCH AND DEVELOPMENT EXPENSES

Table VI-4 presents capital expenditures and research and development (R&D) expenses by firm.

Table VI-4
R-134a: Capital expenditures and research and development expenses of U.S. producers, 2011-13, January-June 2013, and January-June 2014

* * * * *

Mexichem, which accounted for *** company-specific share of capital expenditures during the period (**% percent), reported ***.³⁶ While there was some period-to-period variability, ***. As shown in table VI-4, R&D expenses were reported by *** throughout the period. ***.^{37 38}

(...continued)

³⁰ August 29, 2014 submission (including revised table III-9 and III-10a) by Schagrín Associates on behalf of ***. ***.

³¹ DuPont's posthearing brief (Part II), p. 18 (response to Commissioner Schmidlein), pp. 26-27 (response to Commissioner Williamson).

³² September 9, 2014 e-mail with attachments (incl. revised table II-7a, II-8, III-10a) from *** to USITC auditor

³³ ***. September 3, 2014 submission (including revised table III-10a) by Cassidy Levy on behalf of ***.

³⁴ In addition to identifying the primary SG&A expense categories described previously, *** stated that ***. August 28, 2014 e-mail with attachment from *** to USITC auditor.

³⁵ *** identified the following items as the primary SG&A expense categories: ***. August 29, 2014 submission (including revised table III-9 and III-10a) by Schagrín Associates on behalf of ***.

³⁶ ***. Ibid.

³⁷ ***. September 3, 2014 submission (including revised table III-10a) by Cassidy Levy on behalf of ***.

CAPITAL AND INVESTMENT

The Commission requested U.S. producers of R-134a to describe any actual or potential negative effects of imports of R-134a from China on their firms' growth, investment, ability to raise capital, development and production efforts, or the scale of capital investments. The responses of U.S. producers are presented below.

Actual negative effects

Arkema	***.
DuPont	***.
Mexichem	***.

Anticipated negative effects

Arkema	***.
DuPont	***.
Mexichem	***.

(...continued)

³⁸ ***. *** U.S. producer questionnaire, response to III-16.

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 factors¹--

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

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

- (VI) *the potential for product-shifting if production facilities in the foreign country, which can be used to produce the subject merchandise, are currently being used to produce other products,*
- (VII) *in any investigation under this title which involves imports of both a raw agricultural product (within the meaning of paragraph (4)(E)(iv)) and any product processed from such raw agricultural product, the likelihood that there will be increased imports, by reason of product shifting, if there is an affirmative determination by the Commission under section 705(b)(1) or 735(b)(1) with respect to either the raw agricultural product or the processed agricultural product (but not both),*
- (VIII) *the actual and potential negative effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the domestic like product, and*
- (IX) *any other demonstrable adverse trends that indicate the probability that there is likely to be material injury by reason of imports (or sale for importation) of the subject merchandise (whether or not it is actually being imported at the time).²*

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

THE INDUSTRY IN CHINA

The Commission issued foreign producer questionnaires to seven firms listed in the petition and believed to produce R-134a in China. The Commission received responses from five firms, (1) Shandong Dongyue Chemical Co. Ltd. ("Shandong"); (2) Jiangsu Bluestar Green

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."

Technology Co. Ltd. (formerly Jiangsu Kangtai Fluorine Chemical Co. Ltd. (“Bluestar”); (3) Zhejiang Sanmei Chemical Ind. Co., Ltd. (“Sanmei”); (4) Sinochem Environmental Protection Chemicals (Taicang) Co., Ltd. (“Sinochem”) and; (5) Zhejiang Quhua Fluor-Chemistry Co.,Ltd (“Juhua”). These firms reported estimates that in 2013, they accounted for approximately 96.5 percent of overall production of R-134a in China and 83 percent of all exports of R-134a to the United States. ***³, a Chinese exporter, completed a producer/exporter questionnaire in the preliminary phase of the investigation but did not complete one in the final phase because their exports are included in Chinese producer questionnaire responses.⁴

Table VII-1 presents summary data on producers from China by firm in 2013.

