

UNITED STATES INTERNATIONAL TRADE COMMISSION

Washington, D.C.

In the Matter of

**CERTAIN POLYVINYLIDENE
FLUORIDE RESINS**

Inv. No. 337-TA-1439

**INITIAL DETERMINATION ON VIOLATION OF SECTION 337 AND
RECOMMENDED DETERMINATION ON REMEDY AND BOND**

Administrative Law Judge Cameron Elliot

(August 7, 2026)

Pursuant to the Notice of Investigation and Rule 210.42(a) of the Rules of Practice and Procedure of the United States International Trade Commission, this is my Initial Determination in the matter of *Certain Polyvinylidene Fluoride Resins*, Investigation No. 337-TA-1439.

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TABLE OF ABBREVIATIONS

Hr’g Tr.	Hearing Transcript
RHr’g Tr.	Hearing Transcript (Remand)
CPB	Complainants’ Pre-Hearing Brief
CIB	Complainants’ Second Corrected Initial Post-Hearing Brief
CIB2	Complainants’ Initial Post-Hearing Brief (Remand)
CRB	Complainants’ Reply Post-Hearing Brief
CRB2	Complainants’ Reply Post-Hearing Brief (Remand)
CX	Complainants’ Exhibit
CDX	Complainants’ Demonstrative Exhibit
CPX	Complainants’ Physical Exhibit
JX	Joint Exhibit
RPB	Respondents’ Pre-Hearing Brief
RIB	Respondents’ Initial Post-Hearing Brief
RIB2	Respondent Juhua’s Corrected Initial Post-Hearing Brief (Remand)
RRB	Respondents’ Reply Post-Hearing Brief
RRB2	Respondent Juhua’s Reply Post-Hearing Brief (Remand)
RX	Respondents’ Exhibit
RDX	Respondents’ Demonstrative Exhibit
RPX	Respondents’ Physical Exhibit



I. INTRODUCTION

A. Procedural Background

Complainants Syensqo SA, Syensqo Specialty Polymers, USA LLC, and Syensqo Specialty Polymers Italy S.P.A. (collectively, “Syensqo” or “Complainants”) filed the complaint underlying this investigation on January 13, 2025, with a supplement filed on February 3, 2025. The complaint alleged respondents Zhejiang Fluorine Chemical New Material Co. Ltd. and Hubei Fluorine New Materials Co., Ltd. (together, “Fluorine”), Sinochem Lantian Co., Ltd. (“Sinochem”), Zhejiang Juhua Co., Ltd. (“Juhua”), and Inner Mongolia 3F Wanhao, Fluorochemical Industry Co. Ltd. (“Inner Mongolia”) (collectively, “Respondents”) import or sell in connection with an importation certain polyvinylidene fluoride resins that infringe one or more claims of U.S. Patent No. 8,337,725 (“the 725 patent”) (“the Asserted Patent”).

By publication of a notice in the *Federal Register* on February 21, 2025, the U.S. International Trade Commission ordered that:

Pursuant to subsection (b) of section 337 of the Tariff Act of 1930, as amended, an investigation be instituted to determine whether there is a violation of subsection (a)(1)(B) of section 337 in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain products identified in paragraph (2) by reason of infringement of one or more of claims 1-7, 10, and 12 of the '725 patent, and whether an industry in the United States exists or is in the process of being established as required by subsection (a)(2) of section 337[.]

90 Fed. Reg. 10083 (Feb. 21, 2025).

On Feb 20, 2025, the investigation was assigned to me. EDIS Doc. ID 843949. On March 11, 2025, I set a target date of August 24, 2026 for completion of this investigation. Order No. 3. Also on March 11, 2025, I set the evidentiary hearing for December 8-12, 2025. Order No. 4.



On March 28, 2025, Complainants moved (1439-005) to terminate respondent Inner Mongolia from the investigation based on settlement. The motion was granted via initial determination on April 1, 2025. Order No. 8. On April 22, 2025, the Commission determined not to review Order No. 8. EDIS Doc. ID 849291.

On June 9, 2025, Complainants moved (1439-006) to amend the Complaint and Notice of Investigation to allege infringement of claims 8 and 9 of the 725 patent against the Respondents. The motion was granted via initial determination on June 23, 2025. Order No. 9. On July 15, 2025, the Commission determined not to review Order No. 9. EDIS Doc. ID 856815.

On September 5, 2025, Respondents moved (1439-013) for summary determination of no importation or sale for importation. The motion was granted-in-part as to Juhua but not Fluorine or Sinochem via initial determination on September 29, 2025. Order No. 16. Thereafter, on November 19, 2025, Juhua moved (1439-032) to terminate itself from the investigation in light of Order No. 16. The motion for termination was granted via initial determination on November 24, 2025. Order No. 20.

On November 18, 2025, Complainants moved (1439-029) for leave to amend the Complaint and Notice of Investigation to reflect a corporate name change. The motion was granted via initial determination on November 19, 2025. Order No. 19. On December 9, 2025, the Commission determined not to review Order No. 19. EDIS Doc. ID 866027.

Next, on December 4, 2025, Complainants moved (1439-035) to terminate the investigation with respect to claim 7 of the 725 patent. The motion was granted via initial determination on December 4, 2025. Order No. 24. On January 5, 2026, the Commission determined not to review Order No. 24. EDIS Doc. ID 867870.



The evidentiary hearing took place on December 8-12, 2025, between Complainants, Sinochem, and Fluorine. Pursuant to the procedural schedule, these parties submitted initial and reply post-hearing briefs on January 6, 2026,¹ and January 23, 2026, respectively. These parties thereafter moved and were granted leave to file limited, additional statements identifying untimely argument in each other's sets of post-hearing briefs (and replying to those identifications). Order No. 25. These parties filed their statements on February 2, February 6, and February 11-13, 2026, which were variously titled sur-replies, motions to strike, or oppositions to motion to strike. EDIS Doc. IDs 871166, 871174, 871871 (Motion Dkt. No. 1439-037), 871912 (Motion Dkt. No. 1439-038), 872615, 872617. The motions to strike (1439-037, -038) are granted or denied as discussed within this initial determination, and otherwise denied as moot.

On February 11, 2026, the Commission determined to review and upon review, reverse the outcomes of Order Nos. 16 and 20, thereby remanding the investigation back to the ALJ. EDIS Doc. ID 872308. On February 27, 2026, Order No. 26 issued, which extended the target date via initial determination to accommodate the remand and set a supplemental evidentiary hearing of May 6, 2026. Order No. 26. On March 23, 2026, the Commission determined not to review Order No. 26. EDIS Doc. ID 876231.

The one-day remand evidentiary hearing took place on May 6, 2026, between Complainants and Juhua. These parties submitted initial post-hearing briefs (remand) and reply post-hearing briefs (remand) on May 21, 2026,² and June 2, 2026, respectively.

¹ Respondents filed their initial post-hearing brief on January 7, 2026 without a request for leave. EDIS Doc. ID 868245. Similarly, Complainants filed first and second "corrected" initial post-hearing briefs on January 12 and 16, 2026, respectively, also without leave. EDIS Doc. IDs 868714, 869326.

² Juhua filed its initial post-hearing brief (remand) on May 22, 2026 without a request for leave and that same day filed a corrected version of the document, also without leave. EDIS Doc. IDs 882971, 882992.

[REDACTED]

As of the date of this initial determination, no motions remain pending.

B. The Parties

Complainant Syensqo SA is a Belgian corporation working in the field of specialty chemicals. CIB at 3; RIB at 5. Syensqo Specialty Polymers, USA LLC is a domestic company and wholly owned subsidiary of Syensqo SA, with a principal place of business in the state of Georgia. *Id.* at 5-6. Syensqo Specialty Polymers Italy S.P.A. is another wholly owned subsidiary of Syensqo SA, formed in Italy and with a principal place of business in the state of Bollate, Italy. *Id.* at 6. Together, Complainants boast of nine research and development centers within the United States along with a planned multi-site manufacturing facility for products alleged to be covered by the claims of the 725 patent. *See* CIB at 3, 9.

Respondents Zhejiang Fluorine Chemical New Material Co. Ltd. and Hubei Fluorine New Materials Co., Ltd. are Chinese corporations involved in the development and manufacture of fluorine-related products for various industries. *See* RIB at 6; CIB at 4. According to Complainants, the Fluorine accused products in this investigation are produced in [REDACTED], China. *Id.* at 5.

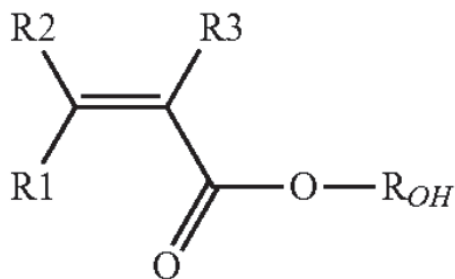
Respondent Sinochem Lantian Co., Ltd. is a Chinese corporation involved in the development and manufacture of specialty chemicals and a “member enterprise” of Sinochem Holdings Corp. Ltd. CIB at 4; RIB at 6. The Sinochem accused products in this investigation are produced in [REDACTED], China. CIB at 4; RIB at 6.

Respondent Zhejiang Juhua Co., Ltd. is a Chinese Corporation involved in the development and manufacture of a wide range of chemical products, including fluorinated polymers. RIB2 at 4. According to Complainants’ and Juhua’s briefings, Juhua manufactures the Juhua accused product in [REDACTED], China. *See* CIB2 at 3; RIB2 at 4.

C. The Asserted Patent and Claims

The 725 patent, entitled “Vinylidene Fluoride Copolymers,” issued on December 25, 2012, to Julio Abusleme, Riccardo Pieri, and Emma Barchiesi. The 725 patent claims priority to, *inter alia*, a European application filed on April 24, 2007.

The 725 patent concerns a copolymer substance (*i.e.*, multiple types of monomers connected by covalent bonds, as opposed to a homopolymer, which has only one type of monomer) with recurring units derived from vinylidene fluoride (VDF) and at least one hydrophilic (meth)acrylic monomer (MA). 725 patent at Abstract; Hr’g Tr. (Smith) at 179:9-19. The Abstract, and independent claim 1, provide the following formula:



725 patent at Abstract, cl. 1. The copolymers are intended for use as binders in lithium batteries or in the manufacture of hydrophilic membranes based on their chemical resistance, weatherability, and heat resistance. *Id.* at 1:19-20, 3:9-12, 3:32-35. The patent teaches that the polymer (A) should comprise from 0.05 to 10% by moles of recurring units derived from said hydrophilic (meth)acrylic monomer (MA) (*id.* at 2:59-61) and states it is “essential” that “the fraction of randomly distributed units (MA) is of at least 40%. Only polymers wherein this condition is fulfilled possess adequate thermal resistance in combination with other properties such as adhesiveness and/or hydrophilicity” (*id.* at 4:39-43).

[REDACTED]

The following patent claims are presently at issue in this investigation, according to Complainants’ briefing:

Asserted Patent	Infringement Claims	Domestic Industry Claims
8,337,725	1, 3, 6, 8, 9	1, 3, 6

See generally CIB at 7-8. As noted, claim 7 was terminated after institution, and claims 8 and 9 were added after institution, but claims 2, 4, 5, 10, and 12 remain pending and have not been the subject of any briefing, even prehearing. *See* CPB at 9-10; *see generally* RPB. Consequently, Syensqo has not shown a violation with respect to claims 2, 4, 5, 10, or 12, and those claims are not addressed here.

D. Products at Issue

1. Domestic Industry Products

Complainants identify the domestic industry products as Solef-brand SF-5130 and SF-75130 “suspension-type PVDF [(polyvinylidene fluoride)] suitable for NMC batteries in EVs.” CIB at 8 (citing Hr’g Tr. (Finelli) at 40:21-42:14, 43:13-44:23, 74:9-75:3). Complainants argue the products exhibit superior thermal, electrical, and physical properties due to the innovation of the 725 patent, with SF-5130 considered to be the flagship product. *Id.* at 8-9. Collectively, SF-5130 and SF-75130 are herein referred to as “the DI Products.”

2. Accused Products

The accused articles in this investigation are, according to Complainants, “specialized PVDF used as binders for lithium-ion batteries.” The models from Fluorine are Zheflon FL2300, FL2310, FL2600 and FL2800 (“Fluorine Accused Products”); and the models from Sinochem are Sinodur SN-25628 and SN-25630 (“Sinochem Accused Products”). RIB at 10; *see* CIB at vii, viii. Similarly, the accused article from Juhua is JHS-1020 (Juhua Accused Product). CIB2 at 3.

According to Complainants, these products “appear as a white powder and cannot be readily identified as PVDF without chemical analyses.” *Id.* at 9 (citing JX-0799C (Brown) at 197:1-7, 196:7-14; CX-0478 (██████████) at 145:12-13); *see* CPB at 10.

A. Standing

B. Importation

[REDACTED]

Determination on Violation, Inv. No. 337-TA-1263, Initial Determination at 13 (June 28, 2022), *non-reviewed in relevant part*, Notice (Oct. 5, 2022).

The sale for importation standard has been described as whether the respondent knew or should have known that its sale of a product to third parties would result in the product subsequently being imported into the United States. *Certain Carbon and Alloy Steel Products* (“*Alloy Steel*”), Inv. No. 337-TA-1002, Initial Determination at 26 (Oct. 2, 2017), *unreviewed*, Notice (Nov. 1, 2017); *see* Remand Notice at 2 (citing *Certain Glass Substrates for Liquid Crystal Displays, Products Containing the Same, and Methods for Manufacturing the Same*, Inv. No. 337-TA-1433, Order No. 64 at 3 (Jan. 9, 2026) (“*Glass Substrates*”), *unreviewed in relevant part*, Notice (Feb. 10, 2026); *Certain Inkjet Ink Cartridges with Printheads and Components Thereof*, Inv. No. 337-TA-723, Initial Determination at 9 (June 10, 2011) (“*Ink Cartridges*”), *unreviewed in relevant part*, Notice (Aug. 11, 2011)). The Commission has held the “knowledge” requirement satisfied if importation “was a foreseeable consequence of [respondent’s] conduct.” *Certain Devices for Connecting Computers Via Telephone Lines*, Inv. No. 337-TA-360, Initial Determination, 1994 WL 929932 at *10-11 (May 24, 1994) (“*Devices for Connecting Computers*”), *unreviewed*, Notice, 1994 WL 929929 (June 29, 1994); *see* Remand Notice at 3 n.1 (separate views of Commissioner Kearns, noting that “it is an open question” whether actual or constructive knowledge is needed to establish importation or sale for importation, and that the Commission has previously found the “knowledge” requirement satisfied “if it was reasonably foreseeable to a respondent or that a respondent knew or should have known that products it sold to third parties would be subsequently imported into the United States.”).

C. Claim Construction

[REDACTED]

“The construction of claims is simply a way of elaborating the normally terse claim language in order to understand and explain, but not to change, the scope of the claims.” *Embrex, Inc. v. Serv. Eng'g Corp.*, 216 F.3d 1343, 1347 (Fed. Cir. 2000).

Claim construction focuses on the intrinsic evidence, which consists of the claims themselves, the specification, and the prosecution history. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc); *see also Markman v. Westview Instr., Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc). As the Federal Circuit in *Phillips* explained, courts must analyze each of these components to determine the “ordinary and customary meaning of a claim term” as understood by a person of ordinary skill in art at the time of the invention. 415 F.3d at 1313. “Such intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language.” *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Grp., Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001).

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips*, 415 F.3d at 1312 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)); *see IQRIS Techs. LLC v. Point Blank Enters., Inc.*, 130 F.4th 998, 1004 (Fed. Cir. 2025) (“It is the claims, not the preferred embodiments, that define the metes and bounds of the patentee’s invention.”). “Quite apart from the written description and the prosecution history, the claims themselves provide substantial guidance as to the meaning of particular claims terms.” *Id.* at 1314; *see Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001) (“In construing claims, the analytical focus must begin and remain centered on the language of the claims themselves, for it is that language that the patentee chose to use to ‘particularly point [] out and distinctly claim [] the subject matter which the patentee regards as his invention.’”). The

context in which a term is used in an asserted claim can be “highly instructive.” *Phillips*, 415 F.3d at 1314. Additionally, other claims in the same patent, asserted or unasserted, may also provide guidance as to the meaning of a claim term. *Id.* “Courts do not rewrite claims; instead, we give effect to the terms chosen by the patentee.” *K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1364 (Fed. Cir. 1999). “[T]he specification ‘is always highly relevant to the claim construction analysis. Usually it is dispositive; it is the single best guide to the meaning of a disputed term.’” *Phillips*, 415 F.3d at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). “[T]he specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor’s lexicography governs.” *Id.* at 1316.

In addition to the claims and the specification, the prosecution history should be examined, if in evidence. *Phillips*, 415 F.3d at 1317; see *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004). The prosecution history can “often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.” *Phillips*, 415 F.3d at 1317; see *Chimie v. PPG Indus. Inc.*, 402 F.3d 1371, 1384 (Fed. Cir. 2005) (“The purpose of consulting the prosecution history in construing a claim is to exclude any interpretation that was disclaimed during prosecution.”).

When the intrinsic evidence does not establish the meaning of a claim, then extrinsic evidence (*i.e.*, all evidence external to the patent and the prosecution history, including dictionaries, inventor testimony, expert testimony, and learned treatises) may be considered. *Phillips*, 415 F.3d at 1317. Extrinsic evidence is generally viewed as less reliable than the patent itself and its prosecution history in determining how to define claim terms. *Id.* “The court may

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receive extrinsic evidence to educate itself about the invention and the relevant technology, but the court may not use extrinsic evidence to arrive at a claim construction that is clearly at odds with the construction mandated by the intrinsic evidence.” *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 977 (Fed. Cir. 1999).

The construction of a claim term is generally guided by its ordinary meaning. However, courts may deviate from the ordinary meaning when: (1) “the intrinsic evidence shows that the patentee distinguished that term from prior art on the basis of a particular embodiment, expressly disclaimed subject matter, or described a particular embodiment as important to the invention;” or (2) “the patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification or prosecution history.” *Edwards Lifesciences LLC v. Cook Inc.*, 582 F.3d 1322, 1329 (Fed. Cir. 2009); *see Apple Inc. v. Wi-LAN Inc.*, 25 F.4th 960, 967 (Fed. Cir. 2022); *GE Lighting Sols., LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) (“the specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal.”); *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1324 (Fed. Cir. 2003) (“[W]here the patentee has unequivocally disavowed a certain meaning to obtain his patent, the doctrine of prosecution disclaimer attaches and narrows the ordinary meaning of the claim congruent with the scope of the surrender.”); *Rheox, Inc. v. Entact, Inc.*, 276 F.3d 1319, 1325 (Fed. Cir. 2002) (“The prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution.”). Nevertheless, there is a “heavy presumption that a claim term carries its ordinary and customary meaning.” *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (citations omitted). The standard for deviating from the plain and ordinary meaning is “exacting” and requires “a clear and unmistakable disclaimer.” *Thorner v. Sony Computer Entm’t Am. LLC*, 669 F.3d 1362, 1366-67

[REDACTED]

(Fed. Cir. 2012); *see Epistar Corp. v. Int’l Trade Comm’n*, 566 F.3d 1321, 1334 (Fed. Cir. 2009) (requiring “expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope” to deviate from the ordinary meaning) (citation omitted).

D. Infringement

“An infringement analysis entails two steps. The first step is determining the meaning and scope of the patent claims asserted to be infringed. The second step is comparing the properly construed claims to the device accused of infringing.” *Markman*, 52 F.3d at 976. A patentee may prove infringement either literally or under the doctrine of equivalents. Infringement of either sort must be proven by a preponderance of the evidence. *SmithKline Diagnostics, Inc. v. Helena Labs. Corp.*, 859 F.2d 878, 889 (Fed. Cir. 1988). A preponderance of the evidence standard “requires proving that infringement was more likely than not to have occurred.” *Warner-Lambert Co. v. Teva Pharm. USA, Inc.*, 418 F.3d 1326, 1341 n.15 (Fed. Cir. 2005).

Literal infringement is a question of fact. *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1332 (Fed. Cir. 2008). “To establish literal infringement, every limitation set forth in a claim must be found in an accused product, exactly.” *Microsoft Corp. v. GeoTag, Inc.*, 817 F.3d 1305, 1313 (Fed. Cir. 2016) (quoting *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1575 (Fed. Cir. 1995)). If any claim limitation is absent, there is no literal infringement of that claim as a matter of law. *Bayer AG v. Elan Pharm. Research Corp.*, 212 F.3d 1241, 1247 (Fed. Cir. 2000).

Doctrine of equivalents is also a form of infringement. One rubric for evaluating if a claimed feature is not literally, but nonetheless equivalent to, a claimed feature is known as the function-way-result test. Under this test, the accused feature is equivalent to the claim limitation when “it performs substantially the same function in substantially the same way to obtain the same result.” *Duncan Parking Techs., Inc. v. IPS Grp., Inc.*, 914 F.3d 1347, 1362 (Fed. Cir. 2019)

[REDACTED]

(quoting *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 608 (1950)). Another is known as the insubstantial differences test, where “[a]n element in the accused device is equivalent to a claim limitation if the only differences between the two are insubstantial.” *Voda v. Gordia Corp.*, 536 F.3d 1311, 1326 (Fed. Cir. 2008) (citing *Honeywell Int’l Inc. v. Hamilton Sundstrand Corp.*, 370 F.3d 1131, 1139 (Fed. Cir. 2004)). The Supreme Court has further instructed, “the proper time for evaluating equivalency . . . is at the time of infringement, not at the time the patent was issued.” *Warner-Jenkinson Co., Inc. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 37 (1997).

In addition to direct infringement, Section 271 of the Patent Act defines two categories of indirect infringement, inducement of infringement and contributory infringement. 35 U.S.C. § 271. For indirect infringement violations under Section 337, the direct infringement element may occur after importation, so long as all the other elements of indirect infringement are met at the time of importation. *See Certain Vision-Based Driver Assistance System Cameras and Components Thereof*, Inv. No. 337-TA-907, Comm’n Op. at 19 (Dec. 1, 2015) (citing *Suprema, Inc. v. Int’l Trade Comm’n*, 796 F.3d 1338, 1348 (Fed. Cir. 2015)). It is well settled that “[a]bsent direct infringement of the patent claims, there can be neither contributory infringement ... nor inducement of infringement.” *Met-Coil Sys. Corp. v. Korners Unltd., Inc.*, 803 F.2d 684, 687 (Fed. Cir. 1986) (citations omitted).

As to the first category, “[w]hoever actively induces infringement of a patent shall be liable as an infringer.” 35 U.S.C. § 271(b); *see DSU Med. Corp. v. JMS Co.*, 471 F.3d 1293, 1305 (Fed. Cir. 2006) (en banc) (“To establish liability under section 271(b), a patent holder must prove that once the defendants knew of the patent, they actively and knowingly aided and abetted another’s direct infringement.”) (citations omitted). “The mere knowledge of possible infringement by others does not amount to inducement; specific intent and action to induce infringement must be

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proven.” *Id.* (citations omitted). A defendant’s belief regarding patent validity is not a defense to a claim of induced infringement. *Commil USA, LLC v. Cisco Sys., Inc.*, 135 S. Ct. 1920 (2015). A defendant’s willful blindness on the question of infringement will satisfy the knowledge requirement. *Global-Tech Appliances, Inc. v. SEB S.A.*, 563 U.S. 754, 765, 768-771 (2011). The requisite intent to induce infringement “may be established through circumstantial evidence” and “may be inferred from all of the circumstances.” *See Broadcom Corp. v. Qualcomm, Inc.*, 543 F.3d 683, 699 (Fed. Cir. 2008) (citing *DSU Med. Corp. v. JMS Co.*, 471 F.3d 1293 (Fed. Cir. 2006); *Water Techs. Corp. v. Claco, Ltd.*, 850 F.2d 660, 669 (Fed. Cir. 1988)).

As to the second category, “a party who sells a component with knowledge that the component is especially designed for use in a patented invention, and is not a staple article of commerce suitable for substantial noninfringing use, is liable as a contributory infringer.” *Wordtech Sys., Inc. v. Integrated Networks Solutions, Inc.*, 609 F.3d 1308, 1316 (Fed. Cir. 2010). Contributory infringement is premised upon a finding that: (1) the entity sells, offers to sell, or imports into the United States a component of a product; (2) the component has no substantial non-infringing use; (3) the component constitutes a material part of the claimed invention; (4) the entity was aware of the patent and knew that the product may be covered by a claim of the patent; and (5) the use of the component in the product directly infringes the claim. *See Certain Gaming & Entm’t Consoles, Related Software, & Components Thereof*, Inv. No. 337-TA-752, Initial Determination (Remand) at 7-8 (Mar. 22, 2013) (citing 35 U.S.C. § 271(c); *Arris Group v. British Telecomm. PLC*, 639 F.3d 1368, 1376 (Fed. Cir. 2011)), *non-reviewed*, Notice (May 23, 2013). As with inducement, willful blindness on the question of infringement will satisfy the knowledge requirement. *Global-Tech*, 563 U.S. at 765, 768-771.

E. Domestic Industry

[REDACTED]

In an investigation based on a claim of patent infringement, section 337 requires that an industry in the United States, relating to the articles protected by the patent, exist or be in the process of being established. 19 U.S.C. § 1337(a)(2). Under Commission precedent, the domestic industry requirement has been divided into (i) a “technical prong” (which requires articles covered by the asserted patent) and (ii) an “economic prong” (which requires certain levels of activity with respect to the protected articles or patent itself). *See Certain Video Game Systems and Controllers*, Inv. No. 337-TA-743, Comm’n Op. at 6-7 (April 14, 2011) (“*Video Game Systems*”).

1. Technical Prong

The technical prong of the domestic industry requirement is satisfied when the complainant in a patent-based section 337 investigation establishes that it is practicing or exploiting the patents at issue. *See* 19 U.S.C. §§ 1337 (a)(2), (3); *Certain Microsphere Adhesives, Process for Making Same and Prods. Containing Same, Including Self-Stick Repositionable Notes*, Inv. No. 337-TA-366, Comm’n Op. at 8 (U.S.I.T.C. Jan. 16, 1996). “In order to satisfy the technical prong of the domestic industry requirement, it is sufficient to show that the domestic industry practices any claim of that patent, not necessarily an asserted claim of that patent.” *Certain Ammonium Octamolybdate Isomers*, Inv. No. 337-TA-477, Comm’n Op. at 55 (U.S.I.T.C. Aug. 28, 2003). Historically, the Commission permits the complainant’s products, and those of its licensees, to be considered for technical prong purposes. *See Certain Magnetic Tape Cartridges and Components Thereof*, Inv. No. 337-TA-1058, Comm’n Op. at 28-29 (April 9, 2019).

The test for claim coverage for the purposes of the technical prong of the domestic industry requirement is the same as that for infringement. *See Certain Doxorubicin and Preparations Containing Same*, Inv. No. 337-TA-300, Initial Determination at 109 (U.S.I.T.C. May 21, 1990), *aff’d*, Views of the Commission at 22 (U.S.I.T.C. Oct. 31, 1990); *Alloc, Inc. v. Int’l Trade Comm’n*, 342 F.3d 1361, 1375 (Fed. Cir. 2003). “First, the claims of the patent are construed. Second, the

[REDACTED]

complainant’s article or process is examined to determine whether it falls within the scope of the claims.” *Certain Doxorubicin and Preparations Containing Same*, Inv. No. 337-TA-300, Initial Determination at 109. As with infringement, the technical prong of the domestic industry can be satisfied either literally or under the doctrine of equivalents. *Certain Dynamic Sequential Gradient Devices and Component Parts Thereof*, Inv. No. 337-TA-335, ID at 44, Pub. No. 2575 (U.S.I.T.C. May 15, 1992). In short, the patentee must establish by a preponderance of the evidence that the domestic product practices one or more claims of the patent.

2. Economic Prong

The “economic prong” of the domestic industry requirement is satisfied when there exists in the United States, in connection with products practicing at least one claim of the patent at issue: (A) significant investment in plant and equipment; (B) significant employment of labor or capital; or (C) substantial investment in its exploitation, including engineering, research and development, and licensing. 19 U.S.C. § 1337(a)(3). The economic prong may also be satisfied when a domestic industry is in the process of being established. 19 U.S.C. § 1337(a)(2). This determination is made when the patent owner “can demonstrate that he is taking the necessary tangible steps to establish such an industry in the United States” and there is a “significant likelihood that the industry requirement will be satisfied in the future.” *Certain Soft Projectile Launching Devices, Components Thereof, Ammunition, and Products Containing Same*, Inv. No. 337-TA-1325, Comm’n Op. at 46 (Dec. 18, 2025) (citing *Certain Stringed Musical Instruments and Components Thereof*, Inv. No. 337-TA-586, Comm’n Op. at 13 (May 16, 2008) (“*Stringed Instruments*”)).

Establishment of the “economic prong” is not dependent on any “minimum monetary expenditure” and there is no need for complainant “to define the industry itself in absolute mathematical terms.” *Stringed Instruments*, Inv. No. 337-TA-586, Comm’n Op. at 25-26. Subsections (A) and (B), in particular, “do not limit what enterprise functions the inputs must be

used to perform,” e.g., sales, marketing, warehousing, quality control, distribution, engineering, research, manufacturing, etc. *See Lashify, Inc. v. Int’l Trade Comm’n*, 130 F.4th 948, 959 (Fed. Cir. 2025). The evaluation is a “holistic review.” *Wuhan Healthgen Biotechnology Corp. v. Int’l Trade Comm’n*, 127 F.4th 1334, 1339 (Fed. Cir. 2025).

However, a complainant must substantiate the significance of its activities with respect to the articles protected by the patent. *Certain Printing and Imaging Devices and Components Thereof*, Inv. No. 337-TA-690, Comm’n Op. at 30 (Feb. 17, 2011) (“*Imaging Devices*”). Further, a complainant can show that its activities are significant by showing how those activities are important to the articles protected by the patent in the context of the company’s operations, the marketplace, or the industry in question. *Id.* at 27-28. That significance, however, must be shown in a quantitative context. *Lelo Inc. v. Int’l Trade Comm’n*, 786 F.3d 879, 886 (Fed. Cir. 2015). The Federal Circuit noted that when the ITC first addressed this requirement, it found the word “‘significant’ denoted ‘an assessment of the *relative* importance of the domestic activities.’” *Id.* at 883-4 (internal citation omitted) (emphasis added). In general, “[t]he purpose of the domestic industry requirement is to prevent the ITC from becoming a forum for resolving disputes brought by foreign complainants whose only connection with the United States is ownership of a U.S. patent.” *Certain Battery-Powered Ride-On Toy Vehicles*, Inv. No. 337-TA-314, USITC Pub. No. 2420, Initial Determination at 21 (Aug. 1991); *see Certain Vacuum Insulated Flasks and Components Thereof*, Inv. No. 337-TA-1216, Notice at 3-4 (Oct. 21, 2021) (“Given the nature and extent of [complainant’s] investments in plant and equipment as a whole, [complainant] is not a mere importer.”).

F. Invalidity

1. 35 U.S.C. § 102

Under the previous version of 35 U.S.C. § 102, a patent claim is invalid as anticipated if:

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant;

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States;

35 U.S.C. § 102 (pre-AIA). Under the current version, a patent claim is invalid as anticipated if:

(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention; or

(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

35 U.S.C. § 102 (AIA). “A patent is invalid for anticipation if a single prior art reference discloses each and every limitation of the claimed invention. Moreover, a prior art reference may anticipate without disclosing a feature of the claimed invention if that missing characteristic is necessarily present, or inherent, in the single anticipating reference.” *Schering Corp. v. Geneva Pharm., Inc.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003) (citations omitted); see *Santarus, Inc. v. Par Pharm., Inc.*, 694 F.3d 1344, 1354 (Fed. Cir. 2012). “A century-old axiom of patent law holds that a product ‘which would literally infringe if later in time anticipates if earlier.’” *Upsher-Smith Labs., Inc. v. Pamlab, L.L.C.*, 412 F.3d 1319, 1322 (Fed. Cir. 2005) (citing *Schering Corp.*, 339 F.3d at 1322). Anticipation, and all other grounds of patent invalidity, must be proved by clear and convincing evidence. *Microsoft Corp. v. i4i Ltd. P’ship*, 564 U.S. 91, 95 (2011).

2. 35 U.S.C. § 103

Pursuant to the previous version of 35 U.S.C. § 103:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

35 U.S.C. § 103(a) (pre-AIA). Under the current version:

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

35 U.S.C. § 103(a) (AIA). “Obviousness is a question of law based on underlying questions of fact.” *Scanner Techs. Corp. v. ICOS Vision Sys. Corp. N.V.*, 528 F.3d 1365, 1379 (Fed. Cir. 2008).

The underlying factual determinations include: “(1) the scope and content of the prior art, (2) the level of ordinary skill in the art, (3) the differences between the claimed invention and the prior art, and (4) objective indicia of non-obviousness.” *Id.* (citing *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966)). These factual determinations are often referred to as the “*Graham* factors.”

The critical inquiry in determining the differences between the claimed invention and the prior art is whether there is a reason to combine the prior art references. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418-21 (2007). In *KSR*, the Supreme Court rejected the Federal Circuit’s rigid application of the teaching-suggestion-motivation test. While the Court stated that “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does,” it described a more flexible analysis:

Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue As our precedents make clear, however, the analysis need not seek out precise

teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

Id. at 418. Since *KSR*, the Federal Circuit has announced that, where a patent challenger contends that a patent is invalid for obviousness based on a combination of prior art references, “the burden falls on the patent challenger to show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device . . . and would have had a reasonable expectation of success in doing so.” *PharmaStem Therapeutics, Inc. v. ViaCell, Inc.*, 491 F.3d 1342, 1360 (Fed. Cir. 2007); *see KSR*, 550 U.S. at 399 (“The proper question was whether a pedal designer of ordinary skill in the art, facing the wide range of needs created by developments in the field, would have seen an obvious benefit to upgrading Asano with a sensor.”).

An obviousness determination should also include a consideration of how “secondary considerations” such as “commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.” *Graham*, 338 U.S. at 17-18. “For [such] objective evidence to be accorded substantial weight, its proponent must establish a nexus between the evidence and the merits of the claimed invention.” *In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995); *see Merck & Cie v. Gnosis S.P.A.*, 808 F.3d 829, 837 (Fed. Cir. 2015). “Where the offered secondary consideration actually results from something other than what is both claimed and novel in the claim, there is no nexus to the merits of the claimed invention.” *In re Huai-Hung Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011); *see Apple Inc. v. Samsung Elecs. Co., Ltd.*, 839 F.3d 1034, 1054-1056 (Fed. Cir. 2016).

3. 35 U.S.C. § 112

The prior version of the Patent Act recites:



The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

35 U.S.C. § 112 (pre-AIA). Under the current version:

(a) IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

35 U.S.C. § 112 (AIA). Pursuant to section 112, a patent claim is invalid for lack of written description if the patent’s specification fails to “reasonably convey[] to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). “[T]he test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art” (*id.*), and “the level of detail required to satisfy the written description requirement varies depending on the nature and scope of the claims and on the complexity and predictability of the relevant technology” (*id.* (citing *Capon v. Eshar*, 418 F.3d 1349, 1357-58 (Fed. Cir. 2005))).

A patent claim may also be invalid under Section 112 for lack of enablement. To prove that a claim is invalid for lack of enablement, a challenger must show by clear and convincing evidence that a person of ordinary skill in the art would not be able to practice the claimed invention without “undue experimentation.” *Alcon Research Ltd. v. Barr Labs., Inc.*, 745 F.3d

1180, 1188 (Fed. Cir. 2014) (citation omitted). “Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighting many factual considerations.” *In re Wands*, 858 F.2d 731, 736-37 (Fed. Cir. 1988). Those considerations, commonly referred to as the “*Wands* factors,” are:

- (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

Id. at 737. The Supreme Court has recently explained and held: “If a patent claims an entire class of processes, machines, manufactures, or compositions of matter, the patent's specification must enable a person skilled in the art to make and use the entire class. In other words, the specification must enable the full scope of the invention as defined by its claims. The more one claims, the more one must enable.” *Amgen Inc. v. Sanofi*, 598 U.S. 594, 610, (2023).

A patent claim may further be invalid under Section 112 if it is indefinite. The statutory language, “particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention,” present in both previous and current versions of the statute, has been interpreted to require the patentee to “be precise enough to afford clear notice of what is claimed, thereby ‘apprising the public of what is still open to them.’” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 909 (citing *Markman*, 517 U.S. at 373). The Court held, “we read § 112, ¶ 2 to require that a patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.” *Id.* at 910. Thus, a claim is required to “provide objective boundaries for those of skill in the art,” and a claim term is indefinite if it “might mean several different things and no informed and confident choice is among the contending definitions.” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014). And the Federal Circuit reminds that it is not individual

words or even limitations that are judged indefinite, but entire claims. *Cox Commc'ns, Inc. v. Sprint Commc'n Co. LP*, 838 F.3d 1224, 1231-2 (Fed. Cir. 2016) (“As *Nautilus* instructs, the dispositive question in an indefiniteness inquiry is whether the ‘claims,’ not particular claim terms, ‘read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.’”).

III. IMPORTATION AND STATUTORY AUTHORITY

Importation and statutory authority are disputed issues. In their initial brief, Complainants contend that “[t]hrough their distributors, Respondents have imported the Accused Products into the U.S. and sold the Accused Products to their distributors for importation into the U.S.” CIB at 9. Complainants generally rely on the activities of their agent, Mr. Kenneth Brown, who arranged for the purchase and receipt of accused products from overseas to show actual importation, and then these same events in conjunction with other circumstantial evidence to show Respondents sold the products for importation. *See generally id.* at 12-13, 21, 25; CIB2 at 3-16. Respondents dispute that actual importation—by any entity—has ever occurred for at least one accused product, and contend that no Respondent has ever sold the Accused Products for importation to any entity under any legal test. *See generally* RIB at 12, 15, 17, 24; RIB2 at 7-16.

A. Importation

There was clearly an actual importation of the Fluorine Accused Products and the Juhua Accused Product by Complainants’ agent, Mr. Brown. He characterizes himself as a “product developer” and “executive consultant,” and was retained through his company by Complainants’ counsel to acquire the accused products in China and have them shipped to the U.S. and the European Union. Hr’g Tr. (Brown) at 581:7-9, 584:4-12. In connection with energy projects he has worked on he has extensive experience procuring products like the Accused Products, including “equipment, component parts, and lots of chemicals and feedstocks.” *Id.* at 584:13-24.

[REDACTED]

Mr. Brown has generally worked with distributors rather than directly with manufacturers, and when he has had no pre-existing relationship with a distributor he has had “discussions” of various issues with the distributor before completing a purchase. *Id.* at 584:25-586:21.

The process he went through for this investigation was “[v]ery similar” to his past experience. Hr’g Tr. (Brown) at 589:13-19. The two distributors he reached out to were Shanghai Youcheng International Trade Co., Ltd. (“Youcheng”) and Shenzhen Benia New Material Technology Co., Ltd. (“Benia”). *See id.* at 589:20-591:1, 608:13-609:2; JX-0140; JX-0222C. He acquired FL2300 and FL2800 from Youcheng, and FL2310, FL2600, and JHS-1020 from Benia. *See* Hr’g Tr. (Brown) at 590:1-16; RHr’g Tr. (Brown) at 18:22-19:1. The FL2300 and FL2800, consisting of one 25 kg box of each, were shipped by Youcheng from Shanghai on October 18, 2024, and arrived in Houston, Texas, on October 20, 2024. *See* Hr’g Tr. (Brown) at 603:25-606:6; JX-0201C; JX-0245C. The FL2310 and FL2600, consisting of one 25 kg box of each, were shipped by Benia from Hong Kong on November 27, 2024, and encountered a long delay in clearing customs, but were released on November 24, 2025, in Houston. *See* Hr’g Tr. (Brown) at 613:7-614:19; JX-0071C; JX-0224C; CX-0588C; Stipulation (EDIS Doc. ID 866477). [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

See RHr’g Tr. (Brown) at 31:17-32:12, 36:6-38:22; JX-0062C; JX-0174C at 2; CX-0629C; CX-0630C. Although Fluorine and Juhua dispute their involvement in these events, they do not dispute that Mr. Brown actually imported the Fluorine Accused Products and the Juhua Accused Product. *See* RIB at 12-17; RIB2 at 7-16.

[REDACTED]

The Sinochem Accused Products present a more complicated situation. The October 2024 shipment from Youcheng to Mr. Brown included a 20 kg box of Sinodur 25628. *See* Hr’g Tr. (Brown) at 603:25-606:6; JX-0201C; JX-0245C. The box had two labels on it, one stating it contained 20 kg of Sinodur 25628, and a second stating it contained 25 kg of Sinodur 25630. *See* JX-0241C. The record is unclear as to why and how the second label was attached to the box, but Sinochem does not dispute that the shipment [REDACTED]—although, like Fluorine and Juhua, it disputes its own involvement in that shipment. *See* RRB at 8-9; CIB at 15 (suggesting without supporting evidence that the second label was added by Youcheng).

As for Sinodur 25630, Complainants rely entirely on Benia’s U.S. shipment to show importation. *See* CIB at 16-18; CRB at 9-13. The November 2024 shipment from Benia to Mr. Brown included a third box of PVDF. *See* Hr’g Tr. (Brown) at 613:7-614:19; JX-0222C at 5; JX-0224C; CX-0588C. Mr. Brown, at least, intended it to be Sinodur 25630. *See generally* JX-0222C. He had previously negotiated unsuccessfully with Youcheng and another distributor, [REDACTED] to obtain Sinodur 25630, and then seemingly successfully negotiated with Benia over the course of several days in November 2024 to obtain it, along with two Fluorine Accused Products (FL2310 and FL2600). *See id.* at 3-8; Hr’g Tr. (Brown) at 629:19-633:22; JX-0096C. Benia stated at that time that the Sinodur 25630 was “in stock,” which seems to have meant that it was in stock at the “manufacturer[],” although Complainants offer no evidence of a sale or consignment of Sinodur 25630 by Sinochem to Benia. JX-0222C at 5. Mr. Brown also negotiated a shipment of what was meant to be the same three products (FL2310, FL2600, and Sinodur 25630) to Dusseldorf, Germany, which arrived there in December 2024, and later arrived in the U.S. *See* JX-0105C; *see generally* JX-0222C. Complainants’ expert Dr. Dennis Smith tested the alleged Sinodur 25630 shipped to Germany, and

[REDACTED]

designated that product GP11 (CPX-0014). *See* CIB at 40-41. The invoice sent to Mr. Brown covered both shipments and recited 40 kg of Sinodur 25630 (20 kg to the U.S. and 20 kg to Germany), although as noted the U.S. shipment was not released to Mr. Brown until shortly before the hearing started. *See* JX-0071C; Stipulation (EDIS Doc. ID 866477).

There was a red flag, however, on the label of the Sinodur box: it identified the contents as “Sinodur 25630,” but listed a batch number of [REDACTED]. JX-0156C at 1; *see* JX-0077C ([REDACTED] Dep.) at 109:4-19. This red flag was rather obvious, because the batch number, which was also on the box shipped to Germany, matched the batch number of [REDACTED], which, again, the parties do not dispute was [REDACTED]. In fact, the weight, manufacture date, and inspection code are the same as well:

[REDACTED]

RDX-0019C.009 (citing JX-0108C; JX-0156C). Complainants argue that the Benia label discrepancy was just a typographical error, and that if Sinochem is correct that the box did not contain Sinodur 25630, Benia must have lied about the shipment. *See* CIB at 18; CRB at 9. It is impossible on this record, however, to conclude definitively that Benia “lied,” as opposed to

[REDACTED]

something less blameworthy, such as a simple record-keeping error.

There were three other red flags about the shipment, as well, which to some extent do suggest deceptive conduct by Benia and all of which should have alerted Mr. Brown (and Complainants) that the shipment may not have contained what was ordered. First, Benia listed the PVDF in the box as “pigment” on the shipping documents, including on the label, “to avoid high tax” and make it easier to clear customs. JX-0084C at 2; *see* Hr’g Tr. (Brown) at 663:6-664:1; Hr’g Tr. (Smith) at 558:4-560:3. Mr. Brown was seemingly untroubled by this, and testified that PVDF could be used as a pigment even though he told Benia he wanted to use it in battery manufacturing, but Dr. Smith, who presumably has better technical knowledge of PVDF’s uses, testified that he had “never seen it used as a pigment.” Hr’g Tr. (Smith) at 560:1-3; *see* Hr’g Tr. (Brown) at 610:1-19, 663:6-22.

Another red flag was the difficulty Mr. Brown had in obtaining Sinodur 25630. As noted, he first inquired of Youcheng in September 2024, who not only did not have it available but even responded (incorrectly, as it turned out) that Sinodur 25630 had been “discontinued by the factory.” JX-0699C at 1; *see* Hr’g Tr. (Brown) at 599:10-22. He then inquired of [REDACTED] in early November 2024, who initially stated that “Sinodur 25630 is available, but its price is a bit high.” JX-0096C at 4. After further inquiry [REDACTED] changed its position, and reported that its inventory was “limited, so we currently do not plan to supply it externally,” and that Sinochem “plans to discontinue the production of 25630.” *Id.* at 3. Ultimately [REDACTED] stated that it was “currently unable to provide 25630” and that the “new formulation of 25630 will be released in two months, and it will then be available for sale.” *Id.* at 2. Mr. Brown eventually obtained what Benia represented to be Sinodur 25630, as explained, but the representations of Youcheng and [REDACTED]

[REDACTED]

should have put him (and Complainants) on notice that there were irregularities in the Sinodur 25630 supply.

A third red flag was Benia's response to Mr. Brown's inquiry regarding Sinodur 25630: they had it "in stock," but it needed to be "arrange[d]" from "the manufacturer[]." JX-0222C at 5. By itself this is unremarkable, but given the starkly different responses from Youcheng and [REDACTED] especially their statements that Sinodur 25630 had been discontinued, Benia's response is strange.

Complainants are correct that, even collectively, these red flags do not establish that the alleged Sinodur 25630 shipped to the U.S. lacked "authenticity." CIB at 18. But Complainants almost completely fail to grapple with the most probative evidence, which is that the sister shipment to Germany (GP11, or CPX-0014) was clearly not Sinodur 25630. *See* RIB at 72-73. As Sinochem states, and the infringement evidence analyzed below shows, "Syensqo's own testing confirmed the German sample is not Sinodur 25630." RIB at 23. For instance, Dr. Smith agreed that the "similarities" between the GP11 and [REDACTED] [REDACTED] Hr'g Tr. (Smith) at 432:12-18. In fact the similarities are striking, as explained below, including that the GP11 has substantial [REDACTED] [REDACTED], a finding consistent with the GP11 being [REDACTED] not Sinodur 25630. *See* RIB at 72-73 (citing Hr'g Tr. (Smith) at 420:5-441:21). Complainants apparently do not dispute that the GP11 sample is the same chemical as the alleged Sinodur 25630 shipped to the U.S., nor is there any reason to doubt that. *See* CIB at 17. But Complainants' only substantive response to Sinochem's testing argument is to argue that "finding [REDACTED] is consistent with [Sinodur] 25630" (CRB at 13), a point fatally undermined by its concession in connection with infringement

[REDACTED]

that the GP11 sample contained [REDACTED]
[REDACTED] sample produced by Sinochem” (CIB at 75).

On balance, the preponderance of the evidence does not show that what Benia shipped to the U.S. in November 2024 was Sinodur 25630. It is more likely that it was [REDACTED], but more importantly, Complainants have failed to carry their burden to show importation of Sinodur 25630 because this one importation is the only evidence that Complainants rely on to show it. In summary, then, Complainants have shown importation of all Accused Products except Sinodur 25630, and therefore the Commission has statutory authority on that basis over all Accused Products except Sinodur 25630.

B. Sale for Importation

This does not end the inquiry, because the Commission may also have statutory authority based on a “sale for importation.” 19 U.S.C. § 1337(a)(1)(B). As to Sinodur 25630, Complainants point only to the “sale” related to the single importation of the inauthentic product, and argue, based on generalized evidence that Sinochem offers its products for sale to U.S. customers, that it “should have known” that the Sinodur 25630 it sold would be imported to the U.S. CIB at 21-25; CRB at 2-4, 7-13. But there is literally no evidence that Sinodur 25630 was actually sold to Benia, or that whatever Sinodur 25630 was sold to Benia, or to any other customer or distributor, was sold “for importation” to the U.S. Sinochem’s sales records do not even show sales to Benia. *See generally* JPX-0009C; JPX-0010C. Complainants allege that Sinochem’s sales records may not be complete. *See* CIB at 21 (noting apparent gaps and ambiguities in Sinochem’s spreadsheets). Yet Complainants have offered no evidence of any sale of Sinodur 25630 for importation, either by Sinochem or by a third party. There is insufficient evidence of an importation, and no evidence of a sale, so there is also no evidence of a sale for importation. Complainants therefore have not

[REDACTED]

met their burden to show Sinodur 25630 has either been imported into the U.S. or sold for importation into the U.S., and the Commission lacks statutory authority to adjudicate whether or not there has been a Section 337 violation in connection with that product.

Other than Sinodur 25630, Respondents argue that they were not “sufficiently involved” in any of the proven importations to be held liable for a violation. RIB at 11. This was the subject of Respondents’ motion for summary determination, and unsurprisingly the record on this issue is now more fulsome than it was before the hearing. The evidence pertaining to each respondent varies, so each respondent will be addressed separately.

1. Juhua

a. Summary of Evidence

Starting with Juhua, its sales director, [REDACTED], testified that [REDACTED]
[REDACTED]. See JX-0080C ([REDACTED] Dep.) at 7:14-16, 12:21-13:2, 93:7-95:20, 117:9-17. Although the shipping paperwork identifies the shipper and manufacturer as “Mew Mews Company Limited,” the shipment timing is consistent with Mr. Brown’s purchase from Benia, and the invoice lists Benia as the supplier. Compare JX-0063C (waybill and shipping label) with JX-0062C (invoice). [REDACTED]

[REDACTED]

[REDACTED] It is unclear where all of the JHS-1020 came from; [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] JX-0321C.0159; *see* JX-0174C at 3-4.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Complainants cite no documentary evidence from Juhua showing actual knowledge, and in the only documentary evidence of Benia’s contemporaneous communications with Mr. Brown, Benia did not mention any contact with Juhua at all. *See generally* JX-0174C.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Complainants otherwise cite no evidence that Juhua knew of any particular customer or destination for that sample, other than that it was going to Benia, so Complainants have not shown that Juhua (as opposed to Benia) imported the JHS-1020 into the U.S., or had actual knowledge that it would be imported into the U.S. *See* CIB2 at 3-16; CRB2 at 2-11.

Complainants nonetheless argue that Juhua “should have known that the JHS-1020 it sold to Benia would be imported into the United States,” and there is some evidence of that. CIB2 at

[REDACTED]

3. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

JX-0080C ([REDACTED] Dep.) at 96:13-19; *see* RHr’g Tr. (Brown) at 20:25-21:23. An Alibaba.com webpage offering JHS-1020 from Benia in 2025 posted the kind of information a distributor would normally post, including a Juhua stock code, a price in U.S. dollars, and certain technical data and product characteristics. *See generally* JX-0055. The website also stated that it could deliver to the U.S. *See id.* at 2. The technical data and product description on the website was in English, and the same information is available in English in Juhua’s marketing brochures. *See id.* at 4; CIB2 at 7; JX-0762C at 6. Juhua formerly had a subsidiary called Xiamen Juda Equipment & Chemical Co., Ltd. (“Xiamen Juda”), which as of 2025 was still an “authorized service provider” of Juhua, and which advertised JHS-1020 on its website in English with delivery by “international express courier,” although [REDACTED] denied it was actually a Juhua distributor of JHS-1020. CX-0901; CX-0902; *see* JX-0080C ([REDACTED] Dep.) at 170:14-172:9.

[REDACTED]

Complainants also cite evidence that they present as inculpatory, but in fact is not; the evidence related to Xiamen Juda, for instance, is intriguing but inconclusive, if for no other reason because if Xiamen Juda sells JHS-1020 to the U.S. as an “authorized service provider,” then Complainants (or Mr. Brown) seemingly should have been able to acquire it readily without going through Benia. Another example is certain testimony from Mr. Brown, such as that Benia’s website recently, and only recently, stated that JHS-1020 is “sourced in the U.S.” RHR’g Tr. (Brown) at 56:22-57:2; *see* CIB2 at 10. This testimony was objected to, but only after Mr. Brown completed his answer, so it has been considered, but it is almost completely irrelevant because a sale for importation must be evaluated at the time of the sale, and because it is unclear what “sourced in the U.S.” even means. *See* RHR’g Tr. (Brown) at 57:3-58:10. Other testimony from Mr. Brown on which Complainants rely was either stricken or successfully objected to, and so is not considered. *E.g.*, RHR’g Tr. (Brown) at 42:24-43:8 (“ecr.com” came up when Mr. Brown searched for JHS-1020); CIB2 at 10-11, 11 n.2. Some evidence Complainants cite is only marginally relevant, such as that Benia said it had experience shipping PVDF to the U.S., which may be true but has no clear connection to Juhua or JHS-1020. *See* CIB2 at 8 (citing RHR’g Tr. (Brown) at 59:22-25). And in other instances Complainants characterize the record incorrectly, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Balanced against all that Complainants cite is very probative evidence on which Juhua relies. Complainants’ counsel conceded at the hearing that it was not aware of another sale of JHS-1020 in the U.S. *See* RHR’g Tr. at 57:16-58:1. JHS-1020 is manufactured in China, all

[REDACTED]

inventory known to Juhua is in [REDACTED], and both [REDACTED] and [REDACTED], a technical witness for Juhua, testified that [REDACTED] See JX-0080C ([REDACTED] Dep.) at 190:5-8, 195:9-11; JX-0078C ([REDACTED] Dep.) at 15:2-10 ([REDACTED] [REDACTED]); JX-0321C.0015 (manufacturing address). [REDACTED] [REDACTED]. See JX-0080C ([REDACTED] Dep.) at 81:9-82:20. According to its interrogatory responses:

[REDACTED]

JX-0321C.0038. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

b. Discussion

[REDACTED]

Clearly, much of the most pointed evidence on this issue comes from [REDACTED], and Complainants argue that he is not credible on certain issues. *See* CIB2 at 14-15. [REDACTED]

[REDACTED]

[REDACTED] But Complainants rely on [REDACTED] testimony extensively for their own purposes, and some of Complainants' criticism of his testimony is explained by the fact that [REDACTED]. *See* CIB2 at 3-14. And certain crucial facts—[REDACTED]

[REDACTED]

[REDACTED]—have little connection to the testimony Complainants attack as unreliable, and so cannot be discounted merely because some of [REDACTED] other testimony is questionable. Overall, then, [REDACTED] testimony on the most relevant issues is credible.

Beyond attacking [REDACTED] and pointing to evidence tending to show that Juhua “should have known” the [REDACTED] box it sold to Benia would be shipped to the U.S., Complainants’ case for sale for importation relies on a comparison to other Commission cases, and on theories of “willful blindness” and “imputed knowledge.” *See* CIB2 at 3-16; CRB2 at 2-11. The willful blindness theory is rejected for two reasons. First, Complainants cite no cases where the Commission applied the doctrine of willful blindness to the “knew or should have known” element of sale for importation. *See* RRB2 at 10-11. The only case Complainants cite regarding willful blindness does not discuss that doctrine and is otherwise irrelevant because it pertained to sale after importation, which seemingly does not require proof of a respondent’s state of mind. *See* CIB2 at

[REDACTED]

10, 16 (citing *Certain Laptops, Desktops, Servers, Mobile Phones, Tablets, and Components Thereof*, Inv. No. 337-TA-1280, Order No. 23 (Mar. 24, 2022)). Second, even accepting that a sale for importation can be shown by willful blindness, Complainants have not shown it because they have not demonstrated a subjective belief by Juhua that there was a high probability that the JHS-1020 would be shipped to the U.S., and deliberate actions by Juhua to avoid learning that. *See Global-Tech Appliances, Inc. v. SEB S.A.*, 563 U.S. 754, 769 (2011). Not only do Complainants not cite this standard, but there is no evidence that Juhua subjectively believed the Benia sample would be resold to the U.S., or that its failure to find out that fact was deliberate, as opposed to negligent.

Complainants' "imputed knowledge" argument fares no better. *See* CIB2 at 7, 9-11. In contrast to willful blindness, "[i]mputing knowledge of subsequent importation" has been applied in Commission investigations in addressing the "should have known" standard. *See Ink Cartridges* at 25-26; *Certain Welded Stainless Steel Pipe and Tube*, Inv. No. 337-TA-29, 1978 WL 50692 at *7-*8 (Feb. 22, 1978) (endorsing the administrative law judge's finding that "there were grounds for imputing knowledge of importation to the manufacturers even though they never dealt directly with importers"). But actual knowledge can be imputed only when the respondent had "actual notice of the possibility that [the accused products] were being imported into the U.S.," thereby triggering a "duty to investigate." *Ink Cartridges* at 25-26. Complainants identify no such actual notice to Juhua. Even assuming that Benia's one sale of JHS-1020 was a red flag, because it was [REDACTED], Juhua was not on notice that the ultimate destination might be the U.S., and [REDACTED]. [REDACTED]. So there is no reason to impute knowledge of the ultimate destination of the JHS-1020 to Juhua, because it had no reason to investigate. The

[REDACTED]

fact that Juhua could have discovered the destination of what it sold Benia if it had inquired—an issue Complainants bring up repeatedly—is therefore beside the point, and there is accordingly no basis to conclude Juhua should have known the shipment’s destination based on imputed knowledge. *See generally* CIB2 at 3-16.

Nor does a comparison to other Commission cases show that Juhua should have known its product would be imported into the U.S. The most pertinent Commission cases, of course, are those cited in the Remand Notice: (1) *Ink Cartridges*, on which Complainants rely heavily (*see generally* CIB2 at 3-16); (2) *Glass Substrates*, which Complainants cite but do not rely on (*see id.* at 3); and (3) *Devices for Connecting Computers*, on which Complainants rely heavily (*see generally* CIB2 at 3-16). *See* Remand Notice at 3, 3 n.1. The Remand Notice also cited *Leggett & Platt, Inc. v. Hickory Springs Mfg. Co.*, 285 F.3d 1353, 1362 (Fed. Cir. 2002), which is only relevant to the summary determination standard and says nothing about importation or sale for importation, and *Comcast Corp. v. Int’l Trade Comm’n*, 951 F.3d 1301, 1309 (Fed. Cir. 2020), which is very relevant to importation and sale for importation. *See id.* Two especially pertinent cases cited in the briefs are *Alloy Steel* (*see generally* CIB2 at 3-16; RIB2 at 5-16) and *Certain Filament Light-Emitting Diodes and Products Containing Same (II)*, Inv. No. 337-TA-1220, Initial Determination (Nov. 19, 2021) (“*Filament LEDs*”), *unreviewed in relevant part*, Notice (Feb. 16, 2022) (*see* RIB2 at 6). All of these cases, and all of the cases the parties cite to and rely on in their briefs, have been reviewed.

Based on that review, some relevant principles regarding sale for importation can be articulated. A party having actual knowledge of importation and exercising “control over the process of importation,” including by imposing requirements on the importers of record and incorporating its own products into the actual imported product, even when that imported product

[REDACTED]

is formally another company's, weighs in favor of sale for importation. *Comcast*, 951 F.3d at 1309; *see* CIB2 at 6. Communications between a respondent's employees can show knowledge of importation. *See Ink Cartridges* at 25-26. *Ink Cartridges* is otherwise not especially helpful, because the evidence showed that the respondent had "actual knowledge" that its products were imported into the U.S., which is not the case here, and because it applied the imputed knowledge doctrine, which is also inapplicable here. *Id.* Knowledge that downstream purchasers of the respondent's product incorporate that product into their own articles, and then import them into the U.S., weighs in favor of sale for importation. *See Glass Substrates* at 6-7. Also weighing in favor of sale for importation are advertising products to customers in the U.S. (specifically on Alibaba.com), admitting that the U.S. is an important market for the downstream purchaser's articles, and maintaining an office in North America. *See id.* at 9-10, 10 nn.5-6. Advertisements in English, including in catalogs, admissions that products are exported, and direct sales to the U.S. market all weigh in favor of sale for importation, and in particular show that importations are a "foreseeable consequence" of a respondent's conduct. *Devices for Connecting Computers* at *10. A corporate parent of an importer can be found liable where, among other things, it "direct[ed]" that accused products be "sold in the United States," coordinated their marketing in the U.S., and marked its name on the accused products' packaging. *Filament LEDs* at 28-29. On the other hand, a "general willingness and readiness to sell" for importation, the existence of plans to evade U.S. tariffs, and sales via third countries intended to avoid anti-dumping penalties are not significant factors weighing in favor of sale for importation. *Alloy Steel* at 35-37.

In view of these factors and others, Complainants have not shown that Juhua should have known, or that it was a foreseeable consequence, that its one sample of JHS-1020 sold to Benia would be imported into the U.S. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED], as in *Glass Substrates* and *Filament LEDs*, but there is no evidence Juhua exercised control over, and imposed no restrictions on, what happened to the JHS-1020 in any downstream products after it left Juhua’s custody, and it surely would have expected that once delivered its packaging would be disposed of. Although JHS-1020 was advertised for sale with U.S. delivery on Alibaba.com, as in *Glass Substrates*, that advertisement was on a Benia page, not a Juhua page. *See* JX-0055.

Complainants cite to additional considerations that are not necessarily encompassed by case law, and which are in any case unpersuasive. [REDACTED]

[REDACTED] and there is no evidence Juhua was actually aware Benia was selling Juhua’s products on Alibaba.com. *See* JX-0080C ([REDACTED] Dep.) at 96:13-19, 164:20-165:3. That [REDACTED] is somewhat odd, because “[t]esting invites a commercial relationship,” but Juhua’s lack of interest is explained by the [REDACTED]. CIB2 at 9. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] *See* CIB2 at 12. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] *See* JX-0078C ([REDACTED] Dep.) at 89:11-16.