Table VII-1
R-134a: Summary data on producers from China, by firm, 2013

Firm	Production (short tons)	Share of reported production (percent)	Exports to the United States (short tons)	Share of reported exports to the United States (percent)	Total shipments (short tons)	Share of firm's total shipments exported to the United States (percent)
Jiangsu Bluestar Green Technology Co. Ltd (Formerly Jiangsu Kangtai Fluorine Chemical Co. Ltd.)	***	***	***	***	***	***
Shandong Dongyue Chemical Co Ltd	***	***	***	***	***	***
Sinochem Environmental Protection Chemicals (Taicang) Co., Ltd	***	***	***	***	***	***
Zhejiang Quhua Fluor-Chemistry Co.,Ltd	***	***	***	***	***	***
Zhejiang Sanmei Chemical Ind.Co.,Ltd.	***	***	***	***	***	***
Total	***	***	***	***	***	***

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

Sanmei

Sanmei reported that *** percent of its total sales in the most recent fiscal year were sales of R-134a. In 2013 *** percent of Sanmei’s total shipments of R-134a were exported to the United States, *** percent of its total shipments were to its home market, and *** percent of its total shipments were to export markets such as ***. Sanmei’s exports to the United

³ ***, a U.S. importer, repackager of R-134a. Weitron, Inc. is *** U.S. importer of R-134a; they also purchase R-134a in bulk from Mexichem and Arkema’s U.S. plants. Hearing transcript, pp. 125-126 (Dayton).

⁴ Counsel for *** explained that, “***.” See September 14, 2014 email from *** to Enck.

States *** percent from 2011 to 2013 but they are expected to *** by 2015. Sanmei's capacity *** percent from 2011 to 2013 and is projected to *** percent from 2013 levels in 2014.⁵ Its production *** percent from 2011 to 2013, and is projected to *** percent further in 2014. Sanmei reported that its top U.S. importer of R-134a is *** which accounted for *** percent of the firm's 2013 U.S. exports.

Sinochem

Sinochem reported that *** percent of its total sales in the most recent fiscal year were sales of R-134a. In 2013, *** percent of Sinochem's total shipments of R-134a were exported to the United States, *** percent of its total shipments were to its home market, and *** percent of its total shipments were to export markets such as ***. Sinochem's exports to the United States *** percent from 2011 to 2013, but projects them to *** percent from 2013 to 2014 and are expected to ***. Sinochem's reported capacity *** percent from 2011 to 2013 and is projected to *** through 2014 and 2015.⁶ Its production *** percent from 2011 to 2013 and it projects an *** percent of its 2013 levels in 2014 and 2015. Sinochem reported its largest U.S. importer was *** which accounted for *** percent of the firm's U.S. exports.

Bluestar

Bluestar reported that *** percent of its total sales in the most recent fiscal year were sales of R-134a. In 2013, *** percent of Bluestar's total shipments of R-134a were exported to the United States, *** percent of its total shipments were to its home market, and *** percent of its total shipments were to markets such as ***. Bluestar's exports to the United States *** percent from 2011 to 2013, and Bluestar projects U.S. exports to *** by 2015. Bluestar's capacity *** from 2011 to 2013 and is not projected to change through 2015. Its production *** percent from 2011 to 2013. Bluestar is projected to *** percent between 2013 and 2014 and *** percent between 2014 and 2015. Bluestar reported that its top U.S. importer was *** , which accounted for *** percent of its 2013 U.S. exports.

Juhua

Juhua reported that *** percent of its total sales in its most recent fiscal year were represented by sales of R-134a. In 2013, *** percent of Juhua's total shipments of R-134a were exported to the United States, *** percent of its total shipments were to its home market, and *** percent of its total shipments were to export markets such as ***. Juhua's exports to the United States *** percent from 2011 to 2013, but projects them to ***. Juhua's reported capacity *** from 2011 to 2013 and is projected to ***.⁷ Its production *** percent from 2011

⁵ Sanmei opened its first production line in Wuyi County, Zhejiang Province in April 2011. Their wholly owned subsidiary, Jiangsu Sanmei Chemical & Industrial Co., Ltd. opened a plant in May 2013 which increased average R-134a production capacity from *** short tons in 2012 to *** short tons in 2013.

⁶ Sinochem indicated that it, ***.

⁷ On May 17, 2012 Juhua opened an R-134a production line in Zhejiang Province called Quzhou Juxin Fluor-Chemistry Co., Ltd.

to 2013 and is projected to ***. Juhua reported that *** is its top U.S. importer accounting for *** percent of its U.S. exports in 2013.