[REDACTED]

Standing against Complainants’ generally weak case for a sale for importation are certain powerful and un rebutted facts, which are summarized above and repeated here. There is no evidence of any other sale, ever, of JHS-1020 into the U.S. *See* RHR’g Tr. at 57:16-58:1. JHS-1020 is manufactured in China, all inventory known to Juhua is in [REDACTED], and [REDACTED]. *See* JX-0080C ([REDACTED] Dep.) at 190:5-8, 195:9-11; JX-0078C ([REDACTED] Dep.) at 15:2-10; JX-0321C.0015. [REDACTED]. *See* JX-0080C ([REDACTED] Dep.) at 81:9-82:20. [REDACTED]

[REDACTED]

[REDACTED]. *See* JX-0080C ([REDACTED] Dep.) at 172:10-12, 190:9-15. [REDACTED]

[REDACTED]

[REDACTED]. *See id.* at 33:13-20, 40:4-18, 48:8-10, 95:3-6; JX-0078C ([REDACTED] Dep.) at 143:20-144:1; JX-0321C.0152-.0153. [REDACTED]

[REDACTED]. *See* JX-0080C ([REDACTED] Dep.) at 143:6-13. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] *See id.* at 191:12-195:11.

Such evidence demonstrates decisively that Juhua did not sell its one sample of JHS-1020 to Benia “for importation.” There is no reason it “should have known” that the sample would be sent to the U.S., or that it was a “foreseeable consequence” of the sale to Benia that it would be sent to the U.S. The evidence is not completely one-sided; as noted, Juhua has a [REDACTED], and it may or may not have a distributor (Xiamen Juda) that markets to the U.S.

[REDACTED]

But weighing all the evidence in light of the “relevant legal standard,” it is clear that no JHS-1020 has been sold for importation into the U.S. Remand Notice at 3 n.1. So although it has been imported, and the Commission accordingly has statutory authority to adjudicate a violation involving it, Juhua itself cannot be held liable for that importation because it was not “sufficiently involved” in it. *Comcast*, 951 F.3d at 1309 (citation omitted).

2. Sinochem

Nor is Sinochem sufficiently involved in any importation. As noted, Complainants offer no evidence of a sale of Sinodur 25630 to Benia, or to any other third party, where the Sinodur 25630 was imported into the U.S. *See* CIB at 16-18. As a result, Complainants offer no evidence that Sinochem should have known that the (nonexistent) shipment would go to the U.S., or that it was a foreseeable consequence that it would go to the U.S. *See* CIB at 21-25. There is accordingly no evidence of a sale for importation of Sinodur 25630 by any entity, with or without sufficient involvement by Sinochem.

As for Sinodur 25628, there is evidence supporting a sale for importation. Youcheng’s website offered Sinodur 25628 for sale and touted its “praise” from “suppliers.” JX-0140; *see* CX-0567 at 2; Hr’g Tr. (Brown) at 590:22-592:2, 593:19-595:5. Mr. Brown contacted [REDACTED] at Youcheng on or about September 20, 2024, and told him he was interested in buying PVDF for testing, with delivery to the U.S. and Germany. *See* Hr’g Tr. (Brown) at 592:6-593:11, 595:3-596:5; JX-0200C at 2. Mr. Brown and [REDACTED] thereafter exchanged multiple emails and WhatsApp messages over the next several weeks, and in some [REDACTED] represented that he had contact with “the company” or “the factory”; for instance, he stated that the “price has already applied for a discount with the company.” JX-0699C at 2; *see* JX-0200C; JX-0251C. In one communication [REDACTED] attached a technical data sheet for Sinodur 25628. *See* JX-251C at 4. Youcheng issued an invoice on September 26, 2024, which listed Sinodur 25628 and a price in

[REDACTED]

U.S. dollars, the shipment was sent on or about October 18, 2024, and it [REDACTED]. *See* JX-0251C at 10-15. As noted, the package had two labels, one stating Sinodur 25628 and one stating Sinodur 25630, but the [REDACTED] label appears to be an authentic Sinochem label, with an authentic Sinochem trademark, and Sinochem does not expressly dispute this. *Compare* JX-0241C (label on box shipped to Mr. Brown) *with* RX-0119C (label on package produced in discovery); *see* RIB at 19. [REDACTED] *Compare* JX-0241C *with* CX-0412C at 38. Mr. Brown thereafter ordered another shipment to be delivered to Germany. *See* JX-699C at 5-6.

Complainants also rely on evidence other than that surrounding the one box of Sinodur 25628 shipped to the U.S. *See* CIB at 21-25. Complainants assert that Sinochem is “solely responsible for [REDACTED] [REDACTED] although this point is not actually supported by Complainants’ citation to the record (*see* CIB at 23 (citing JX-0079C)), Sinochem does not explicitly dispute it (*see* RRB at 8-16). [REDACTED] [REDACTED]. *See* CX-0288. Complainants’ executive, Michael Finelli, testified that he clicked the “Quote” button on the [REDACTED] website and saw terms and conditions referencing California privacy laws, and the field for entering a quote-seeker’s phone number was prepopulated with a “1” country code, that is, the U.S. Hr’g Tr. (Finelli) at 72:13-73:2. Complainants assert that two of the three Sinochem [REDACTED] but this cannot be verified because those [REDACTED] (as Complainants have cited them) are almost entirely in Chinese. *See* CIB at 24 (citing CX-0891C; CX-0894C). The third states, in English,

[REDACTED]

[REDACTED] CX-0892C at 9. Complainants also assert that Sinochem has sold “Accused Products to [REDACTED] and [REDACTED], which have well-publicized [U.S.] manufacturing plans,” and that Sinochem touts its sales of PVDF to [REDACTED] [REDACTED] CIB at 24. Complainants do not cite any sales records, however, and its own “R&D manager” saw no evidence in the documents Complainants do cite that [REDACTED] or [REDACTED] are selling batteries in the U.S. made using Sinodur 25628. JX-0798C (Abusleme Dep.) at 14:17-19, 58:11-64:6. These uncited sales records in any event show sales to [REDACTED] [REDACTED], but not to the U.S. *See* JPX-0010C at tab “Summary.” Complainants ask for official notice of Sinochem applying for a U.S. trademark, but the application was filed in 2025, which has no relevance to this investigation. *See* CRB at 7 n.2.

All these facts are intriguing, but there is a significant hole in Complainants’ case: it has no evidence that the one box of Sinodur 25628 Mr. Brown received was ever sold directly from Sinochem to Youcheng, and no plain evidence of how Youcheng otherwise obtained it. Certainly the box label indicates that [REDACTED] [REDACTED], but Complainants have failed to explain both how Youcheng acquired it and Sinochem’s role in that process. Youcheng itself suggested vaguely that it had some communications with “the company,” but there is no record of any sales directly from Sinochem to Youcheng. JX-0699C at 2; *see* JPX-0009C at tab “Summary”; JPX-0010C at tab “Summary.” Complainants criticize Sinochem’s sales records for having gaps and ambiguities, [REDACTED]

[REDACTED]

[REDACTED] Complainants have not identified it. *See* CIB at 21-22; *see generally* JPX-0009C; JPX-0010C. There is no evidence that Sinochem “allow[ed]” Youcheng to use its trademark, such that they had an existing commercial relationship, other than the fact that

[REDACTED]

Youcheng actually used it on its website, and Mr. Brown’s understanding of Youcheng’s interactions with Sinochem are both speculative and hearsay. CIB at 22 (citing evidence). In short, how Youcheng came into possession of the box of Sinodur 25628 is entirely unclear, so it is equally unclear what “sufficient involvement” Sinochem may have had in its sale.

And Sinochem points to considerable evidence that it had no such involvement. For instance, Sinochem’s interrogatory responses, which Complainants offered in evidence, state in pertinent part:

[REDACTED]

CX-0932C at 4. [REDACTED]

[REDACTED]

[REDACTED]. *See id.* at 11. [REDACTED] is not one of its distributors. *See id.* Its distributors are [REDACTED] *See id.* It has no records of sales to any end customers anywhere [REDACTED]. *See* JPX-0009C at tab “Summary”; JPX-0010C at tab “Summary.” Its marketing efforts [REDACTED]

[REDACTED]

[REDACTED] *See* JX-0079C ([REDACTED] Dep.) at 27:2-14, 77:11-20. The one distributor Complainants identified, [REDACTED]

[REDACTED]. JX-0135C.

[REDACTED]

Viewing all this in light of the relevant legal standard discussed above, the balance of the evidence does not show a sale for importation sufficiently involving Sinochem. Of overarching significance is the almost complete lack of evidence that Sinochem ever sold anything to Youcheng directly, and the general lack of explanation for how Youcheng acquired the Sinodur 25628. Without such evidence, most legal considerations, such as an actual authorized distributor who advertises in English (*see* CIB at 23), have little relevance, nor can Complainants show willful blindness (*see id.* at 24) or imputed knowledge. So Complainants have not carried their burden to show that Sinochem ever sold any Sinodur 25628 to Youcheng, either directly or through intermediaries, or that it knew or should have known that any sale to any customer was for importation into the U.S., or that importation into the U.S. was a foreseeable consequence of any sale of any kind. It remains true, as explained in Order No. 16, that Sinochem has “no alternative explanation” for how Youcheng obtained the Sinodur 25628, but it is Complainants’ burden to show that, whatever the explanation may be, Sinochem was “sufficiently involved,” and Complainants simply have not done so. *Comcast*, 951 F.3d at 1309 (citation omitted); *see* Order No. 16 at 5. Accordingly, Sinochem cannot be held liable for the one importation of Sinodur 25628.

3. Fluorine

Fluorine, in contrast, can be held liable, but only for FL2300. There were two distinct shipments of the four Fluorine Accused Products, one by Youcheng and one by Benia. The FL2300 and FL2800, consisting of one 25 kg box of each, were shipped by Youcheng from Shanghai on October 18, 2024, and arrived in Houston, Texas, on October 20, 2024. *See* Hr’g Tr. (Brown) at 603:25-606:6; JX-0201C; JX-0245C. These products were advertised on Youcheng’s website. *See* CX-0567. As with Sinodur 25628, Mr. Brown contacted [REDACTED] at Youcheng on or about September 20, 2024, and told him he was interested in buying PVDF for testing, with

[REDACTED]

delivery to the U.S. and Germany. *See* Hr’g Tr. (Brown) at 592:6-593:11, 595:3-596:5; JX-0200C at 2. Mr. Brown and [REDACTED] thereafter exchanged multiple emails and WhatsApp messages over the next several weeks, and in some [REDACTED] represented that he had contact with “the company” or “the factory,” although, as with Sinochem, he did not state that he was in direct communication with Fluorine. JX-0699C at 2; *see* JX-0200C; JX-0251C. Mr. Brown attempted to purchase FL2300, FL2310, FL2600, and FL2800, and in one communication [REDACTED] attached technical data sheets for three of those products. *See* JX-251C at 2-8. Eventually Mr. Brown narrowed his request to just FL2300 and FL2800, and [REDACTED] relayed a per-kilogram quote for those products in U.S. dollars. *See* JX-0699C at 1. Youcheng issued an invoice on September 26, 2024, which listed FL2300 and FL2800 and a price in U.S. dollars, the shipment was sent on or about October 18, 2024, and it arrived in Houston on October 20, 2024. *See* JX-0251C at 10-15. Fluorine’s corporate representative, Mr. Guoxiang Miao, confirmed that at least the FL2300 label was authentic. *See* JX-0076C (Miao Dep.) at 252:7-255:13. Mr. Brown thereafter ordered another shipment to be delivered to Germany. *See* JX-699C at 5-6. After litigation started, [REDACTED] reached out to Mr. Brown on WhatsApp; Complainants imply that [REDACTED] characterized Youcheng at that time “as a distributor for Fluorine,” but in fact [REDACTED] called Youcheng “just a middleman, a small trading company.” RX-2457C; CIB at 25.

The FL2310 and FL2600, consisting of one 25 kg box of each, were shipped by Benia from Hong Kong on November 27, 2024, arrived shortly thereafter in Houston, and were released on November 24, 2025. *See* Hr’g Tr. (Brown) at 613:7-614:19; JX-0071C; JX-0224C; CX-0588C; Stipulation (EDIS Doc. ID 866477). Mr. Brown negotiated with Benia over the course of several days in November 2024 for a purchase of FL2310 and FL2600, which Benia represented were “in stock,” although this apparently meant that the “manufacturer[.]” had them in stock. JX-0222C at

[REDACTED]

4-9. Benia forwarded technical data sheets for those products to Mr. Brown, and quoted a per-kilogram price in U.S. dollars. *See id.*; JX-0229C; JX-0231C. As noted, Mr. Brown also negotiated a shipment of FL2310 and FL2600 to Dusseldorf, Germany, which arrived there in December 2024, and later arrived in the U.S. *See* JX-0105C; *see generally* JX-0222C. The one invoice for both shipments lists a total of 50 kg each for FL2310 and FL2600. *See* JX-0071C. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Complainants otherwise rely largely on a hodgepodge of evidence, much of which is unhelpful. As would be expected under the circumstances, Fluorine’s trademarks, product information, and standard label all appear on the packages Mr. Brown received. *E.g.*, JX-0237C; Stipulation (EDIS Doc. ID 866477). [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] *See* CIB at 26 (citing JX-0076C (Miao Dep.) at 246:4-16); JX-0076C (Miao Dep.) at 246:11-247:8 (“We do not know where it was sold to.”). Complainants cite “relayed conversations” between Youcheng and Benia on the one hand and Fluorine’s “agents” on the other, as well as Mr. Brown’s characterization of Youcheng and Benia as “well-established distributors,” but this is mostly just speculation and “interpretation” from Mr. Brown. CIB at 26 (citing Hr’g

[REDACTED]

Tr. (Brown) at 591:21-592:2); Hr’g Tr. (Brown) at 648:9-649:7. Complainants also cite Youcheng and Benia using Fluorine’s trademark, but there is no evidence that this was the result of an established commercial relationship. They also ask for official notice that Fluorine applied for a U.S. trademark in 2010, although this was not in Complainants’ prehearing brief, so Respondents’ motion to strike it is granted and that evidence is not considered. *See* CRB at 5 n.1; Motion to Strike at 2 (1439-037). Fluorine has attended trade shows outside China, including in Japan and Germany, but not in the U.S., and the German trade show attendees apparently speak English, which partly explains Fluorine’s English-language webpages. *See* JX-0076C (Miao Dep.) at 193:6-9, 196:2-8.

Other evidence on which Complainants rely comes from Fluorine’s website and other online activities, and from Mr. Miao. Fluorine has a website with a drop down menu in the top right corner for selecting the language, English is one of the languages available, and when English is selected a small image of North America appears. *See* CX-2082 at 2; CX-2031 at 2. Fluorine’s 2021 company profile on its website stated it had “reached international level” and had a “sales network” for PVDF based on “overseas markets,” and that its main market was “global” with a nearby “port for product export,” and it listed its sales and export volume in U.S. dollars. CX-0444C at 1. One webpage, which promotes Fluorine products other than the Accused Products, touted its PVDF products’ thermal stability in both Celsius and Fahrenheit. *See* CX-2086 at 2. Complainants assert that one webpage identifies North America as one of Fluorine’s main markets, but the cited evidence does not say that. *See* CIB at 28 (citing CX-0456). At least FL2300 and FL2800 are promoted and described on Fluorine’s website. *See* CX-2031 at 3.

In January 2025 FL2300 was also listed for sale at a price in U.S. dollars on Made-in-China.com, which has an English drop down menu. *See* CX-0283. The webpage for FL2300 lists

[REDACTED]

“Mrs. Annie Zhu” as the point of contact for the “supplier,” and Annie Zhu is the name of one of Fluorine’s “sales and export” employees, although Mr. Miao denied that Fluorine sells FL2300 on Made-in-China.com and observed that Ms. Zhu’s contact information is also available on Fluorine’s website. JX-0076C (Miao Dep.) at 229:10-13, 231:6-9, 233:1-6; *see* CX-0283 at 4; CX-0456 at 2 (identifying Annie Zhu as “export manager”). Ms. Zhu was the person responsible for the sale of FL2310 and FL2600 to Benia. *See* JX-0076C (Miao Dep.) at 245:8-15. Fluorine sells the Fluorine Accused Products to multiple customers; Complainants assert that some of these customers sell batteries with the Fluorine Accused Products to U.S. purchasers, but the evidence it cites for that proposition mostly does not demonstrate it. *See* CIB at 28 (citing, CX-0716; CX-0718; CX-0719; CX-0720; JX-0312C at 36-38). The exception is Fluorine’s own English-language webpage for FL2300, which has an image of a particular Panasonic battery used in Panasonic cameras and sold on Walmart’s website, which implies that the battery was made using FL2300. *See* JX-0249 at 1; JX-0277. According to Complainants, Mr. Miao testified that Fluorine is “extremely cost-conscious” and “does not restrict online sales or investigate any online postings of its products,” but the evidence it cites for these contentions do not say that. CIB at 27 (citing JX-0076C (Miao Dep.) at 223:8-22, 271:6-9); *but see* JX-0076C (Miao Dep.) at 233:15-19 (Mr. Miao denying that Fluorine has “taken any steps to review online postings”). Complainants also cite various statements from Mr. Miao showing a general lack of knowledge of how, why, and under what circumstances Fluorine’s products end up where they do, all in an effort to show “blindness to U.S. sales,” most of which Fluorine does not dispute and little of which is especially relevant. CIB at 29 (citing JX-0076C (Miao Dep.)); *see generally* RRB at 3-8.

Fluorine also does not dispute that Youcheng and Benia [REDACTED]

[REDACTED] [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] There is also no documentary evidence of any sale from Fluorine to either Youcheng or Benia, although unlike the other respondents Fluorine’s sales records do not appear to be in evidence.

For most Fluorine Accused Products the totality of the evidence does not show sufficient involvement by Fluorine in their sale for importation. There is no evidence that Fluorine actually knew their sale would be for importation, and although some of the evidence, particularly relating to Fluorine’s website, supports a finding that Fluorine should have known, overall the record is just too weak to conclude that. Fluorine’s only sales of record are to Chinese companies, and the circumstances surrounding its sales to Youcheng and Benia are not fleshed out enough to determine what Fluorine should or should not have known. Nor have Complainants shown willful blindness, because they have not shown a subjective belief by Fluorine that there was a high probability that its products would be shipped to the U.S., and deliberate actions to avoid learning that. *See Global-Tech Appliances*, 563 U.S. at 769; CIB at 29. So Complainants have not met their burden to show Fluorine should have known its products would be imported into the U.S., and Fluorine cannot be held liable on that basis.

As the Remand Notice suggested, though, an alternative legal standard applies: whether a sale was a “foreseeable consequence” of the respondent’s conduct. For FL2310, FL2600, and

FL2800, viewing the record in light of this standard has the same result. The website evidence continues to weigh somewhat in favor of finding foreseeability, but given the countervailing evidence of no sales to the U.S., no knowledge of sales to the U.S., no offers from the U.S., and the like, foreseeability cannot be found for these products.

But there are two documents which imply that sales of FL2300 would have been foreseeable. First is Fluorine’s own webpage dedicated to FL2300:

FLUORINE

[Home](#) [Products](#) [Applications](#) [Innovation](#) [About FLUORINE](#)

[Home](#) / [All](#) / [PVDF](#) / [PVDF Lithium Battery Grade](#) / [Zheflon®FL2300 PVDF - Lithium battery Binders Grade](#)





Description

Zheflon®FL2300 PVDF - Lithium battery Binders Grade

Zheflon®FL2300 PVDF is suitable for high nickel ternary material system in the electric vehicle industry application.

Categories	PVDF Lithium Battery Grade
Brand	Zheflon PVDF & Flurine FKM Manufacturer
Model	FL2300
Particle Size (μm) (D50)	≤110
Water Absorption (%)	≤0.10
Rotational Viscosity (mPa.s)	400-1400
Molecular Weight (Da)	≥1,100,000
Update Time	Mar 28,2025

Contact Now

Favorites

JX-0249 at 1. Second is Walmart’s website, which sells this exact product (Panasonic DMW-BLF19E battery) for use in Panasonic cameras in the U.S. *See* JX-0277. It is certainly foreseeable that a Panasonic battery made using FL2300, with English on the battery label and on Fluorine’s FL2300 webpage, and in a Panasonic camera, would be imported into the U.S. Fluorine argues, correctly, that there is no “evidence connecting that battery to Benia [or] Youcheng.” RRB at 7. But that is not the point; Fluorine sold FL2300 to an unidentified customer or distributor knowing the end product would be incorporated into a particular product, and it was foreseeable that that

[REDACTED]

product would be sold in the U.S. Fluorine also promoted FL2300 on its own using an image of that same downstream product.

So the circumstances of FL2300 are closely analogous to the facts of *Glass Substrates*, where knowledge that a downstream purchaser of the respondent's product would incorporate that product into their own articles, and then import them into the U.S., weighed in favor of sale for importation. See *Glass Substrates* at 6-7. It is enough, in fact, to tip the scales in favor of "sufficient involvement" for Fluorine. On balance, then, it was a foreseeable consequence of Fluorine's sale of FL2300 that the FL2300 would be imported into the U.S., such that Fluorine had sufficient involvement with that sale to be held liable for any violation. Otherwise Fluorine cannot be held liable for the sale of the other Fluorine Accused Products.

IV. U.S. PATENT NO. 8,337,725

A. Level of Ordinary Skill in the Art

The parties propose slightly different versions of a person of ordinary skill in the art ("POSITA") at the time of the 725 patent invention. Complainants argue for "a ph.D. in polymer chemistry or organic chemistry with at least one year of experience working with fluorinated or semi-fluorinated polymers." CIB at 29-30 (citing Hr'g Tr. (Smith) at 198:1-21). Complainants add, "[a] person with anything less than a Ph.D. would have insufficient experience with 2-D NMR and the synthesis and analytical characterization of fluoropolymers." *Id.* at 30 (citing Hr'g Tr. (Smith) at 193:7-24, 198:7-21; Hr'g Tr. (Swager) at [7]28:5-[7]29:2; Hr'g Tr. (Gido) at 1037:14-1040:20).

Respondents argue for a more flexible standard:

POSA would have had an advanced degree in chemistry, chemical engineering, polymer chemistry/science/engineering, or the like, and at least one year of experience designing, developing, researching, or characterizing in the field of fluorinated polymers. Tr. (Gido) at 829:2- 829:6, 1035:9-1036:11, 1041:1-1042:12.

Alternatively, a POSA would have had a bachelor's degree in chemistry, chemical engineering, polymer chemistry/science/engineering, or the like, and at least three years of experience designing, developing, or researching in the field of fluoropolymers. *Id.* at 829:6-829:15.

RIB at 25. They further argue that the specialized techniques used to characterize the polymers of the 725 patent could be supplied by others with skill beyond a POSITA. *See id.* at 26 (citing Hr'g Tr. (Swager) at 728:16-729:2; Hr'g Tr. (Smith) at 191:13-22, 461:13-17, 564:7-16).

The record supports Complainants' construction, which is similar but more demanding than Respondents' through the requirement of a Ph.D. The 725 patent specification explains, as supported by the final element of independent claim 1, that the particular "randomness" property of the (meth)acrylic monomer (MA) within the overall copolymer (A) is important to the invention. 725 patent at 4:39-43 ("It is essential that in polymer (A) the fraction of randomly distributed units (MA) is of at least 40%. Only polymers wherein this condition is fulfilled possess adequate thermal resistance in combination with other properties such as adhesiveness and/or hydrophilicity."); *see id.* at cl. 1. The patent suggests this level of control is difficult:

Copolymerizing vinylidene fluoride and hydrophilic (meth)acrylic monomer remains indeed an uneasy task, due to the very different reactivity of such copolymers and their intrinsic incompatibility.

Thus, while random distribution is targeted, blocky-type structures are obtained. This uneven distribution of the hydrophilic (meth)acrylic monomer units dramatically affects the thermal stability of the copolymer itself.

725 patent at 2:11-19. The patent then teaches that nuclear magnetic resonance (NMR) imaging is the tool to determine this randomness metric. *Id.* at 5:10-15 ("The average number of (MA) monomer sequences (%) can be determined *e.g.* by ¹⁹F-NMR according to standard methods. The fraction of randomly distributed units (MA) is of preferably at least 50%, more preferably of at least 60%, most preferably of at least 70%."), 12:26-29 ("Fraction of randomly distributed HEA units is determined by ¹⁹F-NMR, following an analogous procedure to that followed for

[REDACTED]

determining randomly distributed AA units fraction.”). It stands to reason that a person of ordinary skill in the art of controlling copolymerization reactions to achieve specified randomness/isolation of minority monomers would be familiar with and employ NMR tools towards that end.

The experts in this investigation seem to agree that NMR tools are sophisticated and of limited access, and the techniques require considerable experience. Hr’g Tr. (Swager) at 728:21-24 (“It turns out, companies do not maintain those types of facilities. They’re very expensive. Very skilled people do these experiments. So they usually outsource them. They would go to a university.”); Hr’g Tr. (Smith) at 198:13-21 (“Well, because of some of the techniques that are required. I think this patent requires a PhD. Somebody that has spent a long time looking at a lot of spectra and doing some NMR and a lot of characterization.”); *see generally* Hr’g Tr. (Gido) at 829:20-24 (“So this is Claim 1 of the ’725 patent, and it has in it a number of elements that require sophisticated, scientific measurements to determine.”). These conditions more closely align with the experience, status, and resources of a person with more time in academia, *i.e.*, a Ph.D., over those with a master’s or bachelor’s but more years of working experience. Alternatively, someone with many years’ experience working in the field but with less formal education would also qualify, but their experience would have to be significant—for instance, a laboratory technician with a bachelor’s degree but 15 years’ experience working with fluorinated polymers using NMR tools. Accordingly, a POSITA at the time of the 725 patent invention would have had a Ph.D. in polymer chemistry or organic chemistry with at least one year of experience working with fluorinated or semi-fluorinated polymers, with significant experience making up for less education and vice versa.

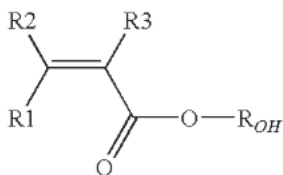
B. Claims-at-Issue

Claims 1, 3, 6, 8, and 9 of the 725 patent are at issue in this investigation, either through allegations of infringement or domestic industry technical prong. *See* CIB at 7-8. These claims are reproduced below, with limitation identifiers:

1. [1pre] A linear semi-crystalline copolymer [polymer (A)] comprising

[1a] recurring units derived from vinylidene fluoride (VDF) monomer and

[1b] at least one hydrophilic (meth)acrylic monomer (MA) of formula:



wherein each of R1, R2, R3, equal to or different from each other, is independently an hydrogen atom or a C1-C3 hydrocarbon group, and R_{OH} is a hydrogen or a C1-C5 hydrocarbon moiety comprising at least one hydroxyl group,

[1c] said polymer (A) comprising from 0.05 to 10% by moles of recurring units derived from said hydrophilic (meth)acrylic monomer (MA) and

[1d] being characterized by a fraction of randomly distributed units (MA) of at least 40%.

....

3. The polymer (A) of claim 1, wherein the fraction of randomly distributed units (MA) is of at least 50%.

....

6. The polymer (A) claim 1, undergoing a loss in weight of 1 wt in TGA analysis under nitrogen following ISO 11358 standard at a temperature of more than 350° C.

....

8. [8pre] A composition (C) comprising the polymer (A) according to claim 1 and

[8a] at least one VDF polymer comprising at least 70% moles of recurring units derived from VDF and,

[8b] optionally, up to 30% moles of recurring units derived from at least one other suitable fluorinated comonomer.

9. The composition (C) of claim 8 wherein the at least one other suitable fluorinated comonomer is selected from the group consisting of hexafluoropropylene, chlorotrifluoroethylene, and trifluoroethylene.

725 patent at cls. 1, 3, 6, 8, 9 (annotated).

C. Claim Construction

The parties identify several claim terms having disputed constructions. *See* CIB at 30-39; RIB at 26-44.

1. “fraction of randomly distributed units (MA)”

“[F]raction of randomly distributed units (MA)” appears in claims 1 and 3. The parties’ competing constructions are as follows:

Complainants	Respondents
Plain and ordinary meaning, <i>i.e.</i>, The percent ratio between the average number of (MA) monomer sequences (%), said sequences being comprised between two recurring units derived from VDF monomer, and the total average number of (MA) monomer recurring units (%), according to the following formula: $\text{Fraction of randomly distributed units (MA)} = \frac{\text{average number of (MA) sequences (\%)}}{\text{average total number of (MA) units (\%)}} \cdot 100$	The percent ratio between the average number of (MA) monomer sequences (%), where the sequence is an isolated recurring unit derived from (meth)acrylic monomer (MA) between two recurring units derived from VDF monomer, and the total average number of (MA) monomer recurring units (%), according to the following formula: $\text{Fraction of randomly distributed units (MA)} = \frac{\text{average number of (MA) sequences (\%)}}{\text{average total number of (MA) units (\%)}} \cdot 100$ when the linear semi-crystalline copolymer has been manufactured by a polymerization process comprising continuously feeding an aqueous solution comprising the hydrophilic

	(meth)acrylic monomer (MA) and maintaining the pressure in said reactor vessel exceeding the critical pressure of the vinylidene fluoride, during the whole duration of the polymerization run.
--	---

CIB at 30-31; RIB at 31-32. As is evident, the parties dispute: (1) whether the manufacturing conditions of the copolymer should be read into the claim; and (2) the meaning of the numerator in the given equation, “average number of (MA) sequences (%).” Complainants argue the manufacturing conditions should not be read in, and the numerator means a group (one or more) of MA units. *See* CIB at 31-37; CRB at 16-19. Respondents argue the process conditions must be read-in given statements in the specification and prosecution history, and the numerator means a single isolated MA unit. RIB at 32-39.

Starting with the equation, the record supports Complainants’ view. Despite using the term “random,” which in a plain and ordinary sense connotes unpredictability, the purpose of the invention concerns the degree to which MA units are distributed in small chunks within the copolymer; *i.e.*, not “blocky.” *See, e.g.*, 725 patent at 2:16-19 (“Thus, while random distribution is targeted, blocky-type structures are obtained. This uneven distribution of the hydrophilic (meth)acrylic monomer units dramatically affects the thermal stability of the copolymer itself.”), 2:22-25 (“wherein the formation of blocky domains of concatenated acrylic acid substantially depletes the resulting copolymers of the targeted properties”), 6:30-34 (“When less than 50% of total amount of monomer (MA) is continuously fed, variations in monomer (MA) concentration during polymerization typically occur: higher initial monomer (MA) concentrations can thus be encountered yielding monomer (MA)—blocky structures.”).

The patent provides an exact formula for “randomness” that also does not conform to any

sense of unpredictability—the amount of “AA sequences” divided by the amount of total AA:

$$\text{randomly distributed AA units fraction} = \frac{\% \text{ moles of AA sequences}}{\text{total } \% \text{ moles AA}} \cdot 100$$

725 patent at 12:5-8; *see id.* at 4:44-67. So while the starting point for any claim construction is the plain and ordinary meaning, when, as here, the specification is exact as to a different and specific meaning, the specification controls. This is a prime example of inventor lexicography. *Phillips*, 415 F.3d at 1316 (“[T]he specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor’s lexicography governs.”).