Shandong

Shandong reported that *** percent of its total sales in the most recent fiscal year were sales of R-134a. In 2013, *** percent of Shandong's total shipments of R-134a were exported to the United States, *** percent of its total shipments were to its home market, and *** percent of its total shipments were to export markets such as ***. Shandong's exports to the United States *** percent from 2011 to 2013, but projects them to *** percent from 2013 to 2014 and *** percent from 2014 to 2015. Shandong's reported capacity *** from 2011 to 2013 and is projected to *** through 2014 and 2015. Its production *** percent from 2011 to 2013 and projects a *** percent of its 2013 levels in 2014 but it projects an *** percent from 2014 to 2015. Shandong reported its largest U.S. importer was *** which accounted for *** percent of the firm's U.S. exports.

Bailian

Bailian did not submit a questionnaire response in the final phase of the investigation. In the preliminary phase Bailian reported that *** percent of its total sales in the most recent fiscal year were sales of R-134a. Since 2010, Bailian has not exported any R-134a to the United States and projects this will remain true through at least 2014.⁸

All Chinese Producers

Table VII-2 presents cumulative data for reported capacity, production, and shipments of R-134a for all reporting producers in China. Cumulatively, the volume of Chinese producer exports to the U.S. decreased by *** percent from 2011 to 2013. Chinese producers anticipate exports to the U.S. to decrease *** percent from 2013 to 2015. Capacity in China increased by *** percent from 2011 to 2013 and is projected to increase by *** percent from 2013 to 2015.⁹ Chinese producers' production increased by *** percent from 2011 to 2013 and is projected to increase *** percent from 2013 to 2015.

Product Shifting

*** of the five responding producers indicate the ability to shift production between R-134a and other products using the same equipment and/or labor. *** report that they cannot shift production. *** reports it is capable of shifting to production of R-125, R-32, or R-143a; *** reports it can shift production capacity to R-133a, Chlorodifluoroacetic Acid, 2,2-

⁸ According to Balian's preliminary foreign producer questionnaire response its capacity was *** short tons and it produced *** short tons of R-134a in 2012.

⁹ Chinese respondents indicated that capacity has grown to serve the home market and third countries in which demand is expected to grow with automobile ownership. Chinese respondents' posthearing brief, pp. 40-41 and Hearing transcript, p.191 (Dougan).

Difluoroethanol, or R-125 and; *** reports it can shift to R-125. All three producers indicate that market demand is the primary factor in the decision to shift production.

Production Constraints

Chinese producers face many of the same production restraints that U.S. producers face including: market demand, limitations of their facilities, scheduled maintenance and catalyst replenishment, and supply of raw materials. *** reports that its production was restrained by “power rationing in peak season” and “extreme weather.” Chinese producers also mentioned government limitations on production of chemicals.

Table VII-2

R-134a: Data on the industry in China, 2011-13, January-June 2013, and January-June 2014, and projections for 2014 and 2015

* * * * *

U.S. INVENTORIES OF IMPORTED MERCHANDISE

Table VII-3 presents data on U.S. importers’ reported inventories of R-134a.¹⁰

Table VII-3

R-134a: Data on importer inventories, 2011-13, January-June 2013, and January-June 2014

* * * * *

U.S. IMPORTERS’ OUTSTANDING ORDERS

The Commission requested U.S. importers indicate whether they imported or arranged for the importation of R-134a after June 30, 2014. *** responding U.S. importers stated that they had arranged imports of R-134a after June 30, 2014 but *** importer reported arranged imports from China. Table VII-4 presents U.S. importers’ arranged imports of R-134a through June 2015.

Table VII-4

R-134a: U.S. importers’ arranged imports of R-134a through June 2015.

* * * * *

¹⁰ All five responding Chinese producers indicate that they have no R-134a inventory in the United States.