The parties’ dispute over this formula concerns the numerator of this equation, and whether it counts sequences of MA units (one or more) or only isolated MA units (exactly one). The record more strongly supports the former. The full context from the first introduction of the equation is as follows:

It is essential that in polymer (A) the fraction of randomly distributed units (MA) is of at least 40%. Only polymers wherein this condition is fulfilled possess adequate thermal resistance in combination with other properties such as adhesiveness and/or hydrophilicity.

The expression “fraction of randomly distributed units (MA)” is intended to denote the percent ratio between the average number of (MA) monomer sequences (%), said sequences being comprised between two recurring units derived from VDF monomer, and the total average number of (MA) monomer recurring units (%), according to the following formula:

$$\text{Fraction of randomly distributed units (MA)} = \frac{\text{average number of (MA) sequences (\%)}}{\text{average total number of (MA) units (\%)}} \cdot 100$$

When each of the (MA) recurring units is isolated, that is to say comprised between two recurring units of VDF monomer, the average number of (MA) sequences equal

the average total number of (MA) recurring units, so the fraction of randomly distributed units (MA) is 100%: this value corresponds to a perfectly random distribution of (MA) recurring units. Thus, the larger is the number of isolated (MA) units with respect to the total number of (MA) units, the higher will be the percentage value of fraction of randomly distributed units (MA), as above described.

725 patent at 4:39-67. The second passage in which the equation is mentioned concerns copolymers which explicitly use acrylic acid (“AA”) as the MA unit;

EXAMPLES

Determination of Average AA Content in VDF/AA Polymer

Total average AA content in polymer (A) is determined by acid-base titration of the carboxylic group. The procedure which has been followed is detailed here below.

A sample of about 0.5 g of polymer (A) is carefully weighted and dissolved in acetone at a temperature of 70-80° C. 5 ml of water are then added dropwise under vigorous stirring so that to avoid coagulation of the polymer. Titration with aqueous NaOH having a concentration of 0.1 N until complete neutralization of acidity is then carried out, with neutrality transition at about -270 mV. AA content is thus determined on the basis of measured acid equivalents.

Determination of Randomly Distributed AA Units Fraction

Fraction of randomly distributed AA units is determined by ¹⁹F-NMR. Signals related to CF₂ moieties of vinylidene fluoride units (in bold in following formula) adjacent to isolated AA units have been found to correspond to peaks at -94 ppm.



From the ratio between the intensities of this signal and all the peaks of the spectrum it is possible to determine the average number of AA sequences per 100 VDF units (*i.e.* % moles of AA sequences), and thus finally determine the fraction of randomly distributed AA units as a ratio between the % moles of AA sequences and the total average AA % moles:

$$\text{randomly distributed AA units fraction} = \frac{\% \text{ moles of AA sequences}}{\text{total \% moles AA}} \cdot 100$$

Id. at 11:43-12:3. Put together, these passages certainly mention the impact of isolated MA/AA units on the randomness fraction, and state that “vinylidene fluoride units (in bold in following

formula) adjacent to isolated AA units have been found to correspond to peaks at -94 ppm.” Yet each formula also clearly recites a count of MA/AA “sequences,” and when showing the chemical formula for AA contained within a VDF chain, uses a subscript “n” which connotes one or more AA units.³ It is also true that while a high count of isolated MA/AA units will achieve the aim of the invention (*i.e.*, avoid large blocks of enchaind MA/AA), a high count of MA/AA sequences for a set amount of MA/AA units will deliver a similar result. Logically, there cannot be large blocks if the amount of AA units are distributed amongst a similar amount of blocks.

This reference to a -94ppm measurement as part of ¹⁹F-NMR testing is perhaps the dispositive fact within the intrinsic evidence. As explained by Respondents, fluorine-19 nuclear magnetic resonance testing involves stimulating and detecting the resonance of the fluorine-19 atom within a particular polymer sample. RIB at 8. The resonance is recorded along a spectrum with different peaks indicating a different environment for the atom. *Id.* (“provides an indication of the chemical structure to which a given nuclei belongs.”). Complainants explain the graph depicts intensity on the y-axis and “chemical shift” on the x-axis quantified by parts per mole (ppm). Importantly, an atom’s neighbors influence its NMR measurement. As reproduced above, the 725 patent states that “[s]ignals related to CF₂ moieties of vinylidene fluoride units (in bold in following formula) adjacent to isolated AA units have been found to correspond to peaks at -94 ppm.”

Yet, in their presentations of non-infringement and section 112 invalidity, Respondents adamantly contend that the -94ppm reading of a ¹⁹F-NMR spectrum only reflects fluorine-19 atoms

³ In the related invalidity discussion, Respondents reference the testimony of one of the patent inventors, Dr. Julio Abusleme, where he testified “n” must be 1 (RIB at 117 (citing JX-0798C (Abusleme Dep.))), but the cited excerpt shows the witness had no personal understanding of the meaning of the -94ppm peak, leaving it to fellow co-inventor Dr. Emma Barchiesi (JX-0798C (Abusleme Dep.) at 113:6-118:2).

[REDACTED]

that are adjacent to an AA unit and does not reflect how many AA units are thereafter in the block; *i.e.*, it detects the bookends, not how many books are on the shelf. RIB at 51-52 (arguing Dr. Smith's -94 ppm result includes "isolated AA units, double AA units, tripled AA units, etc."), 61-62 ("2D NMR [using -94 ppm] is effective for showing that AA is adjacent to VDF – which is not in dispute – but not that the AA is isolated or random . . . Dr. Smith's conflation of adjacent with isolated is improper, and his 2D NMR tests do not establish randomness."); RRB at 31 ("[T]he H-NMR and 2D NMR tests can show that some AA units are adjacent to VDF monomers, but not that they are isolated. . . . Dr. Smith's H-NMR and 2D NMR cannot distinguish between Aas that are isolated and adjacent and those that are simply adjacent but not isolated."), 32 ("if Respondents' proposed claim construction for the Randomness Fraction term . . . is adopted, Syensqo will have no data to determine the numerator of the Randomness Fraction because Dr. Smith provided only data account[ing] for both isolated AA units (*e.g.*, 'VDF-AA-VDF') and multiple MA units (*e.g.*, 'VDF-AA-AA-VDF').").

Respondents' expert agrees. Hr'g Tr. (Gido) at 944:1-18, 978:7-979:16 ("But at least the implication is that this 2D NMR is showing single, isolated Aas, when, in fact, there's a difference between isolated and adjacent. This shows adjacent, but it doesn't necessarily prove that all these AAs are isolated."), 979:17-981:4. Even Complainants' expert, Dr. Smith, appeared to agree upon cross-examination. Hr'g Tr. (Smith) at 527:2-528:2 ("Q. So for a molecular structure of two or three or even four AAs between two VDF units, would you expect to see the correlation peaks at about the same region? A. Yeah. There would be a – roughly the same region, yes."), 529:17-530:9 (explaining different spectra results would be needed to determine presence or absence of multiple AA units); RHR'g Tr. (Smith) at 94:3-24 (the 94 ppm mark "is telling us there's something next to the CF 2 that is not like these other CF 2s at minus 95 – or minus 92. . . . those there's something

[REDACTED]

in there, and in fact, those are the CF 2s that are adjacent to the acrylic acid.”).

This limitation to -94ppm readings is further supported by credible expert testimony that NMR is only capable of detecting interactions between atoms that are within five or six bonds apart from one another. Hr’g Tr. (Gido) at 873:16-874:3, 980:1-12; *see* RHr’g Tr. (Smith) at 113:2-20. According to accepted diagrams, the fluorine-19 atoms on either side of an isolated AA unit are exactly six bonds away, pushing the detection to the limit (if possible at all). *See, e.g.*, RDX-0013C.77. Even then, no party presents evidence explaining how a six-bond-away fluorine-19 neighbor might impact the NMR result of a first fluorine-19 atom (*i.e.*, the interaction between two bookends). This is all further consistent with the 725 patent’s offhand reference that ¹⁹F-NMR can detect the “average number of (MA) monomer sequences” “according to standard [(*i.e.*, known and ordinary)] methods.” 725 patent at 5:10-12.

So, given the technical limitations of a -94ppm ¹⁹F-NMR reading, but its explicit recitation as a standard method for determining “% moles of AA sequences,” it is reasonable to find that a POSITA would not interpret “% moles of AA sequences” in a way that is incompatible with those limitations. They would not expect -94ppm to reveal only CF₂-AA-CF₂ sequences to the exclusion of CF₂-AA_{n+1}-CF₂ sequences. *See, e.g., Indivior Inv. v. Dr. Reddy’s Lab’ys, S.A.*, 930 F.3d 1325, 1342-43 (Fed. Cir. 2019) (construing claim term “cast film comprising flowable . . . matrix” to be consistent with the technical reality that a cast matrix is only flowable before drying”). This, combined with the rest of the intrinsic record, shows Complainants’ construction for “a fraction of randomly distributed units (MA) of at least 40%” is correct.

Accordingly, “fraction of randomly distributed units (MA)” means the amount of MA sequences divided by the total amount of MA units—not the amount of isolated MA units divided by the total amount of MA units.

[REDACTED]

With respect to whether the manufacturing steps, essentially imported from method claim 7, should be read into the phrase “fraction of randomly distributed units (MA),” the intrinsic evidence presents an extremely close issue. The Federal Circuit considered this issue with a similar record in *Vectura Ltd. v. Glaxosmithkline LLC*, 981 F.3d 1030 (Fed. Cir. 2020) (“*Vectura*”). There, the patent involved an additive material on the surface of a pharmaceutical, and the appellant argued the claimed apparatus should be read to “require that the composite particles be produced by the ‘high-energy’ milling process referred to in the specification.” *Id.* at 1037. The court disagreed, holding the overall weight of the specification indicated a mere preference for the technique and not a true requirement. *See id.* The court also held that statements made during prosecution did not rise to the level of disclaimer because the patentee used the differences in manufacturing only to show why the finished products were likely different:

The applicants added that Bosch “does not teach or suggest the milling of particulate surface modifier with drug particles. Instead, the milling operations disclosed in the Bosch reference are performed with liquid phase surface modifier, in other words, surface modifier that is a liquid or is in solution.” *Id.* Because Bosch teaches “the application of a film layer of surface modifier material by adsorption, which will produce a thin, uniform, continuous coating on the drug particles,” it does not “include particulate additive material on the surface of the active particles” and therefore “does not disclose the particles claimed in the present application.” J.A. 10221.

Although the applicants stated that the composite particles “are fused to the active particle in a manner only possible using an aggressive milling procedure,” J.A. 10218, that statement did not purport to add a process limitation to the apparatus claim. *Instead, that statement merely sought to demonstrate that Bosch's coated particles were necessarily different from the applicants' coated particles because Bosch used a process that could not possibly produce “particulate additive matter on the surface of [a] particle of active material,” as required by the applicants' claim.* Accordingly, the most reasonable interpretation of the April 2012 response is that the applicant distinguished Bosch based on the unique structure of the claimed composite particles, not the disclosed milling method. We therefore reject GSK's challenge to the district court's claim construction.

Id. at 1039 (emphasis added). The Court found these facts as falling between its prior cases,

Continental Circuits LLC v. Intel Corp., 915 F.3d 788 (Fed. Cir. 2019) (declining to read-in manufacturing steps) and *Andersen Corp. v. Fiber Composites, LLC*, 474 F.3d 1361 (Fed. Cir. 2007) (agreeing to read-in manufacturing steps) (“*Andersen*”). *Id.* at 1038.

The present record seems to fall somewhere between *Vectura* and *Andersen*. As noted by Respondents, the patent specification uses language of requirement in describing the pressure maintenance and continuous feeding manufacturing steps, like in *Andersen*:

It is essential that during the whole polymerization run, pressure is maintained above critical pressure of vinylidene fluoride. Generally the pressure is maintained at a value of more than 50 bars, preferably of more than 75 bars, even more preferably of more than 100 bars.

It is also mandatory that a continuous feeding of an aqueous solution of hydrophilic (meth)acrylic monomer (MA) is continued during the whole duration of polymerization run.

Only by combining these two conditions, it is advantageously possible to obtain a nearly statistic distribution of the hydrophilic (meth)acrylic monomer (MA) within the VDF monomer polymer backbone of polymer (A).

725 patent at 6:3-14; *see* 474 F.3d at 1366-67 (“The portions of the specification that describe how the physical properties of the claimed composite composition are obtained make clear that the formation of linear extrudates or pellets is not merely a preferred embodiment, but is a critical element in the process that produces those properties.”). Respondents add, with no dispute from Complainants, that all of the working examples in the patent include these two manufacturing conditions. RIB at 35 (citing 725 patent at 13:19-23, 13:37-40, 16:63-17:2).

But Complainants persuasively counter that these conditions are only needed for “a nearly statistic distribution,” meaning a 100% randomness metric—not the lesser 40% metric recited in the claim. *See* CIB at 32 (citing Hr’g Tr. (Smith) at 1252:10-13, 1326:4-10), 34. Respondents argue this can only be speculation as the patent uses the term “statistic distribution” once, as opposed to “random distribution,” which appears frequently. RRB at 20. Respondents have a

[REDACTED]

point, but the patent also teaches varying degrees of desirable randomness: “fraction[s] of randomly distributed units MA . . . of preferably at least 50%, more preferably of at least 60%, [and] most preferably of at least 70%.” 725 patent at 5:13-15. All of these are above 40% and could arguably pertain to “nearly statistic distribution.”

Turning from the specification, the 725 patent’s prosecution history resembles that in *Vectura*. In this case, the examiner initially rejected claim 1 in light of U.S. Pub. No. 2006/0047095 (“Pacetti”) finding that Pacetti described its monomer content as “random,” which the examiner took to mean “fully random” so as to satisfy the 40% metric recited in claim 1. JX-0002.442-443. The applicant responded that following the manufacturing steps was the only way to obtain the 40% metric, and doing otherwise (as in Pacetti) might produce something “generically being ‘random’” but would not produce the 40% metric; *i.e.*, the method *and* results were different:

Third, Applicants respectfully submit that Pacetti does not disclose a fraction of randomly distributed (MA) units of at least 40 %. Applicants respectfully submit that Comparative Example 3 of the instant application demonstrates that although generically being “random,” copolymers which are not manufactured in accordance with the specification (see paragraphs [0042] to [0046]), fail to possess a fraction of randomly distributed (MA) units of at least 40 %. Pacetti does not follow the steps provided in the instant specification, and therefore, does not teach or suggest a fraction of randomly distributed (MA) units of at least 40 %.

For a method of polymerizing VDF and a monomer (MA) to provide a random fraction of at least 40 % moles when polymerizing VDF and monomer (MA) in an aqueous medium in the presence of a radical initiator, the present application discloses:

- for an aqueous solution comprising monomer (MA) to be continuously fed;
- and

- for the pressure to be maintained at a value exceeding the critical pressure of vinylidene fluoride.

Even if Examples 1 and 2 of Pacetti could be construed as disclosing the polymerization of VDF and a monomer (MA), with the conditions described, the obtained polymer would have have a fraction of randomly distributed units of well below 40 %. The method described in Pacetti is distinguishable from the method described in the specification, leading to the high random fraction percentage, both (i) because the polymerization pressure is different and (ii) because there is no continuous addition of an aqueous solution of the monomer (MA).

Actually, in Example 1 of Pacetti, vinyl pyrrolidone is pumped into the autoclave after 30 minutes from the beginning of the reaction. That is, the entire amount of vinylidene fluoride is added at once at a certain point. There is absolutely no continuous addition of this monomer during the whole polymerization. Thus, there is no continuous addition of the same under the form of an aqueous solution. Rather, the only continuous addition of monomers to the polymerization of Example 1 of Pacetti is the addition of vinylidene fluoride and hexafluoropropylene, which are fed for maintaining pressure set-point. The instant specification discloses a continuous addition to achieving the randomness in monomer (MA) distribution. See paragraph [0045] of the instant

[REDACTED]

application. This is further corroborated by the evidence provided in Comparative Example 3 of the instant application, wherein the lack of continuous feeding provides for a 'blocky' polymer, and wherein the fraction of randomly distributed units (MA) is below 40 % moles.

With regards to the polymerization pressure, Pacetti discloses that monomers are added to maintain a polymerization pressure of 50 - 130 psig, which corresponds to a pressure of 3.4-8.9 bar, far beyond the pressure boundary detailed in the instant application as a mandatory requirement for achieving the randomness in monomer (MA) distribution (see paragraph [0044] of the instant application).

Therefore, the Office Action's assertion that the copolymer of Pacetti being described as "random" would meet the recited fraction of uniformly distributed (MA) units, is incorrect.

JX-0002.472-474.

The examiner and applicant took similar positions with respect to a second reference, U.S. Patent No. 4,861,851 ("Miyabayashi"). The examiner stated that Miyabayashi described its monomer content as "random," which the examiner again understood to mean "fully random" (*i.e.*, above the 40% metric recited in claim 1). JX-0002.443-444. The applicant disagreed and incorporated by reference the same argument from Pacetti:

[REDACTED]

The Office Action cites Miyabayashi for allegedly teaching all of the features recited by claim 1. Applicants respectfully submit that the Miyabayashi does not teach or suggest a fraction of uniformly distributed (MA) units of at least 40 %, for similar reasons as discussed above. As discussed above, the particular steps disclosed by the instant specification results in the recited fraction of randomly distributed (M) units of at least 40 %. That is failing to (1) continuously feed an aqueous solution of monomer (MA) and (2) maintain a pressure exceeding critical pressure of VDF, would inevitably lead to polymers having a fraction of distributed (MA) units of less than 40 %. The Office Action asserts that Example 6 of Miyabayashi teaches similar conditions to the instant application. Applicants respectfully submit that the polymerization conditions of Miyabayashi in Example 6 are similar to Comparative Example 3 of the instant application. Thus, one having ordinary skill in the art would expect Example 6 of Miyabayashi to result in a fraction of distributed unit of less than 40%. Therefore, Miyabayashi does not teach or suggest all of the features recited by claim 1.

JX-0002.474.

Thus, the applicant argued that the processes of the prior art could not possibly produce “fraction of randomly distributed units (MA) of at least 40%.” This resembles the prosecution history in *Vectura* discussed above. *See* 981 F.3d at 1039 (“that statement merely sought to demonstrate that Bosch's coated particles were necessarily different from the applicants’ coated particles because Bosch used a process that could not possibly produce ‘particulate additive matter on the surface of [a] particle of active material,’ as required by the applicants’ claim.”). In *Andersen*, on the other hand, there is no indication that the claimed and prior art end products were any different beyond the steps that created them. *See generally* 474 F.3d at 1368-69, 1373-75.

Accordingly, the intrinsic record does not amount to a clear and unmistakable intent to read-in the manufacturing limitations of claim 7 into the apparatus of claim 1.

2. “R_{OH} is a hydrogen or a C₁-C₅ hydrocarbon moiety comprising at least one hydroxyl group”

“R_{OH} is a hydrogen or a C₁-C₅ hydrocarbon moiety comprising at least one hydroxyl group”

appears in the body of claim 1. The parties’ competing constructions are as follows:

Complainants	Respondents
Plain and ordinary meaning	“R _{OH} is ... a portion of a C ₁ -C ₅ hydrocarbon substituted with at least one hydroxyl group (-OH).”

CIB at 37; RIB at 26. The parties’ disputes concern the elements: (1) “hydrocarbon moiety,” (2) “comprising,” and (3) “hydroxyl group.”

Complainants argue, “[a] POSITA would recognize that the recited ‘hydrocarbon moiety’ is met so long as there is a hydroxyl group on a hydrocarbon, even if that hydroxyl group is part of a larger functional group that could carry an alternative classification.” CIB at 38; *see* CRB at 19-20 (“the ‘hydrocarbon moiety,’ which by definition is part of a larger group . . .”). Complainants add that “nothing in the limitation forces the ‘hydroxyl group’ to be directly attached to the hydrocarbon moiety.” *Id.* at 20. Complainants specifically argue that carbonyl or carboxyl groups fall under the proper construction (CIB at 39) and that the corresponding foreign prosecution actually shows “the patentee made clear that carboxyls and alcohols both comprise an OH” (CRB at 20).

Respondents argue that, in a plain and ordinary sense, “moiety” means a part of a molecule, and “hydrocarbon” is strictly limited to molecules with only hydrogen and carbon, so “hydrocarbon moiety” must mean a portion of a C₁-C₅ hydrocarbon with no other atom species. RIB at 27; *see* RRB at 18. In light of this meaning, they further contend that “comprising” is not open-ended (*i.e.*, “having” not “having at least”) and in fact must mean “substituted” because an -

[REDACTED]

OH hydroxyl group contains more than hydrogen and carbon (*i.e.*, it is not a hydrocarbon itself). RIB at 27-28. Lastly, Respondents contend “hydroxyl group” can only mean -OH and does not mean more complicated groups that may contain an -OH. *Id.* at 28-29 (“not other functional groups containing an -OH” such as a carboxyl group).

The evidence supports Complainants’ position. Both parties agree that “moiety” plainly means a portion of a molecule, which is confirmed in at least Respondents’ cited dictionary. *See* CIB at 38; RIB at 27; RX-0052 (“A part of a molecule; for example, the sugar moiety in a nucleotide”). Thus, “R_{OH} is a hydrogen or a C₁-C₅ hydrocarbon moiety comprising at least one hydroxyl group” refers to the C₁-C₅ hydrocarbon portion of some larger molecule—and that portion includes within its composition at least one hydroxyl group. In other words, R_{OH} can be a simple hydrogen or a hydrocarbon molecule that has a OH group somewhere within its composition.

As to the nature of that “hydrocarbon,” potentially limited strictly to carbons and hydrogens, the intrinsic evidence supports Complainants’ interpretation. Both parties, through their experts, agree that a “hydrocarbon” in a plain and ordinary sense is comprised strictly of hydrogen and carbon atoms. Hr’g Tr. (Smith) at 452:4-454:11; Hr’g Tr. (Swager) at 750:13-18, 754:8-11. But the fact that the “hydrocarbon” of claim 1 explicitly includes an OH hydroxyl group breaks this rule.

Additionally, claim terms are to be interpreted in light of the specification, even when ascertaining the plain and ordinary meaning. *Phillips*, 415 F.3d at 1315. And a POSITA reading the 725 patent specification would certainly read, in the background section pertaining to fluorocarbon and hydrocarbon repeat units, that vinyl acetate, vinyl alcohol, acrylic acid, *acrylated*, and methacrylates are described as “hydrocarbon units.” 725 patent at 1:50-56

(emphasis added). This is important because Dr. Smith testifies without dispute from Respondents that acrylate, as one example, includes oxygen, which further breaks the rule. Hr’g Tr. (Smith) at 456:9-18; RDX-0017C.29; see RIB at 75. So the intrinsic evidence clearly and unmistakably confers a meaning upon “hydrocarbon” that allows for atoms other than carbon and hydrogen despite the perhaps stricter ordinary meaning.

In rebuttal, Respondents point to the monomer examples in the specification which are all consistent with a strict hydrogen and carbon (in addition to the OH hydroxyl). RIB at 28-29; RRB at 19. Yet it is important not to read embodiments from the specification into the claims, especially when those embodiments are introduced as “[n]on limitative examples.” 725 patent at 4:1-4 (“Non limitative examples of hydrophilic (meth)acrylic monomers (MA) are notably acrylic acid, methacrylic acid, hydroxyethyl(meth)acrylate, hydroxypropyl(meth)acrylate; hydroxyethylhexyl(meth)acrylates.”); *IQRIS*, 130 F.4th at 1004 (“It is the claims, not the preferred embodiments, that define the metes and bounds of the patentee’s invention.”).

As noted above, Respondents also urge that groups such as carboxyls include an extra oxygen atom in addition to an OH, and are recognized and distinguished from OH for this feature, which means “hydrocarbons” should in turn be strictly limited to exclude moieties with carboxyl groups. See RIB at 30; RRB at 19. This, however, is a non-infringement argument cloaked as claim construction and does not properly inform the analysis, and is further discussed below. *Vita-Mix Corp. v. Basic Holding, Inc.*, 581 F.3d 1317, 1324 (Fed. Cir. 2009) (“Claims are properly construed without the objective of capturing or excluding the accused device.”). Regardless, the record supports an understanding in the art that carboxyl groups (COOH), while given their own name, are still made up of two recognized sub-groups: a hydroxyl (OH) and a carbonyl (C=O). RIB at 3; CRB at 20; Hr’g Tr. (Smith) at 326:17-327:3; Hr’g Tr. (Swager) at 752:20-21; Hr’g Tr.

[REDACTED]

(Wanat) at 1084:13-1085:4. The patent itself recognizes a “carboxyl” group within its primary embodiment of acrylic acid. 725 patent at 11:43-49 (“EXAMPLES. Determination of Average AA Content in VDF/AA Polymer. Total average AA content in polymer (A) is determined by acid-base titration of the carboxylic group.”). So, for the purposes of this patent and asserted claims, a group’s identity is not lost when it is subsumed within a larger group. And the inclusion of an OH within a larger group still meets the meaning of “comprising at least one hydroxyl group.”

Accordingly, “R_{OH} is a hydrogen or a C₁-C₅ hydrocarbon moiety comprising at least one hydroxyl group” is not strictly limited to hydrogen and carbon in the “hydrocarbon moiety” and may include other atoms in addition to the “at least one hydroxyl group.”

3. “continuously feeding an aqueous solution” / “maintaining the pressure in said reaction vessel exceeding the critical pressure”

“[C]ontinuously feeding an aqueous solution” and “maintaining the pressure in said reaction vessel exceeding the critical pressure” appear in the body of unasserted method claim 7. The parties contest their meanings under the assumption that Respondents’ construction for “fraction of randomly distributed units (MA),” which reads-in these limitations to claim 1, prevails. As determined above, the intrinsic evidence does not support doing so. Accordingly, the parties’ disputes need not be addressed.

D. Infringement

According to Complainants’ post-hearing briefing, the use, manufacture, or sale of the Accused Products infringes claims 1, 3, and 6, and one product additionally infringes claims 8 and 9. CIB at 44, 69; CIB2 at 16. For the reasons discussed below, Complainants have shown infringement of these claims by the Accused Products.

Outside of a limitation-by-limitation analysis, Respondents’ briefing implies that there is no infringement as a general matter, because the only known imports of Accused Products

[REDACTED]

involved Complainants ordering and importing the products themselves via Mr. Brown, that these acts were therefore done with the authority of the patent owner, and that there is no direct infringement, by anyone, under 35 U.S.C. § 271. *See* RIB at 92-94; RRB at 46-49; RIB2 at 18-19; RRB2 at 2, 6. Respondents now raise the topic in connection with infringement, and only for the Sinochem Accused Products and the Juhua Accused Product, but they previously raised it in connection with remedy. *See* RPB at 186-187; *but see id.* at 105 (“other than Solvay itself”).

The issue is intriguing, and possibly presents a question of first impression. But Respondents have not demonstrated that any infringement was “with[] authority,” for two reasons. RIB at 92 (citing 35 U.S.C. § 271(a)). First, the cases on which Respondents rely are completely inapposite, as are Complainants’. *See id.* at 94 (collecting cases); CRB at 50. Section 271(a) makes it unlawful not merely to make, offer, or sell a patented product, but also to “import[]” one, so there might be caselaw at least from the U.S. District Courts addressing this question. But Respondents have cited none, and their argument cannot be adopted without more fulsome legal briefing. Second, Mr. Brown’s testimony on this point is also not especially fulsome. At best he testified that he knew his declaration submitted with the Complaint “would be used to advance the Complainants’ petition before the ITC.” Hr’g Tr. (Brown) at 622:18-20. The record contains no evidence of exactly what Complainants’ counsel told him, or of any emails or other documentary evidence regarding his instructions, or of who ultimately paid his fees (*i.e.*, Complainants’ counsel as opposed to Complainants or some third party). It stands to reason that Mr. Brown’s actions were orchestrated and approved by Complainants, but it would have been helpful to have had more pertinent evidence of precisely how he acted as Complainants’ authorized agent. So Respondents’ defense that no infringement occurred because the infringing activities were conducted “with[] authority” granted by the patentee is rejected.

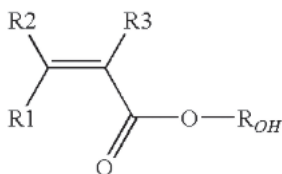
1. Claim 1

For reference, claim 1 of the 725 patent requires:

1. [1pre] A linear semi-crystalline copolymer [polymer (A)] comprising

[1a] recurring units derived from vinylidene fluoride (VDF) monomer and

[1b] at least one hydrophilic (meth)acrylic monomer (MA) of formula:



wherein each of R1, R2, R3, equal to or different from each other, is independently an hydrogen atom or a C1-C3 hydrocarbon group, and R_{OH} is a hydrogen or a C1-C5 hydrocarbon moiety comprising at least one hydroxyl group,

[1c] said polymer (A) comprising from 0.05 to 10% by moles of recurring units derived from said hydrophilic (meth)acrylic monomer (MA) and

[1d] being characterized by a fraction of randomly distributed units (MA) of at least 40%.

725 patent at cl. 1 (annotated). In support of their theory, Complainants rely on the testimony of Dr. Smith and a battery of experimental tests conducted on samples obtained from Mr. Brown and from Respondents as part of discovery in this investigation. *See generally* CIB at 44-91; CIB2 at 16-40. The products from each of Fluorine, Sinochem, and Juhua are addressed below.

a. Fluorine

Complainants represent that Respondents do not dispute the Fluorine Accused Products meet limitations [1a] and [1b]. CIB at 47, 48-49. Respondents' briefing confirms there is no dispute for these limitations, nor is there a dispute for limitation [1c]. *See* RIB at 44-69; RRB at 25-35. In light of the expert testimony and evidence cited, Complainants have shown these

[REDACTED]

limitations are met in the Fluorine Accused Products. *See* CIB at 47-52; Hr’g Tr. (Smith) at 207:20-209:23, 222:10-226:13, 229:6-14, 236:13-237:24.

A portion of limitation [1pre] is in dispute. For “semi-crystalline copolymer,” there is no genuine dispute. Complainants argue that “Fluorine characterizes each of the Fluorine Accused Products as copolymers in its technical documentation” and “Fluorine admits that ‘each Accused Product is a copolymer containing at least segments corresponding to polyvinylidene fluoride.’” CIB at 44 (citing JX-0303C.13, 16; JX-0283C.15). Complainants also argue: “Each Fluorine Accused Product has a melting point and is therefore semi-crystalline. For example, Fluorine’s corporate witness admitted that Fluorine measures the melting points of its polymers and that products cannot leave Fluorine’s factory if test results fall outside of acceptable ranges.” *Id.* at 46 (citing JX-0075C (Miao) at 56:10-57:14). Respondents offer no dispute on these two elements. *See* RIB at 62; RRB at 32-33. Thus, “semi-crystalline copolymer” is met.

The actual dispute (assuming this portion of the preamble is limiting) is over whether the Fluorine Accused Products are “linear.” Complainants, citing Dr. Smith’s test results and testimony, argue the opposite of linear is branching, and branching is detectable by 1D NMR and 2D NMR testing, among other things. CIB at 45-46 (citing Hr’g Tr. (Smith) at 214:20-216:19). Complainants add that Respondents’ experts, Dr. Swager and Dr. Gido, agreed that even linear copolymers still contain minimal amounts of branching, and Dr. Gido agreed 2D NMR can detect this attribute. CRB at 24 (citing Hr’g Tr. (Swager) at 776:2-8; Hr’g Tr. (Gido) at 896:18-20, 999:6-7).

Complainants and Dr. Smith are persuasive. The 2D NMR testing shows areas where certain hydrogen (a.k.a. proton) and carbon environments overlap (setting aside Respondents’ arguments over carbon-13 rarity, addressed below). Hr’g Tr. (Smith) at 210:6-14, 214:20-25; RIB

[REDACTED]

at 64; RRB at 31 n.22; Hr’g Tr. (Gido) at 978:7-17. Below are Dr. Smith’s 2D NMR test results for commercial PVDF, which includes branching (left), and sample P006, which is a sample of FL2300 purchased by Mr. Brown and does not include branching (right):

[REDACTED]

CDX-0001C.55 (citing JX-0390C (FL2300, P006); RX-3040C (FL2300, P013)).⁴ Dr. Smith testified and displayed similar results for each of the samples of FL2310, FL2600, and FL2800. Hr’g Tr. (Smith) at 214:20-216:19; CDX-0001C.56 (citing JX-0474C (FL2310, GP07); JX-0501C (FL2310, P014); JX-0480C (FL2600, GP08); JX-0540C (FL2600, P015) JX-0391C (FL2800, P009); JX-0508C (FL2800, P016)). All results show a distinct absence of cross-peaking at the areas Dr. Smith testified, without opposition, would show branching.

Respondents’ substantive opposition is that the particular carbon tested in this NMR is carbon-13, a relatively rare carbon, and so the results “will only detect about 1 out of every 100 branch points,” and are “not probative of anything . . .” RIB at 64 (citing Hr’g Tr. (Gido) at 915:18-916:19); CRB at 33. But even if the carbon NMR is so limited, the same test was conducted for commercial PVDF and the Fluorine samples, and the results are markedly different. And

⁴ Dr. Smith’s demonstrative, CDX-0001C.55, does not cite an exhibit for the commercial PVDF homopolymer, but there appears to be no dispute from Respondents that its 2D NMR results are reliable.

without any testimony from Dr. Guido that carbon-13 and more naturally occurring carbon (presumably carbon-12) exhibit different propensities for branching, the results make it more likely than not that the Fluorine Accused Products lack a meaningful amount of branching and are therefore linear. The limitation is met.

Next, Respondents dispute limitation [1d] and the requirement for “a fraction of randomly distributed units (MA) of at least 40%.” Complainants and Dr. Smith argue this quantitative fraction, defined by the equation given in the 725 patent, is met based on a first suite of tests for the numerator and a second for the denominator:

$$\text{randomly distributed AA units fraction} = \frac{\% \text{ moles of AA sequences}}{\text{total } \% \text{ moles AA}} \cdot 100$$

725 patent at 12:5-8.

Randomness Numerator

For the numerator, Dr. Smith employed ¹⁹F-NMR testing to show the amount of AA sequences, the claimed “hydrophilic (meth)acrylic monomer,” in the sample. CIB at 53 (citing Hr’g Tr. (Smith) at 210:7-211:20, 246:22-247:5). Complainants look to the patent’s teaching that “[t]he -94 ppm peak is attributable to the two CF₂ groups—corresponding to VDF—that are adjacent to the AA in the Fluorine Accused Products.” *Id.* (citing, *inter alia*, 725 patent at 11:60-65; Hr’g Tr. (Wanat) at 1116:2-1117:10)). When a ¹⁹F-NMR spectrum of an accused product is compared to the -94ppm mark, Dr. Smith integrates that nearby curve and normalizes on a per-fluorine basis to find the percent of CF₂ groups adjacent to an AA within the sample. CIB at 43 (citing Hr’g Tr. (Smith) at 193:8-12), 53-54 (citing Hr’g Tr. (Smith) at 247:4-18, 240:14-19, 241:14-16, 247:4-18, 248:22-249:3, 252:6-7). An example curve and calculation are shown below in demonstratives for sample P006, which is FL2300:





Complainants and Dr. Smith are persuasive that these tests reliably show the percent amount of MA (AA) sequences within a sample. Respondents and the Fluorine Accused Products expert, Dr. Samuel Gido, offer a number of reasons to doubt Dr. Smith's calculations, including in light of their own experimental results, but, among other problems, provide only minimal technical explanations of those results.

For example, Respondents fault Dr. Smith for not counting and integrating *all* the peaks present in the ^{19}F -NMR spectrum, as instructed by the 725 patent. RIB at 50 (citing 725 patent at 11:65-12:5). In the P0006 sample shown above, these extra peaks would be any which are not captured by a red bracket annotation. *See* RDX-0015C.26, 28. Respondents point to Dr. Gido's testing, where this was done, to show that Dr. Smith's numerator values for the Fluorine Accused

[REDACTED]

Products [REDACTED]

[REDACTED] This is not particularly persuasive, however. Respondents' other expert, Dr. Robert Wanat, examined a ^{19}F -NMR spectrum of a Sinochem accused product, SN-25628, and described the smallest perturbations as "noisy background," which is understandable given the sensitivity of NMR instrumentation. Hr'g Tr. (Wanat) at 1116:2-1117:22; *see* RDX-0006C.32; *see also* Hr'g Tr. (Smith) at 191:23-193:12. Dr. Gido's inclusion of all "peaks" for the Fluorine Accused Products seems to capture every instance of noise and yet treat it as meaningful fluorine resonance:

[REDACTED]

RDX-0015C.28 (citing RX-2180C); Hr'g Tr. (Gido) at 936:3-20. This does not come across as proper given Dr. Wanat's testimony, Dr. Smith's explanation of the chemistry represented by his

[REDACTED]

[REDACTED]

[REDACTED]

In particular, Dr. Smith testified that his team “integrated everything that was significant,” and if something was “questionable,” they integrated that as well, and it did not “change anything.” Hr’g Tr. (Smith) at 485:6-24.

Respondents also challenge the temperature at which Dr. Smith conducted his ^{19}F -NMR testing. They argue Dr. Smith used an “elevated temperature of 60°C that required specialized equipment, but when pressed could not provide a scientific basis for using that temperature.” RIB at 51 (citing Hr’g Tr. (Smith) at 488:14-489:10). Dr. Guido, on the other hand, presented ^{19}F -NMR results at a range of lower temperatures, including room temperature, to show how the spectrum changes—in particular, how the single peak at approximately -94.5ppm migrates and splits into two peaks and minimal side peaks additionally appear:



RDX-0015C.33; *see* RIB at 51 (citing Hr’g Tr. (Gido) at 940:10-942:15; RX-2175C; RX-2174C through RX-2184C), 52 (citing Hr’g Tr. (Gido) at 946:25-947:25). Respondents contend that the lower temperatures, in particular, 5°C, provide “the clearest possible resolution” and when that data is used for the integral/normalized calculations (along with other variations, such as counting all noise peaks as above, or removing/including green arrow peaks), Dr. Smith’s numerator percentages are again shown to be inflated. *See* RIB at 51-52 (citing Hr’g Tr. (Gido) at 948:1-24). In his testimony regarding invalidity, Dr. Gido testified that at higher temperatures the two fluorine groups that are adjacent the AA block (single or multiple) are in fact different from one another but are “spinning around so fast that the NMR can’t distinguish them”:

A: . . . So initially, the temperature is going to be high at 60 degrees C. The molecule is going to be spinning around very fast. At that high temperature, the NMR -- you won't be able to see the separate fluorine atoms, and neither will the NMR.

So the fluorines -- there's two different fluorines that are beside the AA group, and they're actually different from one another for reasons of stereo chemistry.

At high temperatures, they're spinning around so fast that the NMR can't distinguish them, so it produces a single peak.

As you lower the temperature, the spinning becomes slower, and the -- then the NMR can start to resolve the individual atoms of fluorine, just like you will be able to start to see them. The peak starts to split because it can tell they're different. So it's getting two different peaks for these two different fluorines.

As the temperature continues lower, the fluorines become more distinguishable, and the peak continues to split, and become resolved into two peaks.

Hr'g Tr. (Gido) at 866:9-867:5; *see id.* at 938:22-939:23 (referring back to earlier invalidity testimony). Notably, Dr. Gido still considers the two red arrow peaks to represent the two fluorines adjacent to an AA and not some other fluorine environment unrelated to the presence of AA. *Id.* at 946:9-20.

Even accepting Dr. Gido's opinions on spin and resolution as accurate, which Complainants and Dr. Smith apparently do (CRB at 34 (citing Hr'g Tr. (Smith) at 1330:13-25, 1357:24-1358:8)), the overall record favors Dr. Smith's 60°C, single peak approach. As discussed above for claim construction, the patent teaches and claim 1 requires a VDF-based copolymer with a particular percentage of AA sequences, which, as far as a ¹⁹F-NMR spectrum is concerned, means a CF₂-AA_n-CF₂ grouping. For this reason, test parameters that coalesce the CF₂ signals into a single grouping indicated by a single peak, rather than delineating between each peak, is more reasonable. A single peak also better accommodates the patent's expectation of -94ppm as the relevant spectrum value, while multiple peaks move the pertinent measurement further away, as shown in Dr. Gido's results. *See, e.g.,* Hr'g Tr. (Gido) at 943:19-21 ("It's not clear which of these peaks are the ones that the patent is teaching to include in the integration of the signal at minus 94

[REDACTED]

PPM.”); RDX-0015C.33. In short, the 60°C is more consistent with the patent’s teachings because it more clearly yields the desired -94ppm peak, so overall Dr. Smith has the more reliable approach.

Respondents offer another challenge related to changing temperature. Once the ¹⁹F-NMR has been cooled to 5°C, and the two peaks are distinguished, Respondents and Dr. Guido allege that these peaks (“Peak 1,” “Peak 2”) in fact include two additional subpeaks (“Peak 3,” “Peak 4”), wherein Peak 3 is embedded within Peak 1. This theory is illustrated in the following demonstratives:





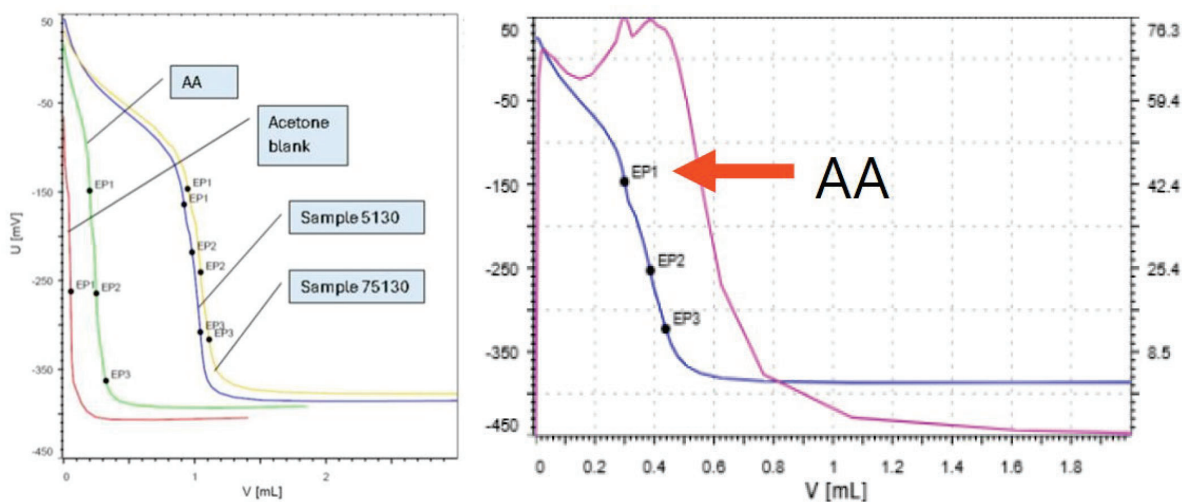
RDX-0015C.40, 41; *see* Hr’g Tr. (Gido) at 943:4-945:8. Respondents contend that Peak 3 and Peak 4 represent non-isolated blocks of AA such that they need to be excluded if Respondents’ construction of “randomness” as isolated is adopted. RIB at 51-52; Hr’g Tr. (Gido) at 946:12-20. As determined above, however, Respondents’ construction is not adopted in part because of the admitted technical limitations of a -94ppm reading. Even then, Dr. Gido’s opinion on the matter suggests a high degree of uncertainty about the test results and so is not especially reliable. Hr’g Tr. (Gido) at 944:6-13 (“We’re not sure what peaks 3 and 4 are, but they might include sequences of multiple AAs, or they might include – they might not.”).

Accordingly, the record supports Complainants’ and Dr. Smith’s testing and calculations for the numerator of the randomness fraction.

Randomness Denominator

For the denominator, Dr. Smith employed potentiometric titration (“PT”) testing to show the overall amount of AA (isolated or not) in a given sample—the same test used for limitations

[1b] (showing presence of AA) and [1c] (showing mole percentage of AA). CIB at 54; *see* Hr’g Tr. (Smith) at 252:12-253:1. Complainants and Dr. Smith explain that he first ran a PT control test which showed pure AA has an endpoint (*i.e.*, complete neutralization of all acid in the sample) of about 150mV, and the Fluorine Accused Products demonstrated an endpoint at this 150mV value as well. CIB at 50 (citing Hr’g Tr. (Smith) at 230:5-12, 230:22-231:13), 52; *see* RIB at 52 (“at what point all the acid being titrated has been used up (neutralized) by the base.”). According to Complainants, “[Dr. Smith] conducted multiple experiments for each sample, and averaged the measured %AA to get an Average AA%” to form the denominator for the randomness equation *Id.* at 54. Exemplary PT testing results for the AA control (left, green) and sample P006 (right, blue) are below:



CDX-0001C.76, 74; Hr’g Tr. (Smith) at 231:8-13 (“A. It’s very important to get the right end point, and the end point for this carboxylic acid enchaind in the PVDF polymer is around minus 150 millivolts. That was the same potential we found for the end point everywhere.”). Importantly, Dr. Smith *exclusively* used the 150 mV EP1 as the endpoint of the titration for all Fluorine Accused Products.

[REDACTED]

Complainants have met their burden. The 725 patent describes a titration protocol consisting of dissolving 0.5 g of polymer in acetone at a temperature of 70-80°C, adding 5 ml of water under vigorous stirring to avoid coagulation, and titrating using aqueous NaOH having a concentration of 0.1 N until “complete neutralization of acidity,” with “neutralization transition at about -270 mV.” 725 patent at 11:51-58. The polymer content can then be calculated based on the amount of NaOH added. *See id.*; Hr’g Tr. (Smith) at 189:10-190:10.

Dr. Smith followed some of this protocol, and filled in gaps where necessary, but also deviated from some of it. For instance, he chose to use a “Metrohm titrator,” which apparently measures neutralization by detecting the electrical potential across the solution as the NaOH is added, with neutralization occurring at what the machine identifies as the “endpoint” or “equivalence point,” and which it indicates as “EP.” Hr’g Tr. (Smith) at 229:6-17, 490:10-491:7; Hr’g Tr. (Gido) at 950:6-951:11, 955:18-956:6 (“So [the machine] will look at that curve, and it will pick the maximum rate of change, and say that’s an end point. . . . Dr. Smith has taken that machine-identified point . . .”), 958:10-16. As another example, he chose to dissolve the polymer in 50 ml of acetone but deviated from the patent’s teaching by adding 4 ml of water rather than 5 ml. Hr’g Tr. (Smith) at 492:9-21.

Fluorine takes issue with several aspects of the protocol Dr. Smith followed, including the amount of acetone used (50 ml versus 100 ml), the amount of water added (4 ml versus 5 ml), the electrode used (an “Ecotrode” versus a “Solvotrode”), and the starting temperature (40°C versus 25°C). *See* RIB at 57. These are not claim elements, nor do Respondents assert that they are. *See 3M Innovative Properties Co. v. GDC, Inc.* 109 F.Supp.3d 1115, 1137 (D. Minn. 2015) (citing *ADC Telecommunications, Inc. v. Switchcraft, Inc.*, 281 F. App’x 989, 992 (Fed. Cir. 2008) (where the specification “lacks any clear indication that a particular testing method is required,” the test

[REDACTED]

method relates to infringement and is a “factual question”)). But it is reasonable to suppose that different protocol parameters might yield different results, and Fluorine does assert that its own testing, using different parameters, shows no infringement of claim 1. *See* RIB at 57-58.

It is not clear, though, that these different parameters yield significantly different results. The use of 50 ml of acetone and 4 ml of water is of little significance, because a POSITA would have known that “if you did it correctly,” meaning if enough acetone (the “good solvent”) is added relative to the amount of water added, so that “the sample is soluble” and there is no precipitate at the endpoint analyzed, the results provide “the same amount of [base] to titrate the same amount of acid.” Hr’g Tr. (Smith) at 505:18-506:9, 1358:12-1359:25. It is reasonable that the quantity of acidic polymer measured should depend mainly on the quantity of base with which it is titrated—because that is the point of titration—and should not depend to any significant extent on the amount of solvent used. So Dr. Guido’s results, where the measurement varied by about a factor of three even though the amount of solvent only doubled (50 ml to 100 ml of acetone), requires some plausible explanation, which Dr. Guido did not provide. *See* Hr’g Tr. (Guido) at 888:17-891:20 (citing RDX-0013C.90). Respondents imply that the difference might have to do with coagulation, which Dr. Guido observed in his testing, but Dr. Smith testified repeatedly that his own testing showed no coagulation at the endpoint he relied on. *See* RIB at 56 n.21; Hr’g Tr. (Smith) at 513:15-518:5.

As for the other parameters, Dr. Smith performed tests using both the Ecotrode and Solvotrode, and the test results he reported relied on the Ecotrode, which came with the Metrohm system, but the Solvotrode “gave the same data.” Hr’g Tr. (Smith) at 492:22-493:10. Dr. Guido’s tests using both electrodes show strikingly different results, which Dr. Guido only explained by observing that one electrode is designed for aqueous solutions and the other for organic solutions,

[REDACTED]

and PVDF dissolved in acetone is a “middle ground.” Hr’g Tr. (Gido) at 884:3-887:1 (citing RDX-0013C.88). And Dr. Smith testified that his titrations were all done at the same temperature and were “well-behaved,” and that, “done properly,” temperature does not affect titration results, and although Dr. Gido’s results do show some variation based on titration temperature, he did not quantify that variation except to note that a higher titration temperature (60°C, just below the boiling point of acetone) yields a higher measured acrylic acid concentration. Hr’g Tr. (Smith) at 494:7-16; RHr’g Tr. (Smith) at 91:2-8; Hr’g Tr. (Gido) at 891:24-893:5; RDX-0013C.92 (citing RX-2115C at 10-11). In any event, Dr. Smith later ran the tests at room temperature with very similar results. *See* CIB at 50-52 (citing test results).

Beyond temperature, electrode, and solvent parameters, Fluoride also challenges Dr. Smith’s testing based on the endpoint he identified; in fact, this is the principal titration-related dispute between the parties. *See* RIB at 52-57. It is undisputed that the various titrations of the Fluorine Accused Products yielded multiple endpoints, and that Dr. Smith relied on the endpoints centered on about [REDACTED]. *See id.* at 54, 57. Fluoride argues that Dr. Smith’s selection finds “no support . . . in science,” but the testimony on which they rely for that proposition does not say that. RIB at 54 (citing Hr’g Tr. (Gido) at 956:11-19 (Dr. Smith’s selection “discount[s] what the patent is teaching,” but otherwise not opining that it had no scientific basis); Hr’g Tr. (Wanat) at 1108:10-17 (Dr. Smith’s selection was “[f]or some reason” but otherwise not opining that it had no scientific basis)).

And in fact Dr. Smith provided a very reasonable explanation for his selection of endpoint: “if you’re going to do a titration,” you have to first test “the blanks, the calibration, and the control, and the standard.” Hr’g Tr. (Smith) at 1331:20-1332:9. One example of this is shown in a compilation of his test results for the DI Products:



CDX-0001C.76 (compilation of JX-0404C, JX-0411C, JX-0412C, JC-0413C, JX-0414C, JX-0596C, and JX-0615C). The curve in red records the titration of pure acetone, which yields one endpoint at about [REDACTED] mV:

Q. So, Professor Smith, how did you figure out that EP1 at about minus [REDACTED] corresponds to [REDACTED] in the polymers that you tested?

A. Well, the [REDACTED] is the blank. We ran the control and the blank, and found EP2, and it was reproduced in the copolymers.

Q. Do you have a slide describing that analysis?

A. Oh. So this is a comparison of the blanks. So in this titration curve on the right on slide 76, we see the acetone blank is the first one, the red one. The red curve. So we do want to see if there's any interaction with the acetone during this addition of base. We do find there is an interaction. There is some equivalence point occurring and reoccurring. It's reproducible around minus [REDACTED].

Q. Remind us, what is in the beaker when you are doing the red-line titration?

[REDACTED]

A. Just acetone and the blank, and I believe the polymer is -- no, just acetone and the blank. Just acetone. I'm sorry.

Q. Why did you pick acetone for that blank?

A. The acetone is the solvent that we're running all of the titrations in. So we need to understand if there's any solvent interactions that we need to worry about. We find that there is some type of interaction. There is a reaction. But that's way down at minus [REDACTED], and it doesn't interfere with our end point that we're trying to find. That's good information to know. We have to know that, and we need to understand that we need to stay away from the minus [REDACTED].

Hr'g Tr. (Smith) at 232:3-233:8.

In other words, Dr. Smith concluded that "there is some type of interaction" between the acetone and the NaOH, but it was obviously not the interaction he was looking for, so any endpoint in the vicinity of [REDACTED] mV could be ruled out. *Id.* In Dr. Guido's view, Dr. Smith concluded the - [REDACTED] mV endpoint "must be an endpoint of acetone," even though acetone is "not an acid" and so is not titratable. Hr'g Tr. (Guido) at 955:7-956:19. Dr. Guido's opinion on this is both incorrect (because Dr. Smith concluded only that [REDACTED] mV indicated some sort of interaction, but not necessarily an endpoint) and not clearly relevant (because the purpose of titrating the acetone blank is to rule out "spurious" endpoints associated with that blank). RIB at 54. And the fact that the - [REDACTED] mV endpoint is not the correct one is consistent with the very small quantity of NaOH needed to achieve it.

Dr. Smith then titrated monomeric [REDACTED] dissolved in acetone, which is represented by the green curve above. *See* Hr'g Tr. (Smith) at 233:9-234:4. The endpoint associated with the acetone was again detected at about - [REDACTED] mV, as expected, and two other endpoints were also detected, at about - [REDACTED] mV and [REDACTED] mV. *See id.*; CDX-0001C.76. Although the record is unclear as to what the [REDACTED] mV endpoint represents, Dr. Smith confirmed that the correct endpoint to analyze was about [REDACTED] mV by titrating the DI Products, where "we know what the comonomer

[REDACTED]

is.” Hr’g Tr. (Smith) at 233:9-234:4, 374:13-21. That is, the titrated DI Products, which were known to contain some quantity of [REDACTED] and which are shown above in yellow and purple, displayed approximately the same endpoints as the control, from which Dr. Smith concluded that the endpoint to analyze was the one at about [REDACTED] mV, corresponding to the [REDACTED] endpoint. *See id.* Using that endpoint Dr. Smith could titrate “the unknown copolymers,” that is, the Accused Products, and “find out the exact amount of acid in each.” *Id.* [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

JX-0526C at 4.

Fluorine’s two main challenges to this analytical approach, other than its unsupported and plainly incorrect claim that it “finds no support . . . in science,” are that Dr. Guido’s attempted replication of Dr. Smith’s testing resulted in coagulation, which compromised the test results, and that the patent expressly teaches use of an endpoint at about -270 mV. *See* RIB at 52-57. Again, Dr. Smith testified that he observed no coagulation at the [REDACTED] mV endpoint, so Dr. Guido’s contrary results are puzzling. Dr. Guido’s coagulation-related criticisms are nonetheless rejected, for three reasons. First, it would seem easy to achieve coagulation or precipitation simply by adding the water too quickly or by not performing “vigorous stirring,” as the patent suggests. 725 patent at 11:51-58. Dr. Smith testified that his team “monitored the solution to make sure it remained clear,” but Dr. Guido did not expressly testify how much effort his team put into avoiding precipitation or coagulation, so the different results might be explained by different experimental conditions. Hr’g Tr. (Smith) at 234:5-17. Second, Dr. Guido’s opinion on this point would have been more

[REDACTED]

persuasive if he had analyzed Dr. Smith's data in addition to his own; he suggests, for instance, that coagulation can be detected merely by examining the shape of the titration curve, but although he did illustrate this by discussing his own titration results, he did not discuss the shape of Dr. Smith's curves. *See* Hr'g Tr. (Gido) at 878:13-882:1. And Dr. Smith's curves show generally consistent results, implying that if there was coagulation, it was in every sample run, which seems unlikely. *E.g.*, JX-0733C at 31-33, 47-49 (showing generally consistent results for samples P006 and P013, corresponding to FL2300). Third, Dr. Gido admitted on cross-examination that many of his results actually did not show the cloudiness indicative of coagulation or precipitation, even at the -[REDACTED] mV endpoint he used, although they sometimes did show coloration. Hr'g Tr. (Gido) at 1008:25-1015:11, 1017:3-1019:6.

As for the patent's teaching of an endpoint at -270 mV, Dr. Smith correctly opined that it is "a mystery." Hr'g Tr. (Smith) at 1331:20-1332:9. The patent does not even state that it is an endpoint, and instead calls it "neutrality transition," a characterization Dr. Smith called "obscure." *Id.*; 725 patent at 11:57. Dr. Gido opined that acetone cannot be titrated because it is not sufficiently acidic, so the [REDACTED] mV "EP" Dr. Smith observed when titrating pure acetone was merely "an artifact." Hr'g Tr. (Gido) at 955:7-956:19. But he also opined that "[t]he machine identifying an end point [REDACTED] is not real, and that's not a reason to override the teachings of the patent"—which only deepens the mystery, because it implies that the patent identifies an "artifact" as the proper endpoint to use. *Id.* at 956:22-957:12. Dr. Wanat offered no explanation for the patent's identified -270 mV endpoint, other than that the patent taught that, and even suggested that he did not understand why Dr. Smith chose "minus [REDACTED] millivolts to minus [REDACTED] millivolts" as his endpoint, which seems implausible given Dr. Wanat's impressive education and experience. Hr'g Tr. (Wanat) at 1107:-1108:17 ("For some reason, Dr. Smith chose to use . . .

minus [REDACTED] millivolts to minus [REDACTED] millivolts.”). Dr. Spontak, Juhua’s expert, did understand Dr. Smith’s rationale for not using -270 mV, but otherwise had little to say on the matter. RHr’g Tr. (Spontak) at 189:22-190:17. Dr. Julio Abusleme, one of the inventors, was not explicitly asked why the patent specified -270 mV for “neutrality transition,” but he did explain that the type of solvent and the volume of solvent could affect “the equivalent point.” JX-0798C (Abusleme Dep.) at 107:13-108:22. Such testimony generally supports Dr. Smith’s test protocol, and also supports Dr. Smith’s opinion that the -270 mV value is simply “guidance.” Hr’g Tr. (Smith) at 462:17-20.

On balance, in fact, interpreting the -270 mV reference in the patent as only guidance is the most reasonable conclusion. No expert offered a scientific reason for selecting that endpoint as the correct one, and although Dr. Gido testified generally about titration curves and “polyprotic acids” to suggest that Dr. Smith’s chosen endpoint was incorrect, no expert (other than Dr. Smith) had any explanation at all for what the -[REDACTED] mV endpoint represented. Hr’g Tr. (Gido) at 813:15-817:4; *see* Hr’g Tr. (Smith) at 491:23-492:2 (“we did not see polyprotic behavior”). It is entirely reasonable that the [REDACTED] mV endpoint represents the same [REDACTED] known to be in the DI Products, that the -[REDACTED] mV endpoint represents “interaction” with acetone, and whatever remaining endpoints (there are sometimes more than three) represent some other interaction or dissolved substance. So Dr. Smith’s analyses are accepted.

And those analyses show endpoints for FL2310, FL2600, and FL2800 at about [REDACTED] mV, as shown in a compilation demonstrative:

[REDACTED]

[REDACTED]

CDX-0001C.75; *see* Hr’g Tr. (Smith) at 237:7-16. The same is seen for FL2300. *See* JX-0733C at 31-33, 47-49. Based on these results, Dr. Smith calculated the denominator of the randomness formula, which he also used to show satisfaction of element [1c]:

	Imported				Produced			
	FL2300	FL2310	FL2600	FL2800	FL2300	FL2310	FL2600	FL2800
Average % AA	[REDACTED]							

CDX-0001C.79; *see* Hr’g Tr. (Smith) at 252:12-253:2. It is unclear where in the record these calculations are recorded, but Respondents do not contest them. Dr. Smith testified that plugging the NMR results and the average AA percent into the randomness formula resulted in a randomness percentage exceeding 40%; the P006 analysis is representative:

[REDACTED]

[REDACTED]

CDX-0001C.95-.96; *see* Hr’g Tr. (Smith) at 253:3-254:5. Dr. Smith found a “fraction of randomly distributed units” exceeding [REDACTED] % for all Fluorine Accused Products:

	Purchased				Produced			
	FL2300	FL2310	FL2600	FL2800	FL2300	FL2310	FL2600	FL2800
Numerator from NMR	[REDACTED]							
Denominator from PT								
Randomness Fraction (%)								

CDX-0001C.96; *see* Hr’g Tr. (Smith) at 253:3-254:5.

Accordingly, Complainants have met their burden to show limitation [1d] is met in the Fluorine Accused Products, and those products therefore infringe claim 1.

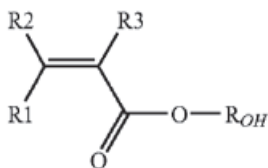
b. Sinochem

Turning to Sinochem, Complainants represent that Respondents do not dispute that the Sinochem Accused Products meet limitations [1pre] and [1a]. CIB at 69-73. Respondents’ briefing confirms there is no dispute for these limitations, nor is there a material dispute for limitation [1c]. *See* RIB at 69-90; RRB at 35-49; *but see* RRB at 40 (mentioning limitation [1c] for the first time). Respondents do argue in their reply brief that Complainants have failed to show the Sinochem Accused Products are copolymers. RRB at 36. This is understood to mean an

assertion that limitation [1pre] is not met. Respondents specifically complain that “Dr. Smith failed to opine that VDF homopolymer and oligomers were absent or accounted for in his analysis.” *Id.* But Sinochem’s technical business records refer to SN25628 and SN256XX as produced from “suspension copolymerization.” Hr’g Tr. (Smith) at 309:18-311:2 (citing CDX-0001C.34; CX-1956C). So the record shows the Sinochem Accused Products are copolymers. In light of the expert testimony and evidence cited, Complainants have otherwise shown limitations [1pre], [1a], and [1c] are met in the Sinochem Accused Products. *See* CIB at 69-73, 78-80; Hr’g Tr. (Smith) at 214:12-19, 229:8-14, 309:23-322:1, 337:11-339:17, 524:11-20.