ANTIDUMPING OR COUNTERVAILING DUTY ORDERS IN THIRD-COUNTRY MARKETS

On April 19, 2010, India imposed preliminary antidumping duty orders on producers and exporters of R-134a under subheading 2903.39.19 from China and Japan.¹¹ On July 15, 2011 final antidumping duty rates were imposed by India on R-134a under subheading 2903.39.19 from China and Japan for a period of 5 years. The final duty rates included \$1.15 per kilogram for producer/exporter Sinochem Environmental Protection (Taicang) Co. Ltd., \$1.36 per kilogram for producer Sinochem Environmental Protection (Taicang) Co. Ltd. and exporter Du-Pont Trading (Shanghai) Co. Ltd., and \$.1.15 per kilogram on producer/exporter Sinochem Environmental Protection Chemicals (Xian) Co. A duty rate of \$1.41 per kilogram was placed on any other Chinese producer/exporter combinations. Finally, imports from any Japanese producer/exporter combinations were assigned a duty rate of \$0.69 per kilogram.¹²

INFORMATION ON NONSUBJECT COUNTRIES

In assessing whether the domestic industry is materially injured or threatened with material injury “by reason of subject imports,” the legislative history states “that the Commission must examine all relevant evidence, including any known factors, other than the dumped or subsidized imports, that may be injuring the domestic industry, and that the Commission must examine those other factors (including non-subject imports) ‘to ensure that it is not attributing injury from other sources to the subject imports.’”¹³ Table VII-5 presents U.S. imports of R-134a from all sources other than China.

¹¹ Government of India CUSTOMS Notification No. 52/2010, April 19, 2010.

¹² Government of India CUSTOMS Notification No. 61/2011, July 15, 2011.

¹³ *Mittal Steel Point Lisas Ltd. v. United States*, Slip Op. 2007-1552 at 17 (Fed. Cir. Sept. 18, 2008), quoting from Statement of Administrative Action on Uruguay Round Agreements Act, H.R. Rep. 103-316, Vol. I at 851-52; see also *Bratsk Aluminum Smelter v. United States*, 444 F.3d 1369 (Fed. Cir. 2006).

Table VII-5
R-134a: U.S. Imports from all other sources, by country, 2011-13, January-June 2013, and January-June 2014

Item	Calendar year			January to June	
	2011	2012	2013	2013	2014
Quantity (short tons)					
U.S. imports from.-- United Kingdom	855	615	643	352	311
Germany	386	440	80	80	99
Russia	0	0	44	27	0
Italy	27	24	19	18	7
Canada	9	11	10	6	3
Japan	24	0	0	0	398
France	0	0	0	0	369
All Other	30	116	42	37	13
Total non-subject U.S. imports	1,333	1,206	838	521	1,200

Source: Official U.S. import statistics, HTS 2903.39.2020.

Table VII-6 presents countries' global exports of a basket category of goods, including R-134a, during 2011-13. The basket category includes all compounds of "other fluorinated, brominated or iodinated derivatives of acyclic hydrocarbons." Further information on R-134a production in and exports from the U.K. and Germany, the two largest sources of nonsubject imports during the period of investigation, is provided below.

Table VII-6
R-134a: Global exports,¹ by country 2011-13

Reporting Country	Value (US dollars)		
	2011	2012	2013
China	1,307,811,408	889,692,491	660,585,834
United States	525,215,254	574,151,865	625,066,848
Netherlands	191,462,281	172,705,055	173,427,544
Japan	254,480,149	196,571,605	147,696,515
France	168,373,093	156,099,881	122,915,694
United Kingdom HMRC	120,654,401	127,713,027	97,875,014
Germany	103,772,798	81,321,298	69,749,109
Belgium	70,451,484	52,834,961	59,370,947
Italy	34,745,890	32,729,920	35,618,694
Spain	42,314,693	36,108,690	25,476,994
Singapore	30,637,065	18,543,305	22,195,631
South Korea	10,162,730	12,791,881	11,958,696
Mexico	10,866,527	10,161,521	8,600,903
Taiwan	35,328,582	10,900,185	1,104,662
All Other	56,597,061	50,255,578	65,501,887
Total	2,962,873,416	2,422,581,263	2,127,144,972

¹ Includes all compounds under other fluorinated, brominated or iodinated derivatives of acyclic hydrocarbons.

Source: Global Trade Atlas (accessed September 15, 2014), HS subheading 2903.39.