As for limitation [1b], which is in dispute, Complainants argue that “SN-25630 includes an MA in the form of [REDACTED]” (CIB at 73) and “SN-25628 includes an MA . . . at least in the form of [REDACTED]” (*id.* at 75). Complainants state, “[REDACTED] is indisputably an MA” (*id.* at 73 (citing, *inter alia*, 725 patent at cl. 2)), and represent, “Sinochem admits that SN-25630 is a PVDF copolymer produced from VDF and [REDACTED]” (*id.*). Complainants are correct. Beyond certain indefiniteness arguments, Respondents do not dispute that SN-25630 meets limitation [1b] by way of comprising [REDACTED]. *See* RIB at 76, 78; RRB at 37 (“That should end the Sinodur 25630 infringement analysis”).

As for [REDACTED] and its presence within SN-25628 and/or SN-25630, Complainants contend “[a] POSITA would recognize [REDACTED] as an MA.” CIB at 75 (citing Hr’g Tr. (Smith) at 324:5-23). They present the following diagram from Dr. Smith’s demonstratives:



(*id.* (citing CDX-0001C.52)) and explain:

[REDACTED]

Dr. Smith identified the [REDACTED] (represented by the horizontal blue line above, circled in red) as the C1-C5 hydrocarbon moiety present in [REDACTED]. Hr’g Tr. (Smith) 324:20-325:1. Attached to the [REDACTED] (to the right of the red circle) is a [REDACTED]

(*id.* at 75). Complainants view the dispute as whether the [REDACTED] group qualifies as the claimed “hydroxyl group” and find that it does because [REDACTED] contains a hydroxyl group. *Id.* at 76.

Complainants are correct. Respondents dispute that [REDACTED] meets “wherein . . . ROH is . . . a C1-C5 hydrocarbon moiety comprising at least one hydroxyl group” because “[REDACTED]’s purported ROH comprises a [REDACTED], which is, under a plain and ordinary meaning, a separate and distinct functional group yielding different properties than the recited hydroxyl group (-OH).” RIB at 74-75 (citing, *inter alia*, Hr’g Tr. (Wanat) at 1078:24-1083:16, 1084:12-1086:24). Respondents draw particular attention to a distinction between [REDACTED] and the specification’s example of [REDACTED], with the following diagrams from Dr. Wanat:



RIB at 75 (citing RDX-0017C.28-29). Respondents explain that both polymer names include [REDACTED] which comes from the so-named group in the red box, but differ in what is attached to the [REDACTED]—[REDACTED] and a hydroxyl group in [REDACTED] *Id.* (citing Hr’g Tr. (Smith) at 44:12-46:18). Thus, according to Respondents, there is no hydroxyl group in [REDACTED]. Respondents further argue that in Complainants’ theory, “it is the [REDACTED] group—not the [REDACTED] hydrocarbon moiety—that ‘comprises at least one hydroxyl group,’” presumably creating a conflict with their preferred claim construction (RIB at 75) and the overall “hydrocarbon moiety” which cannot include any oxygens under a plain and ordinary meaning (RIB at 75).

[REDACTED]

Pursuant to the determined claim construction, above, [REDACTED] meets the claimed MA. “R_{OH} is a hydrogen or a C₁-C₅ hydrocarbon moiety comprising at least one hydroxyl group” (725 patent at cl.1) is not strictly limited to hydrogen and carbon in the “hydrocarbon” and may include other atoms in addition to the “at least one hydroxyl group.” Moreover, [REDACTED] while given their own name, are still made up of two recognized sub-groups: a hydroxyl (OH) [REDACTED] [REDACTED]. RIB at 3; CRB at 20; Hr’g Tr. (Smith) at 326:17-327:3; Hr’g Tr. (Swager) at 752:20-21; Hr’g Tr. (Wanat) at 1084:13-1085:4. This holds true even though a [REDACTED] may yield different properties than a hydroxyl group, and even though the inventors recited each independently in other patent claims. *See* RIB at 74-75; RRB at 36-37. And given there is no dispute that [REDACTED] includes a hydroxyl (-OH), the limitation is met.

The final disputed limitation is [1d] and the required MA randomness percentage. As with the Fluorine Accused Products, Complainants and Dr. Smith rely on ¹⁹F-NMR testing, along with related tests, to show the numerator leading to this value, and PT testing for the denominator. *See* CIB at 80-82; Hr’g Tr. (Smith) at 340:25-352:3; CRB at 41-45. Respondents level many of the same criticisms as against the Fluorine Accused Products, and add that Dr. Smith’s NMR is too insensitive for the low levels of MA in the Sinochem Accused Products (RIB at 82), the NMR failed to take into account PVDF homopolymers and oligomers (*id.*), the PT testing was conducted at too low a temperature (*id.* at 79), the PT testing failed to use a [REDACTED] blank under its own protocols for products that use [REDACTED] as the MA unit (*id.* at 80; RRB at 41), and the PT testing exhibited substantial variability between samples of the (allegedly) same product (RIB at 81-82; RRB at 40). Respondents also contend that Dr. Smith’s selection of endpoints for the PT testing is unreliable. RIB at 78-84; RRB at 40-43.

[REDACTED]

As for NMR testing, Sinochem complains of a “limited accuracy of [about] 5%,” which would seem to make little difference given the very high randomness fractions (over 90%). RIB at 82 (citing Hr’g Tr. (Wanat) at 1118:10-1119:21, 1193:21-1194:4); *see* Hr’g Tr. (Wanat) at 1196:8-24. Sinochem also complains that Dr. Smith did not account for the presence of PVDF homopolymers or oligomers (*see* RIB at 82), but the evidence it cites (Hr’g Tr. (Wanat) at 1114:7-16) is entirely conclusory, and Dr. Smith testified he saw “no evidence of a mixture of small-molecule acids” (Hr’g Tr. (Smith) at 370:19-371:15).

As for titration, although the patent speaks of “complete neutralization of acidity” (725 patent at 11:56), even an endpoint of -270 mV does not achieve complete neutralization of the solution, because in most tested samples the PT machine detected endpoints past that voltage (*e.g.*, JX-0520C (titration of P018, corresponding to 25630 directly from Sinochem)). So “complete neutralization” more likely refers to complete neutralization of the active ingredient, that is, [REDACTED] which Dr. Smith identified as happening at -150 mV. Nor is an analysis for related Chinese litigation especially relevant, because [REDACTED]. JX-0710C at 7. The variability between the samples of GP11 and P018 is explained by the fact that they are not the same substance, as discussed below, and the variability between P010 and P017 (corresponding to SN25628) is not especially significant. *See* RIB at 81-82. Although the patent specifies dissolving the polymer in acetone at 70°C-80°C, it does not specify a temperature for the titration itself, so Dr. Smith’s selection of 40°C (that is, room temperature) was seemingly a reasonable choice for a POSITA, and was in any event corroborated by performing it again at 60°C, as explained above. *See* 725 patent at 11:51-58. Sinochem further complains that Dr. Smith did not use a [REDACTED] control in his titration of SN-25628, but he testified that he used the “[REDACTED] end point,” which he found

[REDACTED]

to be -150 mV, and Sinochem's own documents show a [REDACTED] content of 0.1%. Hr'g Tr. (Smith) at 338:2-9; *see* CX-1974C at 66.

Finally, the results of PT and NMR testing, plugged into the randomness formula, show a "fraction of randomly distributed units" [REDACTED] by all Sinochem Accused Products. *See* Hr'g Tr. (Smith) at 348:1-350:2, 351:15-24. The titration results for P010, P017, and GP11 are all strikingly similar, with P018 as an outlier:

[REDACTED]

JX-0598C (P010, 25628 from Youcheng); JX-0586C (GP11, from Benia); JX-0611C (P017, 25628 from Sinochem); JX-0520C (P018, 25630 from Sinochem). Analysis of the P018 sample nonetheless yielded a randomness fraction of [REDACTED] because its numerator was also an outlier:

[REDACTED]

CDX-0001C.173; *see* CX-1909C; CX-1911C.

Accordingly, Complainants have met their burden to show limitation [1d] is met in the Sinochem Accused Products, and they infringe claim 1.

Additionally, as noted above in the discussion of importation, the parties dispute whether the sample marked GP11, ordered by Mr. Brown as SN-25630 from Benia, is [REDACTED]. Respondents argue that [REDACTED] no actual imports of SN-25630 into the United States have ever been shown. *See* RIB at 17, 23. Complainants allege that GP11 is SN-25630, just as the representative from Benia claimed it was. *See* CRB at 9 (“Benia informed Mr. Brown that SN-25630 was in stock . . .”). This is discussed now in connection with infringement because the most probative evidence comes from Dr. Smith’s experimental tests addressed above. And that evidence shows GP11 is [REDACTED].

Setting aside the oral representations from Benia, and whatever mistakes may have been on the labels of the received cartons, Dr. Smith testified that Sinochem’s batch records show—consistent with the findings above—[REDACTED] as the (MA) comonomer and [REDACTED]. Hr’g Tr. (Smith) at 423:8-24. Dr. Smith’s NMR test results further show a [REDACTED].

[REDACTED]

[REDACTED]

[REDACTED], which Dr. Smith acknowledged:

[REDACTED]

Hr’g Tr. (Smith) at 427:17-432:18 (citing RDX-0017C.14). It is worth noting that Complainants did not visually present Dr. Smith’s ^{19}F -NMR test results for P18, authentic SN-25630, at the hearing. CDX-0001C.164-173. Additionally, Dr. Smith’s PT test results also show the overall (MA) comonomer mole % [REDACTED], again acknowledged by Dr. Smith:

[REDACTED]

Hr’g Tr. (Smith) at 433:20-434:22 (citing RDX-0017.17). The shapes of the four titration curves presented above also show [REDACTED]

[REDACTED] As Dr. Wanat pointed out, a comparison of GP11 and P018 shows

[REDACTED] Hr’g Tr. (Wanat) at 1111:9-1112:10. So Complainants’ own

[REDACTED]

testing evidence clearly and consistently shows GP11 exhibiting the salient features of [REDACTED] as opposed to SN-25630. It is as Respondents put it: “[T]he results speak for themselves.” RIB at 73.

Complainants’ response is that the authentic SN-25630 sample, P18, “also revealed diagnostic peaks for [REDACTED] specifically, [REDACTED] via H-NMR testing. CIB at 74 (citing Hr’g Tr. (Smith) at 437:14-22). Quantitatively, that percentage is de minimis compared to the others, as alluded to by Dr. Smith (Hr’g Tr. (Smith) at 437:19 [REDACTED] [REDACTED])), so it essentially has no bearing on the comparison. Even then, what needs to be shown is that GP11 has a [REDACTED] mole % to separate it from P10 and P17, not that P18 has a [REDACTED] mole % to liken it to P10 and P17. *See* RRB at 38. On this point, Dr. Smith admitted GP11 did not contain [REDACTED]. RIB at 72 (citing Hr’g Tr. (Smith) at 429:23-430:17). Respondents further argue Complainants’ rebuttal is waived for failure to appear in the pre-hearing brief. *Id.* But given the outcome, that objection is moot.

Accordingly, the record supports that GP11 is [REDACTED].

c. Juhua

To begin, Complainants represent that Respondents do not dispute that JHS-1020, the Juhua Accused Product, meets limitations [1pre], [1a], [1b], and [1c]. CIB2 at 17-24. Juhua’s briefing confirms there is no dispute for these limitations. *See* RIB2 at 19-22; RRB2 at 13-15. In light of the expert testimony and evidence cited, Complainants have shown these limitations are met in the Juhua Accused Product. *See* CIB2 at 17-24; RHr’g Tr. (Smith) at 73:3-91:8.

As for limitation [1d], Complainants and Dr. Smith approach it the same way as with the other Respondents: ¹⁹F-NMR testing, along with related tests, to show the numerator of the randomness equation, and PT testing for the denominator. *See* CIB2 at 24-26; RHr’g Tr. (Smith)

[REDACTED]

at 92:20-95:10, 98:6-110:15; CRB2 at 12-14. Juhua levels many of the same criticisms as for the testing of the Fluorine and Sinochem Accused Products, and adds that a “gelatinous precipitate” formed at the end of PT testing that artificially lowered the amount of detectable [REDACTED]. RIB2 at 20-22; RRB2 at 14-15. Importantly, Juhua contends that Dr. Smith’s selection of endpoints for the PT testing is unreliable. RIB2 at 22; RRB2 at 14-15.

As with the other Accused Products, Juhua is not persuasive on the endpoint of PT testing. The below graphs show Dr. Smith’s PT tests on the JHS-0120 acquired by Mr. Brown and supplied by Juhua as part of this investigation:



CX-01709C ([REDACTED], JHS-1020 from Mr. Brown); CX-1716C ([REDACTED], JHS-1020 from Juhua). Based on the EP2 endpoints in each graph, which correspond to about [REDACTED], and the NMR results, the calculated “fraction of randomly distributed units” was [REDACTED] respectively. *See* RHR’g Tr. (Smith) at 110:2-9.

Accordingly, Complainants have met their burden to show limitation [1d] is met in the Juhua Accused Product, and it infringes claim 1.

2. Claim 3

For reference, claim 3 of the 725 patent requires:

3. The polymer (A) of claim 1, wherein the fraction of randomly distributed units (MA) is of at least 50%.

725 patent at cl. 3.

In support of infringement by the Accused Products, Complainants refer to the calculations made in connection with limitation [1d], as claim 3 simply requires a more restrictive randomness percentage. *See* CIB at 64, 89-90; CIB2 at 39. As determined above, Dr. Smith's calculations for randomness are reliable and consistently show percentages exceeding 50%. Accordingly, Complainants have shown infringement of claim 3 by all Accused Products.

3. Claim 6

For reference, claim 6 of the 725 patent requires:

6. The polymer (A) claim 1, undergoing a loss in weight of 1 wt in TGA analysis under nitrogen following ISO 11358 standard at a temperature of more than 350° C.

725 patent at cl. 6.

In support of its theory, Complainants rely on the testimony of Dr. Smith and his thermogravimetric analysis ("TGA") test results on samples obtained from Mr. Brown and Respondents as part of discovery in this investigation. *See generally* CIB at 64-66, 90-91; CIB2 at 39-40. The products from each of Fluorine, Sinochem, and Juhua are addressed below.

a. Fluorine

Complainants contend that "Dr. Smith's TGA testing showed that multiple samples of each Fluorine Accused Product undergoes a 1% weight (wt) loss 'well above' 350°C as required by claim 6." CIB at 64 (citing Hr'g Tr. (Smith) at 269:23-270:1, 270:11-16, 271:1-7). Dr. Smith's recorded temperatures at which 1% weight loss occurred range from 389.03°C to 423.80°C across the products. *Id.* at 65 (citing JX-0403C; JX-0666C-JX-0670C; RX-2950C-RX-2951C). Complainants represent that Dr. Smith followed the ISO 11358 standard along with "the standard heating rate of 10°C/min. from 40 to 1,000°C." *Id.* at 42 (citing JX-0348; CX-0394C.2, 6). They

[REDACTED]

further allege that Dr. Guido's testing produced the same results for at least the FL2300 and FL2800 products under the same procedure. *See id.* at 65.

Respondents counter that a 1% weight loss actually occurs at temperatures lower than 350°C when the proper, slower, heating rate is used—*i.e.*, the Fluorine Accused Products decompose more quickly than Complainants contend. *See* RIB at 65 (citing Hr'g Tr. (Guido) at 985:11-986:14; Hr'g Tr. (Wanat) at 1138:17-1139:15). Respondents explain:

Dr. Guido illustrated this fact by running preliminary TGA tests on the FL2300 product at four different heating rates: 10°C/min., 2°C/min., 1°C/min. and 0.5°C/min. The results confirmed that a TGA run at slower heating rates produced less stable and more accurate results. Tr. (Guido) at 986:15-987:9; RDX-0015C.120; RX-2114C.001, 002. Dr. Wanat agreed that although running TGAs at a slower heating rate would take longer and be inefficient, for the purposes of attaining better accuracy, a POSA would elect to run the tests at the slower heating rate. Tr (Wanat) at 1139:16-1140:7.

Id. at 66. Respondents provide the following demonstrative illustrating these results for FL2300 and argue "similar results" occurred for the other Fluorine Accused Products:

[REDACTED]

Id. (citing RDX-0015C.0120; Hr'g Tr. (Guido) at 987:10-988:15). At the hearing, Dr. Guido presented the results for FL2310 and FL2800, but not for FL2600, which Complainants argue

[REDACTED]

showed a 1% weight temperature of 359.28°C even at the slowest 0.5°C heating rate. *See* Hr’g Tr. (Gido) at 986:15-988:15; CIB at 65 (citing RX-2173C). Respondents further refer to the deposition of one of the patent inventors, Dr. Abusleme, where it was expressed that “if you increase the speed, the sample will seem more stable than what it actually is.” RIB at 65 (citing JX-0798C (Abusleme Dep.) at 120:22-121:7).

The limitation is met in all Fluorine Accused Products, for two reasons. First, it is not clear that heating rate is even relevant to the claim. Neither the claim nor the ’725 patent specification mention any heating rate. And even though both claim 6 and claim 1 seemingly require experimental testing to show infringement, the testing for claim 1 is used to show a feature of the substance itself that, in theory, exists independently of the test; *i.e.*, molecular structure and mass weight percentages. Claim 6, on the other hand, is a test to show how the sample performs when certain conditions are imposed—*i.e.*, a performance metric (“TGA analysis under nitrogen following ISO 11358 standard at a temperature of more than 350° C”). This is supported by the ISO 11358 standard itself: “Long-term thermal stability is a complex function of service and environmental conditions.” JX-0348.4. And there is no dispute that both sides’ testing employed the claim’s recited conditions. RIB at 65 (“The issue is at what rate to increase the temperature, and neither the ’725 patent nor the ISO 11358 standard provides guidance on what rate a POSA should use.”); Hr’g Tr. (Smith) at 272:11-25 (“ISO doesn’t state a heating rate is preferred”).

So the fact that Dr. Smith’s testing, meeting all limitations of the claim, resulted in 1% weight loss above 350°C is dispositive. The fact that Dr. Gido, also meeting all limitations of the claim, resulted in 1% weight loss below 350°C does not take away from Dr. Smith’s result. Under some circumstances, the claim is met; and under others, it is not. Yet occasional infringement is still infringement. *Broadcom Corp. v. Emulex Corp.*, 732 F.3d 1325, 1333 (Fed. Cir. 2013) (“It is

[REDACTED]

well settled that an accused device that ‘sometimes, but not always, embodies a claim nonetheless infringes.’”) (internal citation omitted).

Second, under the assumption that heating rate is relevant to satisfaction of the claim, the weight of the evidence shows the 10°C/min used by Dr. Smith is more reasonable. Dr. Smith testified that this rate “is the normal or the standard heat rate” (Hr’g Tr. (Smith) at 272:18-20) backed up by a publication authored by Dr. Guido in which 10°C/min was also used (CX-0394.5). Dr. Guido explained his article’s rate was selected because the tester “may have been in a hurry” and because of the particular simulation at hand— “[w]e were actually trying to simulate the degradation of a material that’s implanted into the body, and is oxidized by the body. So it’s simulating oxidation, which is also kind of the same thing as burning. So we were using the TGA to do something kind of different.” Hr’g Tr. (Guido) at 1028:12-24. But the article points to the same performance measurement purpose as claim 6—thermal stability:

2.1.3. Thermogravimetric Analysis (TGA)

TGA was performed using a Discovery Series TGA from TA Instruments. The runs involved a 10 °C per minute ramp from room temperature up to 600 °C under air (flow rate 25 ml/min). Sample masses used were typically about 3 mg. To observe the effect of anti-oxidant on thermo-oxidative stability, anti-oxidant was removed from a sample of Pinnacle mesh so that its thermal stability could be compared with that of Pinnacle with anti-oxidant present. The protocol for removing the antioxidant was as fol-

CX-0394.5. And the ISO 11358 standard also states that mass changes during TGA are due to “decomposition or oxidation reactions or the volatilization of a component.” JX-0348.4. So the record’s documentation on this topic supports Dr. Smith’s approach.

Respondents also argue in favor of slower 1°C/min and 0.5°C/min heating rates in light of inventor Dr. Abusleme’s testimony that “if you increase the speed [of heating], the sample will seem more stable than what it actually is.” JX-0798C (Abusleme Dep.) at 121:5-7. But this brief opinion was not given in any numerical context (*see id.* at 119:6-121:9) and is otherwise the basic

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] JX-0348.1 (“1.4. The thermogravimetric measurements may be carried out in . . . an isothermal mode (mass change versus time at constant temperature.”). So a higher heating rate for this claim is more appropriate, regardless of inventor testimony.

Accordingly, the additional elements of claim 6 are met in all Fluorine Accused Products, and they therefore infringe claim 6.

b. Sinochem

For Sinochem, Complainants and Dr. Smith employed the same 10°C/min TGA testing as for Fluorine and found the temperatures at which 1% weight loss occurred were [REDACTED] for SN-25628, and [REDACTED] for SN-25630. CIB at 90 (citing Hr’g Tr. (Smith) at 363:24-364:5). Respondents, through Dr. Wanat, similarly rely on their own testing at 0.5°C/min to show 1% weight loss below 350°C—*i.e.*, a performance worse than what claim 6 requires. RIB at 91 (citing Hr’g Tr. (Wanat) at 1140:9-1142:10). As determined, both heating rates could be used, but Dr. Smith’s enjoys more support in the record.

Accordingly, the additional limitations of claim 6 are met in all Sinochem Accused Products, and they infringe claim 6.

c. Juhua

For Juhua, Complainants and Dr. Smith employed the same 10°C/min TGA testing as for the other Accused Products and found the temperature at which 1% weight loss occurred was between [REDACTED] for JHS-1020. CIB2 at 39 (citing RHR’g Tr. (Smith) at 114:19-145:3). [REDACTED]

[REDACTED]

Juhua, through Dr. Spontak, presents its own testing at 0.5°C/min to show 1% weight loss below

[REDACTED]

350°C—*i.e.*, a performance worse than what claim 6 requires—and argues this is the better heating rate for the same reasons discussed above. *See* RIB2 at 23 (citing RHr’g Tr. (Spontak) at 190:23-199:6); RRB 2 at 15-16. As determined, both heating rates could be used, but Dr. Smith’s enjoys more support in the record.

Accordingly, the additional limitation of claim 6 is met in the Juhua Accused Product, and it infringes claim 6.

4. Claim 8

For reference, claim 8 of the 725 patent requires:

8. [8pre] A composition (C) comprising the polymer (A) according to claim 1 and
- [8a] at least one VDF polymer comprising at least 70% moles of recurring units derived from VDF and,
- [8b] optionally, up to 30% moles of recurring units derived from at least one other suitable fluorinated comonomer.

725 patent at cl. 8 (annotated). Only the Fluorine FL2310 Accused Product is accused under claim

8. CIB at 66. [REDACTED]

[REDACTED]

[REDACTED]. [REDACTED]

[REDACTED], meaning claim 8 is met

regardless of which polymer is considered for limitation [8b]. *Id.* at 67. Respondents dispute the claim is met because neither FL2300 or FL2800 were shown to be “the polymer (A) according to claim 1.” RIB at 67; RRB at 35.

[REDACTED]

[REDACTED]

[REDACTED] So dependent claim 8 is infringed by FL2310.

5. Claim 9

[REDACTED]

For reference, claim 9 of the 725 patent requires:

9. The composition (C) of claim 8 wherein the at least one other suitable fluorinated comonomer is selected from the group consisting of hexafluoropropylene, chlorotrifluoroethylene, and trifluoroethylene.

725 patent at cl. 9. Only the Fluorine FL2310 Accused Product is accused under claim 8. In support of its theory, [REDACTED]

[REDACTED] CIB at 68-69 (citing Hr’g Tr. (Smith) at 276:1-25). Respondents do not dispute these facts other than to argue FL2310 does not meet claim 8. RIB at 68; RRB at 35. Accordingly, the additional element of claim 9 is met and the claim is infringed by FL2310.

E. Domestic Industry – Technical Prong

According to Complainants’ post-hearing briefing, the DI Products practice claims 1, 3, and 6 of the 725 patent. CIB at 91. Respondents do not dispute the practice of these claims on any ground other than their “continuous feeding” construction which has been rejected above. *See* RIB at 94-98; RRB at 49-50; CIB at 91. For the reasons discussed below, Complainants have shown by a preponderance of the evidence that the DI Products practice these claims.

1. Claim 1

Claim 1 of the 725 patent is presented above in connection with infringement. In support of their theory, Complainants again rely on testimony from Dr. Smith. *See generally* CIB at 91-95. Dr. Smith considered NMR, melting point, and X-ray diffraction testing to show the products are linear semi-crystalline copolymers under limitation [1pre]. CIB at 91-92 (citing, *inter alia*, Hr’g Tr. (Smith) at 366:12-371:17). FTIR and NMR testing demonstrated the DI Products include PVDF under limitation [1a] and AA as the hydrophilic methacrylic monomer under limitation [1b]. *Id.* at 92-93 (citing, *inter alia*, Hr’g Tr. (Smith) at 372:14-373:15, 368:9-373:22, 376:7-377:14).

[REDACTED]

For limitation [1c], Complainants refer to testing done in the ordinary course of their business “show[ing] that the DI Products each contain about 1 mol% of AA,” which was verified by Dr. Smith through PT testing. CIB at 93 (citing, *inter alia*, JX-0526C; JX-0527C; Hr’g Tr. (Smith) at 378:5-22). And for limitation [1d], Complainants refer to Dr. Smith’s NMR tests and calculations that resulted in “the DI Products hav[ing] a fraction of randomly distributed MA units of 92.65% for 5130 and 89.3% for 75130.” *Id.* at 93-94 (citing, *inter alia*, Hr’g Tr. (Smith) at 370:5-9, 379:18-381:20). Notably, according to Complainants, “Dr. Smith used the results of his F-NMR and PT testing of the DI products to calculate, respectively, the value of the numerator, *i.e.*, the average number of sequences of AA, and the denominator, *i.e.*, the total average of AA recurring units, in the same way he did with the Accused Products.” *Id.* at 94. Although Dr. Smith’s PT testing of the Accused Products has not been shown to be reliable, testing by Complainants’ own laboratories shows results comparable to Dr. Smith’s. *See* JX-0526C (SF-5130); JX-0527C (SF-75130). And in any event, Respondents do not challenge DI technical prong. *See generally* RIB; *Certain Marine Air Conditioning Systems, Components Thereof, and Products Containing the Same*, Inv. No. 337-TA-1346, Comm’n Op. at 76 (Mar. 11, 2024).

In light of the expert testimony and evidence cited, and lack of any opposition, Complainants have shown these limitations are met in the DI Products and claim 1 is practiced.

2. Claim 3

Claim 3 of the 725 patent is presented above in connection with infringement. In support of its theory, Complainants rely on the testimony and testing of Dr. Smith, who showed in connection with claim 1 that the fraction of randomly distributed MA units is well over 50%. CIB at 99 (citing, *inter alia*, Hr’g Tr. (Smith) at 392:23-393:14). Accordingly, claim 3 is practiced by the DI Products.

3. Claim 6

Claim 6 of the 725 patent is presented above in connection with infringement. In support of its theory, Complainants again rely on their own ordinary business records as well as testing and testimony from Dr. Smith. CIB at 100. They argue, without dispute from Respondents, that the records “demonstrate[] that SF-5130 shows a 1% weight loss in nitrogen following ISO 11358 at 382°C . . . and SF-75130 shows a 1% weight loss in nitrogen following ISO 11358 at 393°C” (*id.* (citing JX-0526C.7-8; JX-0527C.5)), and Dr. Smith’s testing showed 1% loss at 385.56°C and 379.25°C, respectively (*id.* (citing Hr’g Tr. (Smith) at 393:25-394:20)). Accordingly, claim 6 is practiced by the DI Products.

F. Validity

Respondents identify the following invalidity theories for the 725 patent:

Claims	Theory
1, 3, 6-9	Rendered obvious under 35 U.S.C. § 103 by Miyabayashi (RX-0033) alone or in view of Calfee (RX-1201)
1, 3, 6-9	Rendered obvious under 35 U.S.C. § 103 by Ishida (JX-0347)
1, 3, 6-9	Invalid under 35 U.S.C. § 112 for indefiniteness
1, 3, 6-9	Invalid under 35 U.S.C. § 112 for lack of written description

See generally RIB at 99-141. The prior art status of the applied references is as follows. U.S. Patent No. 4,861,851 (“Miyabayashi”) issued on August 29, 1989. RX-0033. Although Respondents do not identify under which subsection of 35 U.S.C. § 102 (pre-AIA) Miyabayashi qualifies as prior art, its issuance date compared to the priority date of the 725 patent indicates it is prior art under at least 35 U.S.C. § 102(b) (pre-AIA). *See* CIB at 100 (alleging earliest priority date of April 27, 2007).

[REDACTED]

U.S. Patent No. 3,022,278 (“Calfee”) issued on February 20, 1962. RX-1201. U.S. Patent No. 6,806,333 (“Ishida”) issued on October 19, 2004. JX-0347. Again, Respondents do not identify which subsections of 35 U.S.C. § 102 (pre-AIA) Calfee and Ishida qualify under as prior art, but their issuance dates compared to the priority date of the 725 patent indicates they are prior art under at least 35 U.S.C. § 102(b) (pre-AIA). Complainants do not dispute the prior art status of these references. *See generally* CIB at 100-119; CRB at 53-66.

1. Miyabayashi

According to Respondents, Miyabayashi alone or in combination with Calfee renders claims 1, 3, 6, 8, and 9 invalid as obvious. RIB at 98. Respondents argue both references disclose “copolymers of primarily VDF and a small amount of AA that improved functionality while maintaining high thermal stability.” *Id.* (citing Hr’g Tr. (Swager) at 756:14-15, 759:10-760:11, 771:3-13). Respondents further argue that a POSITA would have been motivated to optimize the high thermal and chemical stability copolymerization through “the continuous addition of a small amount of olefinic compounds, such as [AA]” and to do so in a way that preserves VDF’s “high thermal and chemical stability.” *Id.* at 99 (citing Hr’g Tr. (Swager) at 770:25-773:1, 782:13-783:17). The record does not support that claims 1, 3, 6, 8, and 9 are invalid on this ground. Specifically, Respondents have not shown a copolymer “being characterized by a fraction of randomly distributed units (MA) of at least 40%” would have been obvious in light of Miyabayashi alone or Miyabayashi with Calfee.

As discussed above in the contexts of claim construction and infringement, the randomness fraction recited in claim 1 is essentially the heart of the 725 patent invention. *See generally* 725 patent at Abstract; JX-0002.467-476. Respondents contend this limitation would have been obvious in variety of ways, none of which is supported by clear and convincing evidence.