United Kingdom

There are no production facilities for R-134a in the United Kingdom. Mexichem UK has a fluorocarbon production facility there, but it was converted from production of R-134a to production of R-125 during 2001-06.¹⁴ While the facility no longer produces R-134a, Mexichem UK does purify R-134a. Mexichem exports standard R-134a from the United States to the United Kingdom, where the subject product is purified before imported into the U.S. market.¹⁵ The purified R-134a is used in pharmaceutical applications such as metered dose inhalers (MDIs) to treat lung/breathing issues.

Table VII-7 presents the United Kingdom's global exports of a basket category of goods, including R-134a, during 2011-13. This basket category includes a smaller collection of products than that contained in the basket category presented in table VII-6; it does not include the compounds with bromine. The United States was the second or third largest export market for these products from the United Kingdom in each year 2011-13.

¹⁴ Mexichem Fluor, manufacturing plants, http://www.mexichemfluor.com/americas/m_plants.html (retrieved November 27, 2013).

¹⁵ Conference transcript, pp. 24-25 (Geosits).

Table VII-7**R-134a: United Kingdom exports of related products,¹ by country, 2011-13**

Partner Country	Value (US dollars)		
	2011	2012	2013
France	14,545,675	15,113,503	17,362,526
Spain	21,405,897	20,196,038	14,235,321
United States	18,055,808	13,668,177	11,974,769
Saudi Arabia	433,434	3,915,712	7,100,686
India	1,746,088	4,372,457	6,547,015
Ireland	7,667,440	5,777,992	5,242,593
United Arab Emirates	1,515,858	2,064,744	3,797,791
Netherlands	2,889,771	5,197,386	3,399,910
Italy	3,489,737	8,137,898	3,287,133
Germany	3,090,219	3,227,227	2,789,765
Japan	4,613,652	3,983,483	1,424,242
Turkey	1,777,028	954,989	1,363,590
Jordan	857,827	2,449,889	1,321,030
China	3,241,152	994,152	1,239,981
All Other	28,914,329	31,251,121	13,301,203
Total	114,243,915	121,304,768	94,387,555

¹ Includes all compounds under subheading 2903.39.90 (fluorides, fluorinated derivatives, iodides, and iodinated derivatives of acyclic hydrocarbons).

Source: Global Trade Atlas (accessed September 15, 2014).

Germany

Solvay Fluor produces R-134a in Germany. While most of the product is intended for refrigerant and foam blowing applications, some of the R-134a is further purified for pharmaceutical uses.¹⁶ Solvay produces its own HF from fluorspar, some of which it sources from its mines in Namibia and Bulgaria.¹⁷

Table VII-8 presents Germany's global exports of a basket category of goods, including R-134a, during 2011-13. This basket category includes a smaller collection of products than that contained in the basket category presented in table VII-6; it does not include the compounds with bromine. The United States was not among the top five export markets for these products from Germany in any year during 2011-13

¹⁶ Solvay Chemicals, Fluor Products, <http://www.solvaychemicals.com/EN/products/Fluor/Fluor.aspx> (retrieved December 2, 2013).

¹⁷ Solvay Chemicals, hydrogen fluoride brochure, October 11, 2011.

Table VII-8**R-134a: German exports of related products,¹ by country, 2011-13**

Partner Country	Value (U.S. dollars)		
	2011	2012	2013
France	18,505,108	17,943,855	21,456,093
United Kingdom	7,223,956	4,524,513	7,432,814
Belgium	7,681,199	7,399,582	6,433,275
Czech Republic	4,090,128	3,324,993	3,572,474
Italy	10,237,397	10,075,118	3,176,253
Spain	4,918,414	6,025,982	3,113,514
Russia	1,842,794	2,238,603	2,428,255
Netherlands	9,618,907	4,382,273	2,287,299
United States	4,494,538	3,119,949	1,807,045
Slovakia	53,083	1,165,494	1,772,034
Austria	3,785,786	2,379,089	1,688,960
Brazil	897,990	1,349,569	1,658,566
Switzerland	3,220,010	1,603,914	1,344,672
Poland	1,940,700	690,460	1,232,302
All Other	22,909,127	13,484,360	9,103,991
Total	101,419,137	79,707,754	68,507,547

¹ Includes all compounds under subheading 2903.39.90 (fluorides, fluorinated derivatives, iodides, and iodinated derivatives of acyclic hydrocarbons).