First, Miyabayashi generally discloses “a novel vinylidene fluoride-acrylic acid ester copolymer.” RX-0033 at 1:7-8. The patent teaches various embodiments of a “vinylidene fluorideacrylic acid ester copolymer” in varying weight percentages, one of which includes an optional “0.10-0.1% by weight of a crosslinking monomer.” *Id.* at 2:42-65. Miyabayashi instructs that one species of this crosslinking comonomer can be acrylic acid (AA) (*id.* at 4:22-25), and Respondents generally rely on these embodiments for the claimed “(meth)acrylic monomer (MA)” mole % in limitation [1c] (*see* RIB at 100-101 (referring to examples 4-9 in Miyabayashi Table 1). Miyabayashi particularly provides a table of experimental results, Example Nos. 1-9, in which amounts of VDF, AA, and other esters are copolymerized. RX-0033 at Table 1. Respondents’ expert, Dr. Timothy Swager, provides a helpful recreation of this table below, which in original form is spread across multiple patent pages:

TABLE 1									
Example No.	Item								
	Monomers fed					Polymerization			
	VDF (g)	EA (g)	AA (g)	BA (g)	MEA (g)	Pressure (kg/cm ² G)		Polymer yield	
						At start	At end	(g)	(%)
Example 1	48	5	0	0	0	48	43	14.7	27.7
2	60	10	0	0	0	58	52	21.0	30.0
3	45	14.5	0	0	0	45	40	19.0	31.9
4	25	24.5	0.5	0	0	24	21	20.8	41.6
5	218	47.5	2.5	0	0	37	33	68.0	25.4
6	245	10	2.5	0	0	46	40	50.0	19.4
7	70	175	2.5	0	0	11	9	190.9	77.1
8	208	0	2.5	47.5	0	36	32	67.6	26.2
9	199	0	2.5	0	47.5	35	32	67.5	27.1

RX-0033 at Table 1, Example 6

RDX-0010.79; *see* Hr’g Tr. (Swager) at 766:8-16. As shown, Example No. 4 incorporates half a gram of AA into the copolymerization process, while Example Nos. 5-9 incorporate 2.5 grams.

[REDACTED]

For the randomness equation of limitation [1d], Respondents first argue: “Miyabayashi discloses that its copolymers are ‘substantially random,’ which a POSA would understand as referring to a copolymer with Randomness Fraction of at least 50%.” RIB at 102 (citing RX-0033 at Abstract, 2:42-44, 5:55-58; Hr’g Tr. (Swager) at 765:2-18, 764:23-764:24, 767:16-768:9); RRB at 54. Complainants are persuasive, however, that “Miyabayashi does not explain what this is or how to achieve it, and does not mention any specific fraction of randomness, including the claimed fraction of at least 40%.” CIB at 105. There is no discussion in Miyabayashi of what is meant by random, how to achieve it, or what benefits are conferred—all of which are important because, as determined above, the use of “randomness” in the 725 patent actually relates to non-blockiness of a comonomer within a copolymer chain and not “randomness” in the plain and ordinary sense (following no pattern or rule).

Respondents essentially concede this point. In their reply brief they clarify that they do not rely on the “substantially random” disclosure as teaching limitation [1d] explicitly or inherently, but rather argue that Miyabayashi additionally discloses continuous feeding of an aqueous solution, and that it is this continuous feeding which would inherently produce the required non-blockiness metric:

Syensqo next argues that there is no inherency in Miyabayashi’s copolymer with respect to the claimed range of randomness fraction because the examples of Miyabayashi use one-pot reactions. C-PostHB at 105. This argument is misplaced as Respondents did not argue that 1[d] is met because the examples in Table 1 inherently meet the randomness fraction threshold. Rather, Respondents’[] obviousness argument is that Miyabayashi also discloses continuously feeding an aqueous solution “in the presence of a radical polymerization initiator batchwise, semicontinuously or continuously according to a known polymerization method” Tr. (Swager) at 766:2-7; RDX-0010C.79; RX-0033 at 5:18-25, Table 1. Thus, it would be obvious to modify the one-pot process in the examples to a continuous addition process, which would produce a copolymer that inherently meets the randomness fraction threshold specified in claims 1 and 3 because the rest of the process features in the ‘725 Patent are also disclosed in Miyabayashi, as shown in Respondents’ opening brief.

RRB at 54-55.

Respondents are not persuasive. Like Miyabayashi's terse recitations of "substantially random," the concept of continuous feeding appears exactly once in Miyabayashi's specification, and only in a general sense:

The vinylidene fluoride-acrylic acid ester copolymer of this invention can be produced by copolymerizing a mixture of
(A') 10-95% by weight of vinylidene fluoride,
(B') 5-90% by weight of an alkyl acrylate and/or an alkoxy-substituted alkyl acrylate,
(C') 0-10% by weight, preferably 0.1 to 10% by weight of a crosslinking monomer and
(D') 0-40% by weight, preferably 0-10% by weight of an other ethylenically unsaturated monomer copolymerizable with (A'), (B') and (C') in the presence of a radical polymerization initiator batchwise, semicontinuously or continuously according to a known polymerization method such as emulsion polymerization, suspension polymerization, solution polymerization or bulk polymerization. Emulsion polymerization is preferred.

RX-0033 at 5:12-28. Dr. Smith credibly testified that this one paragraph is a benign attempt to cover all possible polymerization methods as suitable for Miyabayashi's invention and, importantly, the reference to "continuous" or "semicontinuous" polymerization means continuous feeding of all reactants to the reaction vessel—not just the feeding of MA units. Hr'g Tr. (Smith) at 1273:3-25 ("What is really better [than batch processing], if you can do it, is a continuous process; that is, you're feeding in the reactants continually, and you're dropping out the product continually, and collecting the product continually. These things can run for months."). Consistent with that, when describing the experimental setups behind its Example Nos. 1-9, Miyabayashi fails to offer any specificity beyond the reactants being simply "fed" into the autoclave and copolymerized "for hours." RX-0033 at 7:22-25, 7:59-8:5.

Dr. Smith's explanation is further supported by Calfee (discussed further below) which itself refers to high polymerization temperature ranges "used conveniently in continuous processes

[REDACTED]

wherein provision is made to remove polymer relatively rapidly from the heated polymerization zone. In batch reactors, temperatures of 50 to 150 C. are generally found preferable.” RX-1201 at 11:15-19. It is also supported by Ishida, which speaks of maintaining pressure by “continuously” adding a mixture of the primary reactants. JX-0347 at 11:26-30 (“While maintaining the pressure by pressurizing as the pressure decreased, 550.5 g of a gas mixture comprising 50 mol % of (a) tetrafluoroethylene, 25 mol % of (b) propylene and 25 mol % of (c) ethylene, was continuously added to continue the reaction.”). Dr. Swager also describes Miyabayashi’s passage as speaking generally about continuous processes for all reactants. *See* Hr’g Tr. (Swager) at 766:2-7 (“They also contemplate doing this in continuous fashions, or batch-wise or continuous. And if you are doing things continuously, you have to maintain your monomers at a continuous level, and so you are basically doing continuous addition if you are doing a continuous process, by definition.”), 772:9-20 (addressing both Miyabayashi and Calfee, “this talks about continuous flow as different ways of processing and making polymers. They’re being quite general in this regard.”).

This is all very different from, for example, the 725 patent’s experimental embodiments in which all the VDF is initially introduced, and then only the MA unit is continuously added. 725 patent at 13:1-46. And while the 725 patent does briefly consider the possibility of adding “[a]n incremental addition of VDF monomer during polymerization,” it notes this is “not mandatory” and “[for] the sake of simplicity, it would be generally preferred to introduce all the VDF monomer required at the onset of the polymerization.” *See id.* at 6:16-39. The patent further teaches what happens when VDF and AA are added at the same time, albeit all in an initial injection—namely, the randomness fraction is low. *Id.* at 13:50-14:12 (Comparative Example 3).

[REDACTED]

So Miyabayashi does not actually teach the particular technique that has the most likelihood of creating the 40% randomness metric of limitation [1d], and neither Miyabayashi nor Dr. Swager provide a motivation for a POSITA to do so. *KSR*, 550 U.S. at 399. So a clear and convincing case has not been made that a copolymer “characterized by a fraction of randomly distributed units (MA) of at least 40%” would have been obvious over Miyabayashi alone.

Respondents’ addition of Calfee does not meaningfully improve the theory. Like Miyabayashi, Calfee does not teach any particular randomness value, the equation itself, or the non-blockiness attribute to which the equation pertains and which the 725 patent finds desirable. *See* Hr’g Tr. (Swager) at 799:22-800:8 (“this random component and the structure of the formula is actually quite unusual. It was a construct for that patent.”). Accordingly, Respondents take the same approach as with Miyabayashi, which is to argue that Calfee’s “continuous” feeding of reactants will obviously produce the required metric. For background, Respondents explain that “Calfee discloses polymerizing in an aqueous medium with a radical initiator the vinylidene fluoride monomer and the hydrophilic (meth)acrylic monomer (MA) in a reaction vessel.” RIB at 103 (citing RX-1201 at 12:20-28, 13:39-40; Hr’g Tr. (Swager) at 780:19-781:5)). They argue that “Calfee reinforces Miyabayashi by teaching that ‘the polymerization process is attended by a drop in pressure [and] the pressure may be maintained in the desired range by continuous or intermittent injection of additional quantities of . . . the added olefinic compounds’” (*id.* (citing RX-1201 at 12:61-67)).

Respondents are not persuasive. As with Miyabayashi, the record supports that Calfee’s “continuous” techniques relate to polymerization as a whole and not the specific technique of continuous MA feeding into a polymerization vessel which already includes the VDF, as taught by the 725 patent. *See* RX-1201 at 11:15-28, 11:54-58 (“As recognized in polymer technology,



catalyst residues, particularly of peroxy [sic] compounds, may be incorporated in the resulting polymer, and additional catalyst must be added from time to time in continuous systems in order to maintain the polymerization.”); 725 patent at 13:1-14:12 (distinguishing Example 1 and Example 2 from Comparative Example 3); JX-0002.473-474 (emphasizing the 40% metric comes from continuous feed of aqueous solution of monomer (MA)). Indeed, a fair reading of Respondents’ preferred Calfee excerpt, once the content removed by ellipses is reinstated, is that VDF, and potentially also the “olefinic compound,” are injected together:

The apparatus must be constructed of a material such as steel which can be fabricated in a form capable of standing any pressure used, but the polymerization chamber itself is preferably lined with an inert material resistant to corrosion-such as stainless steel, silver, nickel, tantalum, platinum, rhodium, chromium, porcelain, or enamel, which will not adversely affect the rate of polymerization or the quality of the product.

The polymerization process is attended by a drop in pressure; the pressure may be maintained in the desired range by continuous or intermittent injection of additional quantities of vinylidene fluoride as well, if desired, of the added olefinic compounds. It is to be understood that the polymerization can be carried out batchwise or in continuous types of processes.

RX-1201 at 12:53-67. Even then, the reference teaches continuous “or intermittent” injection is useful to maintain pressure and it is reasonable to find that either would do so. But according to the 725 patent, only the former would accomplish the goal of a 40% randomness metric. 725 patent at 13:1-14:12; *see* JX-0002.473-474. Without any evidence showing an acknowledgment or appreciation in the prior art for MA unit non-blockiness, it is not clear and convincing that a POSITA would have found it obvious to employ a sufficiently continuous feed of just the MA unit, and by doing so, create a copolymer “characterized by a fraction of randomly distributed units (MA) of at least 40%.”

Accordingly, Respondents have not shown that all the elements of claim 1, or any claim depending therefrom, are fully disclosed in Miyabayashi and/or Calfee. So Respondents have not

carried their burden of showing obviousness in light of the *Graham* factors, particularly in light of the scope and content of the prior art and the differences between the claimed inventions and the prior art.

2. Ishida

According to Respondents, Ishida alone renders claims 1, 3, 6, 8, and 9 invalid as obvious. RIB at 105. Respondents argue that Ishida discloses “copolymers of primarily VDF and a small amount of acrylate monomers that impart functionality while preserving desirable properties of PVDF.” *Id.* (citing Hr’g Tr. (Swager) at 757:8-758:1). Although styled as an obviousness theory, Respondents effectively argue all limitations of claim 1 are disclosed in Ishida, explicitly or inherently, due to the realities of Ishida’s chemical processes. *See id.* at 106-108.

For example, for the randomness fraction of limitation [1d], Respondents contend, “Ishida discloses or at least renders obvious limitations [1pre]-[1c] and the process limitations and therefore necessarily disclose a copolymer ‘being characterized by a fraction of randomly distributed units (MA) of at least 40%’ (claim 1) or ‘of at least 50%’ (claim 3)” and “[t]he randomness threshold specified in claim 1[d] and claim 3 [] will be met by inherency due to the kinetics of [the] copolymerization process.” RIB at 107; *see* RRB at 56. That is, like Miyabayashi and Calfee, Ishida does not teach the randomness fraction in any amount, so Respondents look to Ishida’s disclosures that monomers may be introduced continuously to the reaction vessel. *See generally* RRB at 56.

Respondents have not met their burden. Their discussion of limitation [1d] in Ishida, which is the critical issue in this investigation, receives little discussion in the briefing and thus, enjoys little explanation of modification, motivation to make that modification, or any of the *Graham* factors. *See* RIB at 107-108; RRB at 56. And Ishida’s disclosure is otherwise of inadequate scope, similar to Miyabayashi’s and Calfee’s. For example, Respondents cite Ishida’s six examples of

[REDACTED]

polymer preparation. RRB at 56 (citing JX-0347 at “Examples 1-6”); *see* JX-0347 at 11:1-13:44. In all six, the setup involves placing an initial amount of the MA unit (constituent “(e) vinyl monomer having a reactive group”)) in the reactor, and then “continuously” adding the other monomer reactants for the duration of the polymerization. *Id.* at 11:11-19, 11:48-57. This would seem to be the opposite of the process disclosed in the 725 patent specification (which leads to the claimed randomness fraction), where the principal VDF monomer is already present in the vessel and it is the MA unit which is added continuously. *See* 725 patent at 13:1-14:12 (describing Example 1, Example 2, Comparative Example 3). So to the extent Respondents look to these examples, they are not likely to lead to the 40% randomness metric.

This leaves Ishida’s more general disclosure that any of its monomers may optionally be added all at once, continuously, or semi-continuously:

Further, various methods may be employed, such as a method of introducing the monomer in its entire amount all at once into the reactor, a method of introducing the entire amount of the monomer continuously, a method of introducing the monomer by dividing its entire amount, and a method of charging a part of the monomer for preliminary reaction and then introducing the rest dividedly or continuously. Further, in the case of divided addition, the monomer composition may be different.

JX-0347 at 9:59-67; *see* RRB at 56 (citing same). This, however, no more leads a POSITA to continuously add the MA units to the reactor containing the VDF than Miyabayashi’s and Calfee’s generalized teachings, discussed above. And like those references, Ishida further fails to disclose any appreciation or desire for non-blockiness of the MA monomer within the VDF chain for any reason. So even if Ishida’s disclosures could be viewed as encompassing the specific technique of continuous addition of MA unit to a reactor containing VDF, neither Ishida nor Dr. Swager provides a motivation to do so. *See* Hr’g Tr. (Swager) at 786:4-787:6. This is fatal to a clear and convincing case of obviousness. *KSR*, 550 U.S. at 399. Further, to the extent that Respondents

[REDACTED]

and Dr. Swager argue that by simply having a low concentration of MA units in the reactor, the “chemical kinetics” will produce “lack of blockiness or essentially randomly distributed units” (Hr’g Tr. (Swager) at 786:4-787:6), the 725 patent specification is strong evidence that is not the case. *See* 725 patent at 13:1-14:12 (distinguishing continuous addition of MA unit solutions from Comparative Example 3 in which “22g of Acrylic Acid (AA) and 1028g of VDF were initially introduced into the autoclave.”)

Accordingly, in light of the *Graham* factors Respondents have not shown that claim 1, or any claim depending therefrom, would have been obvious over Ishida.

3. Indefiniteness

Apart from prior art, Respondents further contend the Asserted Claims are indefinite under 35 U.S.C. § 112. RIB at 115. Respondents’ challenge comprises six different aspects of the randomness equation of limitation [1d], and then the nature of “a C₁-C₅ hydrocarbon moiety comprising at least one hydroxyl group” in limitation [1b]. *Id.* at 115-134. Each of these issues are discussed below. Respondents have not shown that the claims are invalid as indefinite.

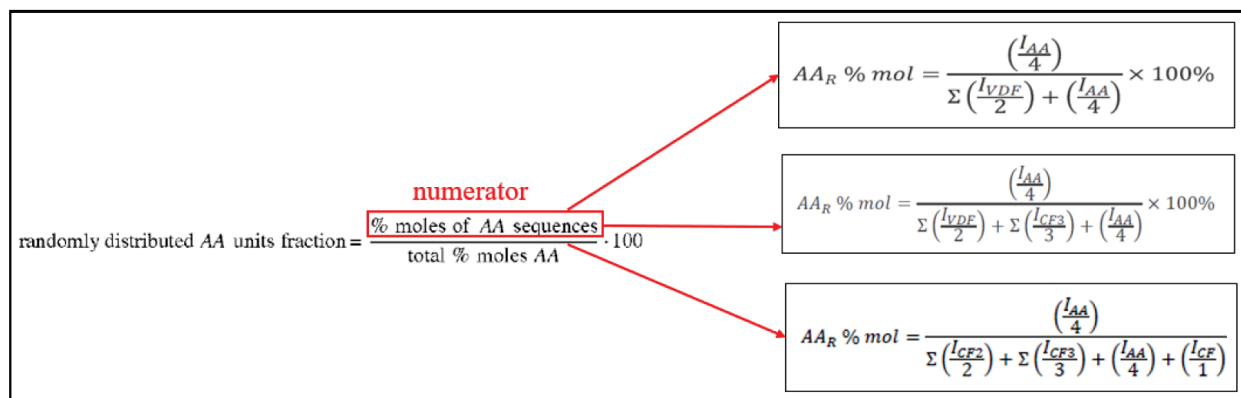
a. Randomness Numerator: Uncertain Measurement

Respondents’ first challenge to limitation [1d] is that there are two possible “counting methods” for the randomness numerator: a first where it represents “only single (isolated) MA (e.g., acrylic acid (‘AA’)) units, with a VDF unit on either side,” and a second where it represents “single (isolated) MA (e.g., AA) units and multiple MA (e.g., AA) units.” RIB at 116-117; *see* RRB at 65. Respondents observe that the two methods will produce two different randomness metrics, and in some cases “the same accused product would be infringing under one possibility, but not infringing under the other possibility.” RIB at 118. Respondents reason, “[t]herefore, the Randomness Fraction cannot be measured with reasonable certainty.” *Id.*

As determined above, the intrinsic record and technical realities of ^{19}F -NMR testing support the second of Respondents' two "counting methods." Thus, properly construed there is no dichotomy causing the alleged uncertainty. The claim is not indefinite for this reason.

b. Randomness Numerator: Uncertain Calculation

Respondents' second challenge to limitation [1d] involves the calculations applied to the ^{19}F -NMR test results, in which Dr. Smith divides the results by varying integers before summing the quotients. RIB at 120. Respondents argue that Dr. Smith "concocted [this] method in an attempt to calculate the numerator (called 'AAR % mol'), which is itself a ratio (as indicated by the stated percentage (%)),," but it was a method that "kept evolving and resulted in three different formulae" *Id.* Respondents provide the following demonstrative showing the "three different formulae":



Id. at 120 (citing RDX-0013C.368; RDX-0017C.102). They further complain that none of the three equations is taught in the 725 patent, nor did Dr. Smith produce any literature showing their use. *Id.* at 121; *see* RRB at 65-66. This is a problem, according to Respondents, because "[a] POSA would not have been aware of any of the three formulae" (RIB at 121 (citing Hr'g Tr. (Gido) at 858:20-859:3)) and so "the patent fails to provide reasonable certainty in determining the numerator . . ." (*id.*).

[REDACTED]

Respondents are not persuasive because there is plainly only a single equation as applied to three different hypothetical NMR test results—not three different equations. As explained by Dr. Smith, the equation involves division to accommodate the number of fluorine atoms within each observed spectrum peak, to the extent it is observed. Hr’g Tr. (Smith) at 240:1-241:13 (“We know how many fluorines are responsible for each of these signals.”); RHr’g Tr. (Smith) at 106:13-108:1 (“If we have any CF₃, which is quite common, we have to normalize that sample, or if we had a CF, we’d have to normalize that sample.”). This is clear from Respondents’ presentation of the equation which in each variation identifies the molecule pertaining to each peak in subscript (*e.g.*, CF₂, CF₃, CF). Respondents’ failure to even acknowledge these subscript designations (*see* RIB at 120-121; RRB at 65-66) and Dr. Gido’s failure to provide any technical critique of Dr. Smith’s mathematical operations (*see generally* Hr’g Tr. (Gido) at 858:15-859:9) greatly undermines the purported indefiniteness. And the calculations are straightforward enough (integration, division, summation) that they should be within the level of ordinary skill adopted above (*i.e.*, a Ph.D. in polymer chemistry or organic chemistry with at least one year of experience working with fluorinated or semi-fluorinated polymers). *Ethicon Endo-Surgery, Inc. v. Covidien, Inc.*, 796 F.3d 1312, 1319 (Fed. Cir. 2015) (“If such an understanding of how to measure the claimed average pressures was within the scope of knowledge possessed by one of ordinary skill in the art, there is no requirement for the specification to identify a particular measurement technique.”). The claim is not indefinite for this reason.

c. Randomness Numerator: ¹⁹F-NMR Method

Respondents’ third challenge to limitation [1d] comes from the Accused Product and DI Product ¹⁹F-NMR spectra produced by Dr. Smith. RIB at 121. Respondents argue that in none of these spectra is there actually a peak appearing at the -94ppm value taught in the 725 patent. RIB at 121-122 (citing spectra results); *see* RRB at 66, 67 (citing RX-2181C). Rather, according to

[REDACTED]

Respondents, the peaks appear near -94ppm, which is a problem because “the Asserted Patent only discloses ‘at -94ppm,’ not teaching or suggesting ‘near -94ppm’ or ‘about -94ppm.’” RIB at 122 (citing 725 patent at 11:63)). Respondents’ selected example is in the below demonstrative:



RIB at 122. Respondents conclude, “[a] ~~POSA~~ would not be able to assess with reasonable certainty as to whether the signals with peaks that are not at -94ppm (but near -94ppm) should be attributed to the AA (or[] MA) units.” *Id.* at 122-123; *see* RRB at 67.

Respondents are not persuasive. “Definiteness is to be evaluated from the perspective of someone skilled in the relevant art.” *Nautilus*, 572 U.S. 908. Neither Respondents nor Dr. Guido even attempt to explain how an ordinary artisan would understand the 725 patent’s instruction of -94ppm in the proper technical context. *See* RIB at 121-123; RRB at 66-67; Hr’g Tr. (Guido) at 859:10-860:13. The entirety of Dr. Guido’s direct testimony on this theory is as follows:

Q. Okay. Let's move on to the next slide. So, Professor, on slide 69, let's continue to talk about your opinion regarding the numerator, okay?

A. Okay. What I'm showing in this slide is –

Q. Go ahead.

A. -- that the patent, in the little box there, this is actually just below where Mr. Shaw was having me look at the patent where it says determination of the randomly distributed AA units, by Fluorine NMR.

It says that this is found by looking at a peak at minus 94 PPM in ^{19}F -NMR.

So this is Dr. Smith's slide where he looked at that peak, and the problem is that the teaching is vague, and there actually is no peak at minus 94 PPM in the spectrum.

So I think if we go to the next slide, we can see. I zoomed in on it. So there's minus 94 PPM, and there's a peak that is by it, but it's not at it.

You know, I will say myself, when I was first doing this testing, we took NMR spectra, and I looked at them, and you know, the patent's teaching that there's a peak at 94 PPM, and there is no peak at 94 PPM.

So I'm looking, well, here's the closest peak, and I'm thinking, well, is this the one I should use, or is there something wrong, or is this the one I should use?

So it's not entirely clear, you know, what the patent is trying to teach. The patent doesn't say a peak near minus 94, at about minus 94. It just assess a peak at minus 94 PPM, and there was no peak at minus 94 PPM.

Id. A clear and convincing case of invalidity is not made by this terse, “is this the one I should use, or is there something wrong, or is this the one I should use?” opinion, setting aside a complete lack of explanation for what the prominent signals appearing “near” -94ppm represent other than MA-adjacent fluorines. And even assuming that the signals represent something other than MA-adjacent fluorines, that could simply indicate that the Accused Products are non-infringing, and has no clear connection to the meaning of the claim language itself. Respondents have not met their burden here.

d. Randomness Numerator: Temperature Dependency

Respondents’ fourth challenge to limitation [1d] “stems from the temperature dependency of ^{19}F -NMR testing results.” RIB at 123. Respondents principally rely on the same temperature-

[REDACTED]

shifting NMR study discussed above for infringement (60°C to -25°C) to additionally argue, “[a] POSA would not know which testing temperature to use as the patent fails to teach or provide any guidance as to which testing temperature should be used for determining the numerator of the Randomness Fraction.” RIB at 124-126 (citing, *inter alia*, RX-2175C.1). For convenience, the demonstrative is reproduced again below:



RIB at 124 (citing RDX-0013C.75). Respondents find this problematic because, for one particular sample, the randomness numerator as calculated varied from .213% (60°C) to 0.13% (-25°C). RIB at 125 (citing Hr’g Tr. (Gido) at 865:10-12, 869:11-25). They conclude, “[t]he fact that different experts and laboratories obtained materially different values for the numerator of the Randomness Fraction that depended [on] the testing temperature chosen precisely shows the indefiniteness stemming from the uncertain determination of the numerator and thus Randomness Fraction.” RRB at 67.

[REDACTED]

No so. Dr. Guido's temperature test certainly shows variability based on temperature. But, taken together with Dr. Guido's explanation of those results, that test does not demonstrate that a POSITA would be unable to ascertain which temperature to use for the ^{19}F -NMR testing. As explored above in connection with infringement, Dr. Guido opined that the two smaller peaks (marked by red arrows above) shifted to the right of -94ppm represent "those two fluorines, the green one and the yellow one, that are beside the two AA units." Hr'g Tr. (Guido) at 868:1-2 (discussing RDX-0013C.74). The unresolvable choice for a POSITA, then, according to Respondents and Dr. Guido, is whether to integrate "this single peak at 60 degrees C, and at, say room temperature, or 5 degrees C, you're integrating that double peak." *Id.* at 869:11-17; *see id.* at 870:1-4 ("Dr. Smith chose 60 degrees C, which gives the highest numerator. I think a POSITA would more likely choose 25 degrees C in the absence of any specific teaching to do otherwise because that's just room temperature.").

As determined for infringement, it stands to reason that a POSITA, knowing the fluorines adjacent to the MA units are represented by double peaks at lower temperatures further from -94 ppm, or the single peak at higher temperatures closer to -94 ppm, would choose the latter based on the -94 ppm guidance from the 725 patent. 725 patent at 11:60-63 ("Fraction of randomly distributed AA units is determined by ^{19}F -NMR. Signals related to CF_2 moieties of vinylidene fluoride units (in bold in following formula) adjacent to isolated AA units have been found to correspond to peaks at -94 ppm."). Respondents provide no evidence other than Dr. Guido's room temperature opinion (*e.g.*, NMR textbooks, treatises, etc.) to counteract this express disclosure. Complainants also persuasively point to an internal Sinochem testing document that shows evaluation of "dimonomer content" based on a single peak at near -94ppm, at unspecified

temperature, suggesting that NMR temperature is not likely to confuse those active in the field. CRB at 68 (citing CX-1974C.65-66).

This situation is distinct from those post-*Nautilus* cases *Teva Pharms. USA, Inc. v. Sandoz, Inc.* and *Dow Chemical Co., v. Nova Chem. Corp. (Can.)* cited by Respondents. RIB at 126. In *Teva*, the dispute fundamentally concerned the meaning of a claim term, “molecular weight,” with that term capable of receiving any one of three equally applicable meanings in the art; different measuring methods were a secondary concern. 789 F.3d 1335, 1341-1343 (Fed. Cir. 2015); *see Dow*, 803 F.3d 620, 634-635 (Fed. Cir. 2015) (discussing *Teva*). But no such claim construction ambiguity exists here. And in *Dow*, the court held that multiple, known, possible methods of calculation on a given data set caused the indefiniteness, with no intrinsic evidence to settle the choice. *Id.* at 633-635. Here, the question is which experimental setup should be used to measure “average number of (MA) sequences,” and the patent answers that question—a setup that reveals a single peak near -94ppm.

On the whole then, a clear and convincing case of indefiniteness from the perspective of a POSITA has not been made on this ground.

e. Randomness Denominator: Titration Electrode

Respondents’ next challenge concerns the PT testing used to determine the denominator of the randomness fraction; specifically, “the potentiometric titration result’s dependency on the type of measurement equipment (titration sensing electrode) used, which causes the value of the denominator of the Randomness Fraction to vary materially based on the equipment chosen.” RIB at 127. Respondents again emphasize that the 725 patent fails to specify what equipment to use, and if a POSITA were to run the test using a “Ecotrode” electrode, the results could vary enough from the results using a “Solvotrode” electrode that either infringement or non-infringement might be shown. *See id.* at 127-130. For support, Respondents look to Dr. Guido’s experimental tests on

[REDACTED]

the FL2800 Accused Product in which all other aspects of the setup were kept constant, but changing between Ecotrode and Solvotrode created a large difference in total MA units measured:

[REDACTED]

RIB at 128 (citing RDX-0013C.89; Hr’g Tr. (Gido) at 884:3-888:12). Respondents thus reason, “a POSA would obtain materially different values for the denominator, and therefore would be unable to determine, with reasonable certainty, the value of the Randomness Fraction.” *Id.* at 129.

Respondents are not persuasive for two reasons. First, Dr. Gido does not actually hold the opinion that a POSITA would not know which of the two electrodes to use. He clearly opines that the “Solvotrode [] is specifically designed to use in predominantly organic-based systems. So acetone is an organic solvent” and “[Solvotrode] is more appropriate to more organic conditions, which is the case when you have 100 milliliters of acetone.” Hr’g Tr. (Gido) at 884:11-19, 961:12-18. He further notes that “the titrations in this case are kind of a middle ground, right, they’re not completely organic or completely aqueous,” but the background solutions of both experts were almost 10x or 20x more acetone than water. Hr’g Tr. (Smith) at 462:10-16 (50ml acetone, 4ml water), 492:18-21; Hr’g Tr. (Gido) at 956:20-957:12 (discussing RDX-0015C.53, 50ml acetone/100ml acetone, 4ml/5ml water). Indeed, Dr. Smith testified that “a little bit of water” is only added to ensure the solution is conductive enough for the PT testing. Hr’g Tr. (Smith) at 507:1-7. It stands to reason that a POSITA, with a Ph.D. in polymer chemistry or organic chemistry with at least one year of experience, would know whether this was an organic-based titration or an aqueous-based titration, and select the appropriate electrode.