Source: Global Trade Atlas (accessed September 15, 2014).

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
78 FR 64243 October 28, 2013	1,1,1,2-Tetrafluoroethane From China; Institution of Antidumping and Countervailing Duty Investigations and Scheduling of Preliminary Phase Investigations	http://www.gpo.gov/fdsys/pkg/FR-2013-10-28/pdf/2013-25315.pdf
78 FR 66894 November 7, 2013	1,1,1,2-Tetrafluoroethane From the People's Republic of China: Notice of Extension of the Deadline for Determining the Adequacy of the Antidumping Duty and Countervailing Duty Petitions:	http://www.gpo.gov/fdsys/pkg/FR-2013-11-07/pdf/2013-26730.pdf
78 FR 73839 December 9, 2013	1,1,1,2 Tetrafluoroethane From the People's Republic of China: Initiation of Countervailing Duty Investigation	http://www.gpo.gov/fdsys/pkg/FR-2013-12-09/pdf/2013-29341.pdf
78 FR 73832 December 9, 2013	1,1,1,2-Tetrafluoroethane From the People's Republic of China: Initiation of Antidumping Duty Investigation	http://www.gpo.gov/fdsys/pkg/FR-2013-12-09/pdf/2013-29344.pdf
78 FR 76857 December 19, 2013	1,1,1,2-Tetrafluoroethane From China; ITC Determination (AD)	http://www.gpo.gov/fdsys/pkg/FR-2013-12-19/pdf/2013-30159.pdf
78 FR 79007 December 27, 2013	1,1,1,2-Tetrafluoroethane From China; ITC Determinations (CVD)	http://www.gpo.gov/fdsys/pkg/FR-2013-12-27/pdf/2013-30958.pdf
79 FR 3178 Jan 17, 2014	1,1,1,2-Tetrafluoroethane from the People's Republic of China: Notice of Postponement of Preliminary Determination in the Countervailing Duty Investigation	http://www.gpo.gov/fdsys/pkg/FR-2014-01-17/pdf/2014-00947.pdf
79 FR 18281 April 1, 2014	1,1,1,2-Tetrafluoroethane From the People's Republic of China: Postponement of Preliminary Determination of Antidumping Duty Investigation	http://www.gpo.gov/fdsys/pkg/FR-2014-04-01/pdf/2014-07256.pdf
79 FR 21895 Apr 18, 2014	1,1,1,2-Tetrafluoroethane From the People's Republic of China: Preliminary Affirmative Determination and Alignment of Final Determination With Final Antidumping Determination	http://www.gpo.gov/fdsys/pkg/FR-2014-04-18/pdf/2014-08932.pdf

Citation	Title	Link
79 FR 30817 May 29, 2014	1,1,1,2-Tetrafluoroethane From the People's Republic of China: Antidumping Duty Investigation, Preliminary Determination of Sales at Less Than Fair Value, Affirmative Preliminary Determination of Critical Circumstances, in Part, and Postponement of Final Determination	http://www.gpo.gov/fdsys/pkg/FR-2014-05-29/pdf/2014-12484.pdf
79 FR 31088 May 30, 2014	1,1,1,2-Tetrafluoroethane From the People's Republic of China: Amended Affirmative Preliminary Determination	http://www.gpo.gov/fdsys/pkg/FR-2014-05-30/pdf/2014-12590.pdf
79 FR 35795 June 24, 2014	1,1,1,2-Tetrafluoroethane From China; Scheduling of the Final Phase of Antidumping and Countervailing Duty Investigations	http://www.gpo.gov/fdsys/pkg/FR-2014-06-24/pdf/2014-14670.pdf
79 FR 37287 July 1, 2014	1,1,1,2-Tetrafluoroethane From the People's Republic of China: Antidumping Duty Investigation; Amended Affirmative Preliminary Determination of Critical Circumstances	http://www.gpo.gov/fdsys/pkg/FR-2014-07-01/pdf/2014-15420.pdf
79 FR 62594 October 20, 2014	1,1,1,2-Tetrafluoroethane From the People's Republic of China: Final Affirmative Countervailing Duty Determination	http://www.gpo.gov/fdsys/pkg/FR-2014-10-20/pdf/2014-24912.pdf
79 FR 62597 October 20, 2014	1,1,1,2-Tetrafluoroethane From the People's Republic of China: Final Determination of Sales at Less Than Fair Value	http://www.gpo.gov/fdsys/pkg/FR-2014-10-20/pdf/2014-24903.pdf

APPENDIX B

LIST OF HEARING WITNESSES

CALENDAR OF PUBLIC HEARING

Those listed below appeared as witnesses at the United States International Trade Commission's hearing:

Subject: 1,1,1,2-Tetrafluoroethane from China
Inv. Nos.: 701-TA-509 and 731-TA-1244 (Final)
Date and Time: October 15, 2014 - 9:30 a.m.

Sessions will be held in connection with these investigations in the Main Hearing Room (room 101), 500 E Street, S.W., Washington, DC.

OPENING REMARKS:

Petitioner (**John D. Greenwald**, Cassidy Levy Kent (USA) LLP)
Respondents (**Max F. Schutzman**, Grunfeld Desiderio Lebowitz Silverman & Klestadt LLP)

In Support of the Imposition of Antidumping and Countervailing Duty Orders:

Schagrin Associates
Washington, DC
on behalf of

Mexichem Fluor, Inc.

Peter Geosits, Americas Commercial Director, Mexichem Fluor, Inc.

John Pacillo, Americas Operations Director, Mexichem Fluor, Inc.

Roger B. Schagrin)
John W. Bohn) – OF COUNSEL
Paul W. Jameson)

In Support of the Imposition of Antidumping and Countervailing Duty Orders (continued):

Cassidy Levy Kent (USA) LLP
Washington, DC
on behalf of

E.I. DuPont de Nemours & Company (“DuPont”)

Greg M. Rubin, Business Manager, DuPont

Beth Sassano, Marketing Manager, DuPont

Jim Bachman, Combo Manager, DuPont

Deirdre Maloney, Senior International Trade Advisor,
Cassidy Levy Kent (USA) LLP

John D. Greenwald)
) – OF COUNSEL
James R. Cannon)

**In Opposition to the Imposition of
Antidumping and Countervailing Duty Orders:**

Alston Bird
Washington, DC
on behalf of

AutoZone, Inc.

John Lammars, Merchandising Director, Customer
Satisfaction, AutoZone, Inc.

Elizabeth Hein)
Jason Waite) – OF COUNSEL
Chunlian Yang)

**In Opposition to the Imposition of
Antidumping and Countervailing Duty Orders (continued):**

Grunfeld Desiderio Lebowitz Silverman & Klestadt LLP
Washington, DC
on behalf of

Sinochem Environmental Protection Chemicals (Taicang) Co., Ltd.
Zhejiang Quhua Flour-Chemistry Co., Ltd.
Zhejiang Sanmei Chemical Industry Co., Ltd.
Weitron International Refrigeration Equipment (Kunshan) Co., Ltd.

Deborah Dayton, President, Weitron Inc.

James Dougan, Vice President, Economic Consulting Services

Max F. Schutzman)
) – OF COUNSEL
Ned H. Marshak)

Trade Pacific PLLC
Washington, DC
on behalf of

National Refrigerants, Inc. (“NRI”)

Jarrold M. Goldfeder)
) – OF COUNSEL
Jonathan M. Freed)

REBUTTAL/CLOSING REMARKS:

Petitioner (**Roger B. Schagrin**, Schagrin Associates)
Respondents (**Ned H. Marshak**, Grunfeld Desiderio Lebowitz
Silverman & Klestadt LLP)

-END-

APPENDIX C
SUMMARY DATA

Table C-1

R-134a: Summary data concerning the U.S. market, 2011-13, January to June 2013, and January to June 2014

* * * * *

APPENDIX D

**THE U.S. INDUSTRY'S FINANCIAL RESULTS WITHOUT INPUT
ADJUSTMENT FOR RELATED PARTY PROFIT OR LOSS**

Table D-1

R-134a: Results of operations of U.S. producers, 2011-13, January-June 2013, and January-June 2014

* * * * *

Table D-2

R-134a: Results of operations of U.S. producers, by firm, 2011-13, January-June 2013, and January-June 2014

* * * * *

Table D-3

R-134a: Variance analysis on the operations of U.S. producers, 2011-13, January-June 2013, and January-June 2014

* * * * *