Second, the evidence does not clearly and convincingly support Respondents’ central proposition—that changing between Solvotrode and Ecotrode electrodes causes the denominator “to vary materially.” RIB at 127. Respondents’ brief only mentions the FL2800 Accused Products as being used for this experiment. *Id.* at 128-129. And a comparison of the above table with the actual PT test results for FL2800 shows that Dr. Guido chose the furthest endpoints recorded by the titration machines for the calculations:

[REDACTED]

[REDACTED]

[REDACTED]

Id. at .2 (FL2800, sample S4, Ecotrode) (EP3, EP6, EP2).

The selected EP7, EP4, and EP5 endpoints for the Solvotrode do not seem to correspond to meaningful rate of change points, however. They are the very last endpoints recorded, all well past -270mV, and as Dr. Guido explained endpoints are just the machine looking for local maximums in rate of change. Hr’g Tr. (Guido) at 962:1-3. And when the endpoints correlating with the Solvotrode’s maximum rate of change-are considered, the results are consistent with the Ecotrode—both occur at essentially the 0.75 ml NaOH mark:

[REDACTED]

[REDACTED]

RX-2115C.1 (Solvotrode), 2 (Ecotrode). Although not mentioned in Respondents' brief, the Ecotrode/Solvotrode experiment was apparently also carried out for the FL2300 product, and it too has a consistent mark at the point of maximum rate of change—around 0.2-0.3ml NaOH. *Id.* at .4-5. So even apart from Dr. Smith's opinion that switching electrodes was not observed to make a difference in one limited test run (Hr'g Tr. (Smith) at 338:10-23), the record is not clear and convincing that the correct endpoints have been selected for this comparison and, overall, indefiniteness has not been shown.

f. Randomness Denominator: Acetone Dependency

Respondents' last challenge to limitation [1d] again concerns the PT testing. Respondents argue the end result "depend[s] on the amount of acetone used to dissolve a copolymer product." RIB at 130-131. Respondents first fault the patent for not specifying the amount of acetone to use because "[d]epending on the choice of the amount of acetone, a POSA would obtain materially different results for the denominator, and thus the Randomness Fraction claim element." *Id.* at 131 (citing Hr'g Tr. (Gido) at 890:14-891:20). To demonstrate the variability, Dr. Gido ran identical tests on the FL2300 Accused Product with 50ml and 100ml of acetone:

[REDACTED]

Id. (citing RDX-0013C.91; RX-2115C; Hr'g Tr. (Gido) at 888:17-891:20). Respondents reason, "[t]his material difference that depends on an experimental setup (amount of acetone used) causes the same product to fall inside or outside the claim scope, resulting in uncertainty of the scope of the invention." *Id.* at 132.

[REDACTED]

Respondents' testing certainly shows that a doubling of background acetone solution extends the total titration process, as shown in the below data sets:

[REDACTED]

[REDACTED]

Id. at .14 (100ml). But Respondents are not persuasive, again for two reasons.

First, as with the Solvotrode/ECOTRODE experiments, Dr. Gido actually has an opinion on whether 50ml or 100ml is the proper volume of background solution. When 5ml of water is used to improve conductivity, as instructed by the patent, he stated 100ml is needed, or at least better suited, to avoid precipitation or coagulation of the copolymer test sample. *See* Hr'g Tr. (Gido) at

[REDACTED]

818:7-19, 878:1-883:4 (“In my repeat of his – of Dr. Smith’s [50ml] conditions, I encountered severe problems with precipitation.”), 888:20-890:5. The patent itself speaks of this consideration. 725 patent at 11:53-54 (“5 ml of water are then added dropwise under vigorous stirring so that to avoid coagulation of the polymer.”). So it stands to reason that a POSITA, with a Ph.D. in polymer chemistry or organic chemistry with at least one year of experience, would know what amount of solvent is too little for reliable results. *Ethicon*, 796 F.3d at 1319. To the extent it is suggested or implied that volumes beyond 100ml may further affect the PT tests, and further confuse a POSITA, that is not supported by any record evidence and Dr. Smith credibly opines such would not be the case. Hr’g Tr. (Smith) at 506:2-12 (amount of added base should not differ for the same amount of acid).

Second, again as with the Solvotrode/ECOTRODE experiments, the underlying rate of change data behind the acetone experiments shows a certain consistency between 50ml and 100ml. Specifically, the maximum rate of change for each set of runs is around 0.2ml.

[REDACTED]

[REDACTED]

[REDACTED] As discussed for infringement, there is reason to find that maximum rates of change are meaningful indicators in PT testing. *See generally* Hr'g Tr. (Gido) at 950:13-951:11. Even if not the most meaningful, the record as a whole does not clearly and convincingly show Respondents' preference for the last endpoints, corresponding to lesser rates of change, are the proper value for the denominator of the randomness equation. And to accept this particular ground of indefiniteness would imply that POSITAs are generally incapable of using titration to determine the amount of an acid in a sample because they would not know how much background solvent to use. This is a difficult conclusion to accept. So invalidity on this ground has not been shown.

g. C1-C5 Hydrocarbon Moiety

Respondents' final indefiniteness ground concerns the limitation "ROH is . . . a C1-C5 hydrocarbon moiety comprising at least one hydroxyl group." RIB at 132-133. Because a "hydrocarbon" in a plain and ordinary sense only allows for hydrogen and carbon atoms, Respondents contend the inclusion of "hydroxyl group" (necessarily containing an oxygen) is nonsensical and renders the phrase indefinite. *Id.* at 133. As determined above for claim

construction, “hydrocarbon moiety” allows for atoms other than carbon and hydrogen. So the claim is not indefinite on this ground.

4. Lack of Written Description

Respondents further contend the Asserted Claims are invalid for lack of written description under 35 U.S.C. § 112. RIB at 134-135. Respondents challenge four claim limitations within claim 1 and the sole limitation of claim 3. *Id.* at 134-140. Each of these issues are discussed below. Respondents have not shown that the claims are invalid as lacking written description.

a. Linear Copolymer

Respondents’ first written description challenge is against the preamble of claim 1, which recites a “linear . . . copolymer.” RIB at 135. They contend the 725 patent specification “fail[s] to provide a single example showing that the inventors possessed a linear copolymer that had no grafting or branching,” or, put another way, the patent is silent as to steps to suppress or eliminate the well-understood mechanisms such as chain transfer or backbiting that cause branching. *See id.* (citing Hr’g Tr. (Gido) at 895:7-896:23); *see also id.* at 136 (citing *Centocor Ortho Biotech, Inc. v. Abbott Labs.*, 636 F.3d 1341, 1348 (Fed. Cir. 2011); *University of California v. Eli Lilly & Co.*, 119 F.3d 1559, 1568 (Fed. Cir. 1997)).

Respondents are not persuasive. Firstly, Respondents make no effort to show that the “linear” term in the preamble is limiting, even if other terms are limiting. *See* RIB at 135; CRB at 72. Beyond this, the test for written description is whether the four corners of the specification communicate, to one of ordinary skill in the art, that the inventors possessed the full scope of the claim. *Ariad*, 598 F.3d at 1351. This inquiry is a question of fact. *Id.* And as a factual matter, the 725 specification speaks of linear copolymers in multiple ways. In the background of the art, the patent discloses drawbacks of traditional PVDF which stem from, *inter alia*, “cross-linked materials.” 725 patent at 1:31-39. The patent then teaches that “[l]inear copolymers are thus

[REDACTED]

generally preferred when a precise control of the molecular structure is required.” *Id.* at 40-41. The patent then introduces known PVDF prior art publications and, in each, highlights the linearity of the polymers. *Id.* at 1:42-65. The result is a statement that “[t]here is thus still a need [in] the art for vinylidene fluoride linear copolymers comprising recurring units derived from hydrophilic (meth)acrylic monomers, possessing a substantially random distribution of the recurring units” *Id.* at 2:29-32. The patent goes so far as to distinguish “linear copolymer” from other arrangements as well. *Id.* at 5:46-50 (“Polymer (A) is a linear copolymer, that is to say that it is composed of macromolecules made of substantially linear sequences of recurring units from VDF monomer and (MA) monomer; polymer (A) is thus distinguishable from grafted and/or comb-like polymers.”). These disclosures demonstrate the inventors contemplated and had possession of linear copolymers at the time of filing.

That copolymer linearity is also not the alleged inventive contribution of the 725 patent sets this case apart from *Ariad* and *Centocor*, in which it was the focus of the claim—*i.e.*, the inventors’ purported contribution to the art—which failed to have written description support. The *Ariad* court explained:

Ariad claims methods comprising the single step of reducing NF-κB activity. Lilly argues that the asserted claims are not supported by a written description because the specification of the ’516 patent fails to adequately disclose how the claimed reduction of NF-κB activity is achieved. The parties agree that the specification of the ’516 patent hypothesizes three classes of molecules potentially capable of reducing NF-κB activity: specific inhibitors, dominantly interfering molecules, and decoy molecules. Lilly contends that this disclosure amounts to little more than a research plan, and does not satisfy the patentee’s *quid pro quo* as described in *Rochester*.

. . . .

Regardless whether the asserted claims recite a compound, Ariad still must describe some way of performing the claimed methods, and Ariad admits that the specification suggests only the use of the three classes of molecules to achieve NF-κB reduction. Thus, to satisfy the written description requirement for the asserted

claims, the specification must demonstrate that Ariad possessed the claimed methods by sufficiently disclosing molecules capable of reducing NF-κB activity so as to “satisfy the inventor's obligation to disclose the technologic knowledge upon which the patent is based, and to demonstrate that the patentee was in possession of the invention that is claimed.” *Capon*, 418 F.3d at 1357.

598 F.3d at 1354-55. The *Centocor* court held similarly:

The overwhelming majority of the '775 patent describes the A2 mouse antibody and the single chimeric antibody that Centocor made based on A2's mouse variable region. . . . However, the mouse variable region sequence does not serve as a stepping stone to identifying a human variable region within the scope of the claims. . . . Dr. Ghrayeb was able to point to only a few sentences sprinkled throughout the '775 patent that mention human antibodies or human variable regions at all.

636 F.3d at 1349-50; *see Regents of the Univ. of Cal.*, 119 F.3d at 1567 (faulting the patent specification for failing to disclose the claimed DNA sequence as opposed to a method of obtaining the DNA).

Accordingly, the claim is not invalid for lack of written description of “linear . . . copolymer.” To the extent that Respondents maintain their rebuttal argument that the patent “provides no information that would allow a POSA to understand what degree of branching the inventors regarded as within the meaning of ‘linear[.]’” (RRB at 70), this is an indefiniteness argument, not adequately briefed and not supported by clear and convincing evidence.

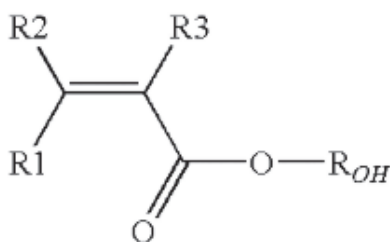
b. R₁, R₂, R₃, is a C₁-C₃ Hydrocarbon Group

Respondents next challenge the written description of limitation [1b] that recites, “wherein each of R₁, R₂, R₃, equal to or different from each other, is independently an hydrogen atom or a C₁-C₃ hydrocarbon group.” RIB at 136-137. They contend, “in the Asserted Patent’s disclosures, R₁, R₂ and R₃ are defined as a hydrogen atom, and nothing else.” (*id.* at 137 (citing 725 patent at 3:56-66, 4:5-36)) and “[the patent] does not disclose a representative set of species for all C₁-C₃ permutations or disclose structural features predictive of the claimed performance characteristics” (RRB at 70). Respondents reason, “[t]he written description requirement should curtail the attempt

to overreach the scope of what the inventors actually invented here.” RIB at 137 (citing *Reiffin v. Microsoft Corp.*, 214 F.3d 1342, 1345 (Fed. Cir. 2000)).

Respondents have not met their burden, mainly because their characterization of the specification as disclosing R1, R2, R3 only as hydrogen atoms is incorrect. *See* RIB at 137. As Complainants observe, the challenged language appears verbatim in the specification: “wherein each of R1, R2, R3, equal or different from each other, is independently a hydrogen atom or a C₁-C₃ hydrocarbon group.” *See* CIB at 124 (citing 725 patent at 2:42-58). In fact, element [1b] duplicates that passage in the specification, including the disclosed molecular diagram:

at least one hydrophilic (meth)acrylic monomer (MA) of formula:



wherein each of R1, R2, R3, equal to or different from each other, is independently an hydrogen atom or a C1-C3 hydrocarbon group . . .

725 patent at 2:45-57. This is therefore not a case where the claim covers a genus but only certain species are disclosed in the specification, as in *AbbVie Deutschland GmbH & Co., KG v. Janssen Biotech, Inc.*, 759 F.3d 1285, 1299-1300 (Fed. Cir. 2014). It is instead a case where the claimed invention has a “precise definition . . . of species falling within the genus sufficient to distinguish the genus from other materials.” *Ariad*, 598 F.3d at 1350. That is sufficient to satisfy the written description requirement. Respondents’ suggestion that the patent must also teach a “representative set of species for all [hydrocarbon] permutations” and “structural features predictive of the claimed

performance characteristics” is not supported by any authority and in any event relates more to enablement than to the adequacy of the written description. *See* RRB at 70.

Accordingly, Respondents have not shown by clear and convincing evidence that the 725 patent fails to provide adequate written description for “wherein each of R₁, R₂, R₃, equal or different from each other, is independently a hydrogen atom or a C₁-C₃ hydrocarbon group.”

c. R_{OH} is a C₁-C₅ Hydrocarbon Moiety

Respondents’ third challenge is against the remainder of limitation [1b], “R_{OH} is a hydrogen or a C₁-C₅ hydrocarbon moiety comprising at least one hydroxyl group.” RIB at 137. Here, Respondents take issue with the breadth of the term as understood by Complainants and applied against the Accused Products—specifically, the SN-25628 Accused Product—and contend that if the construction is adopted there is a written description problem. *See id.* at 137-139; CRB at 70-71 (alleging intent to capture [REDACTED] as the claimed monomer). They specifically argue, “[i]t is undisputed that each exemplified monomer in the patent has either an R_{OH} that is hydrogen (i.e. acrylic acid and methacrylic acid) or is a C₁-C₅ hydrocarbon moiety comprising (or substituted) with a functional group, which is only a hydroxyl group, and not a [REDACTED].” RIB at 138 (citing Hr’g Tr. (Gido) at 899:3-15).

Respondents are nearly persuasive, because the moiety is not strictly limited to carbon and hydrogen atoms. But here, too, the claim language duplicates the specification’s language. *See* 725 patent at 2:57-58. And the 725 patent speaks at length on the properties of R_{OH} and discloses multiple exemplary members. For example, the patent repeatedly emphasizes the need for the MA units to be hydrophilic to improve solubility in aqueous polymerization mediums, and to also provide adhesiveness:

The Applicant has found that the substantially random distribution of hydrophilic (meth)acrylic monomer (MA) within the polyvinylidene fluoride backbone of the polymer (A) advantageously maximizes the effects of the modifying monomer

[REDACTED]

(MA) on both adhesiveness and/or hydrophilic behaviour of the resulting copolymer, even at low levels of hydrophilic (meth)acrylic monomer (MA) in the composition, without impairing the other outstanding properties of the vinylidene fluoride polymers, e.g. thermal stability and mechanical properties.

725 patent at 3:13-23; *see id.* at 1:31-39, 2:20-26, 2:66, 6:54-58. The patent provides several “non-limitative” examples of MA units meeting these conditions, with chemical illustrations for three. *Id.* at 4:1-38 (“acrylic acid, methacrylic acid, hydroxyethyl(meth)acrylate, hydroxypropyl(meth)acrylate; hydroxyethylhexyl(meth)acrylates”). Dr. Smith credibly explained at the hearing that these desirable properties are due to the polar properties of the ROH group, as provided by the claimed “hydroxyl group” of the C1-C5 hydrocarbon moiety. Hr’g Tr. (Smith) at 175:25-176:15, 177:3-178:12, 182:8-183:13 (“These groups are hydrophilic. There’s an OH group there. There’s oxygen. Those are more polar atoms, so it’s a more polar molecule. . . . Acrylic acid is the best example because it is nearly water-soluble . . .”), 184:2-10, 347:3-19; *see* Hr’g Tr. (Wanat) at 1085:5-12 (“a reason for putting a hydrophilic (meth)acrylic monomer into a PVDF backbone is to introduce some polarity and some bonding capability to that structure . . .”).

Respondents’ clear and convincing case fails here because they do not fairly acknowledge these disclosures or these chemical properties of the ROH group. Rather, they focus on the fact that the patent fails to recite an example that comprises a [REDACTED] at the end of the monomer, as with one of the Accused Products. *See* RIB at 137-139; RRB at 70-71. But as outlined above, there is more to the intrinsic evidence than this omission. And while Respondents do allege there are different “functional differences” between hydroxyl and [REDACTED] groups in connection with claim construction (RIB at 29 (citing Hr’g Tr. (Swager) at 753:2-13; Hr’g Tr. (Wanat) at 1084:12-1086:23)), the cited expert testimony does not mention hydrophilicity and the bonding appears the same if not better (Hr’g Tr. (Wanat) at 1085:22-24 (“[with the [REDACTED] monomer] now you actually have the ability to do ionic bonding which tends to be stronger than a simple

hydrogen bond or an association’’)). So Respondents have not really shown that [REDACTED] groups or [REDACTED] monomers are inconsistent or incompatible with the putative genus disclosed in the specification. Indeed, if they were, Sinochem’s SN-25628 product would likely be ineffective for its intended purpose of a lithium-ion battery additive.

Accordingly, Respondents have not shown by clear and convincing evidence that the 725 patent fails to provide adequate written description for “R_{OH} is a hydrogen or a C1-C5 hydrocarbon moiety comprising at least one hydroxyl group.”

d. Fraction of Randomly Distributed (MA) Units

Respondents’ last invalidity challenge is to the randomness fraction recited in limitation [1d] and dependent claim 3. RIB at 139. They explain, “[t]he Asserted Patent’s disclosures only support the range of 68% to 81% for the Randomness Fraction specified in the Asserted Claims—the disclosed Example 9 shows 68% and the disclosed Example 14 shows 81%,” and argue nothing “reasonably suggests that the inventors had possession of a Randomness Fraction that is in the range of 40% to 68% or 81% to 100%” *Id.* Respondents further characterize the 40% and 50% thresholds of claims 1 and 3, respectively, as “arbitrary and unsupported speculations.” *Id.* at 140.

Respondents are not persuasive. First, written description does not require actual reduction to practice, which seems to be the implication from Respondents’ focus on the practical examples disclosed in the 725 patent’s specification. *Ariad*, 598 F.3d at 1352 (citing *Falko-Gunter Falkner v. Inglis*, 448 F.3d 1357, 1366-67 (Fed. Cir. 2006)); see RIB at 140 (“It is telling that Complainants sought to rely on post-filing test data to allege written description support.”); RRB at 71 (“written description requires that a disclosure showing that the inventors actually achieved or reliably could achieve the full claimed range set by the lower and upper limits, not merely a disclosure about the limits and range.”).



Second, Respondents ignore swaths of teachings in the specification regarding randomness, how varying degrees may be achieved, and what the patentees found desirable. For example, the patent discloses an experimental copolymer with 22% randomness (*i.e.*, actual possession) by way of following the undesirable prior art method of introducing all VDF and AA at the same initial time. 725 patent at 13:50-14:13 (Comparative Example 3), 6:16-18. The patent also discloses specific randomness fractions of 50%, 60%, and 70% as ranging from preferred to most preferred (*id.* at 5:13-15) and an understanding of what 100% randomness would mean in terms of molecular arrangement (*id.* at 4:58-67 (purely isolated AA units)), and it credibly teaches that a technique to achieve different amounts of randomness is to vary the amount of total MA units which are introduced continuously into the reactor:

The aqueous solution of hydrophilic (meth)acrylic monomer (MA) continuously fed during polymerization amounts for at least 50% wt of the total amount of monomer (MA) supplied during the reaction (*i.e.* initial charge plus continuous feed). Preferably at least 60% wt, more preferably at least 70% wt, most preferably at least 80% wt of the total amount of monomer (MA) is continuously fed during polymerization. When less than 50% of total amount of monomer (MA) is continuously fed, variations in monomer (MA) concentration during polymerization typically occur: higher initial monomer (MA) concentrations can thus be encountered yielding monomer (MA)—blocky structures.

(*id.* at 6:23-34). Respondents address none of these disclosures and thus have not presented a clear and convincing case that 40% and 50% randomness fractions were not in the possession of the inventors. Accordingly, no claim is invalid on this ground.

V. DOMESTIC INDUSTRY - ECONOMIC PRONG

In a patent-based complaint, a violation of Section 337 can be found “only if an industry in the United States, relating to the articles protected by the patent ... concerned, exists or is in the process of being established.” 19 U.S.C. § 1337(a)(2). Under Commission precedent, this “domestic industry requirement” of Section 337 consists of an economic prong and a technical prong. *Stringed Instruments*, Inv. No. 337-TA-586, Comm’n Op. at 12-14. The complainant bears

[REDACTED]

the burden of establishing that the domestic industry requirement is satisfied. *See Certain Set-Top Boxes and Components Thereof*, Inv. No. 337-TA-454, Initial Determination at 294 (June 21, 2002) (not reviewed in relevant part).

The economic prong of the domestic industry requirement is defined in subsection (a)(3) of Section 337 as follows:

(3) For purposes of paragraph (2), an industry in the United States shall be considered to exist if there is in the United States, with respect to the articles protected by the patent, copyright, trademark or mask work concerned --

(A) Significant investment in plant and equipment;

(B) Significant employment of labor or capital; or

(C) Substantial investment in its exploitation, including engineering, research and development, or licensing.

19 U.S.C. § 1337(a)(3). The economic prong of the domestic industry requirement is satisfied by meeting the criteria of any one of the three factors listed above. Investments in plant and equipment and labor or capital that may fairly be considered investments in research and development are eligible for consideration under Subsections (A) and (B), in addition to Subsection (C). *See Certain Solid State Storage Drives, Stacked Electronics Components, and Products Containing Same*, Inv. No. 337-TA-1097, Comm’n Op. at 14 (June 29, 2018) (“*Solid State Storage*”). Nevertheless subsection (A), (B), and (C) amounts should be presented and considered individually, not in the aggregate. *See Certain Replacement Automotive Lamps*, Inv. No. 337-TA-1291, Comm’n Op. at 30, 30 n.44 (Mar. 7, 2024) (citing *Certain Carburetors and Products Containing Such Carburetors*, Inv. No. 337-TA-1123, Comm’n Op. at 21 (Sept. 12, 2019)).

Complainants contend that a domestic industry under the 725 patent both exists and is in the process of being established, under subsections (A) and (B). *See CIB* at 126, 133, 137.

[REDACTED]

Complainants principally point to the development of battery-grade PVDF manufacturing facilities within the United States, under codename Project Sarsaparilla. *Id.* at 127-128. As Complainants explain it, the production of the DI Products will occur across two sites: “one for key raw materials (142b and [REDACTED]) in St. Gabriel, Louisiana (the ‘St. Gabriel Facility’), and one for using those raw materials to produce VDF, which is then turned into PVDF, in Augusta, Georgia (the ‘Augusta Facility’).” *Id.* at 127. Complainants argue this effort is unique as “[t]here is no manufacturer of comparable battery-grade PVDF, including PVDF that can be used in NMC batteries, in the U.S.” *Id.* at 128 (“Project Sarsaparilla supports key priorities for Complainants, including making them the first mover in the U.S. market for PVDF that can be used in NMC batteries.”).

Complainants argue that the Augusta Facility has a forecasted cost between [REDACTED], with [REDACTED] already expended. CIB at 133 (citing Hr’g Tr. (Jarosz) at 693:10-22). As for the St. Gabriel Facility, Complainants argue that a joint venture named Synorb, majority-owned by Complainants and licensed to the 725 patent, will operate the location. *Id.* at 136 (citing, *inter alia*, Hr’g Tr. (Finelli) at 106:17-107:24, 100:11-19). The St. Gabriel Facility has a forecasted cost between [REDACTED], with [REDACTED] already expended. *Id.* at 135-136 (citing, *inter alia*, Hr’g Tr. (Jarosz) at 681:13-25, 693:10-22).

Complainants acknowledge these facilities will likely create [REDACTED] even though “Project Sarsaparilla [REDACTED].” *See* CIB at 131. Thus, to arrive at amounts attributable to the DI Products, specifically, Complainants and their expert, Mr. John Jarosz, apply allocations based on business record sales forecasts.⁵ The most conservative of these allocations is a [REDACTED]

⁵ It would appear [REDACTED]

See Hr’g Tr. (Jarosz) at 679:24-680:4.

[REDACTED]

[REDACTED] to be produced from Project Sarsaparilla.” *Id.* (citing, *inter alia*, Hr’g Tr. (Jarosz) at 672:17-673:11, 683:25-686:2; Hr’g Tr. (Finelli) at 112:13-21; JX-0267C.3). Complainants and Mr. Jarosz apply an additional [REDACTED] allocation on top of the [REDACTED] for the St. Gabriel Facility to reflect the expectation that [REDACTED]. *See id.* at 133.

The record shows a domestic industry in the process of being established. Complainants are clearly taking the necessary tangible steps to create plant and equipment operations within the United States to manufacture the DI Products. Complainants’ witness, Mr. Michael Finelli, testified that Complainants applied for and received a grant from the Department of Energy in 2022 for the project. CIB at 134 (citing Hr’g Tr. (Finelli) at 114:17-116:15; CX-0046C). This grant requires regular updates to the DOE, and [REDACTED]. *Id.* (citing Hr’g Tr. (Finelli) at 125:6-126:9). And, as noted above, over [REDACTED] has already been expended, including [REDACTED].” *Id.* at 134 (citing Hr’g Tr. (Finelli) at 114:22-116:10).

There is also a significant likelihood that the industry requirement will be satisfied in the future. Construction of the facilities should not prove unduly complicated or present unexpected problems. Complainants argue they [REDACTED] CIB at 143-144 (citing JX-0006C; JX-0271C; Hr’g Tr. (Finelli) at 94:19-95:1, 128:12-24). As noted above, when the plants become operational, it is expected the total investment will be over [REDACTED] for the August Facility and [REDACTED] for the St. Gabriel Facility. CIB at 137 (citing Hr’g Tr. (Finelli) at 73:22-74:8, 129:11-130:1). Applying Mr. Jarosz’s [REDACTED] allocations to

[REDACTED]

these amounts returns [REDACTED] in cognizable plant and equipment investment in support of the DI Products. This is certainly significant in an absolute sense, but when it is further considered that the DI Products will be manufactured from raw material to finished product [REDACTED] within the United States, the domestic value-add is overwhelming. *See* CIB at 133-134 (“The Augusta Facility will rely on [REDACTED] key raw materials (some from the St. Gabriel Facility), engage almost [REDACTED], and have all work [REDACTED]”), 135-136 (“The St. Gabriel Facility will be the source of intermediate materials needed by the August Facility, [REDACTED] and 142b, which are not readily available on the commercial market and have no current US source.”); *Wuhan*, 127 F.4th at 1339 (“In *Lelo*, we recognized the comparison of domestic investments to total (*i.e.*, domestic plus foreign) investments as a valid quantitative analysis for assessing the significance of investments”). Respondents do not contest this issue. *See generally* RIB; RRB; CRB at 75.

Complainants have also shown a domestic industry in the process of being established under subsection (B). It is not correct that investments in plant and equipment are freely considered capital and thus transferable to subsection (B). *See* CIB at 137; *Lashify*, 130 F.4th at 954 (“For the economic prong, section 337(a)(3) identifies three *potentially overlapping* but independently sufficient bases for considering the required industry to exist.” (emphasis added)); *Soft Projectile Devices*, Inv. No. 337-TA-1325, Comm’n Op. at 23-24 (rejecting broad reading of “capital” that would render “plant and equipment” superfluous). But Complainants specifically argue that “[t]he Augusta Facility alone will generate an estimated [REDACTED] permanent operations and manufacturing jobs, with wages averaging at least [REDACTED]” and “[t]he St. Gabriel Facility will generate an estimated [REDACTED] such jobs.” CIB at 142 (citing Hr’g Tr. (Jarosz) at

[REDACTED]

701:20-702:15; CDX-0003C.42, 114). When this is allocated down to SF-5130, the DI Product, the amounts total [REDACTED] Hr’g Tr. (Jarosz) at 702:1-15; CDX-0003C.42. Setting aside Complainants’ proffered depreciation amounts on each facility as additional “capital,” [REDACTED] appears significant given that, again, the DI Products will be manufactured from raw material to finished product [REDACTED] within the United States. This U.S.-centered production makes it unlikely that foreign labor costs will dwarf or immensely exceed the \$ [REDACTED], which is only further supported by the raw material sourcing requirements of the DOE grant (*i.e.*, “capital”). Hr’g Tr. (Finelli) at 117:6-22 (explaining satisfaction with Buy America requirements and raw materials); JX-0006C.22-23 (Section 2.3.2 Supply chain analysis). The practical, tangible steps taken towards this activity are the same as under subsection (A). Respondents do not contest this issue. *See generally* RIB; RRB; CRB at 75.

Accordingly, a domestic industry in the process of being established under subsection (B) has been shown.

Complainants have not shown a domestic industry under any subsection “exists,” however. Because the activities presented for economic prong are manufacturing-related, but those manufacturing facilities are admittedly not yet operational, there are no DI products in existence in the U.S. that have benefitted from those activities. Thus, there can be no significant investment in plant or equipment, labor or capital, with respect to “articles protected by the patent”; *i.e.*, no domestic industry “exists.” 19 U.S.C. § 1337.

VI. CONCLUSIONS OF LAW

1. Complainants have proven infringement of claims 1, 3, 6, 8, and 9 of U.S. Patent No. 8,337,725.
2. Complainants have proven importation of FL2300 but not of any other Accused Product.

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3. Respondents have not proven the invalidity of any claims of U.S. Patent No. 8,337,725.
 4. Complainants have proven the existence of articles protected by claims 1, 3, and 6 of U.S. Patent No. 8,337,725.
 5. Complainants proven that an economic domestic industry is in the process of being established as required by 19 U.S.C. § 1337(a)(2) for U.S. Patent No. 8,337,725.
 6. There is a violation of section 337 with respect to U.S. Patent No. 8,337,725.

VII. RECOMMENDED DETERMINATION ON REMEDY AND BOND

The Commission's Rules provide that subsequent to an initial determination on the question of violation of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, the administrative law judge shall issue a recommended determination concerning the appropriate remedy in the event that the Commission finds a violation of section 337, and the amount of bond to be posted during Presidential review of the Commission action under section 337(j). *See* 19 C.F.R. § 210.42(a)(1)(ii).

The Commission has broad discretion in selecting the form, scope, and extent of the remedy in a section 337 proceeding. *Viscofan, S.A. v. Int'l Trade Comm'n*, 787 F.2d 544, 548 (Fed. Cir. 1986). Under Section 337(d)(1), if the Commission determines as a result of an investigation that there is a violation of section 337, the Commission is authorized to enter either a limited or a general exclusion order. 19 U.S.C. § 1337(d)(1). A limited exclusion order ("LEO") instructs the U.S. Customs and Border Protection ("CBP") to exclude from entry all articles that are covered by the patent at issue and that originate from a named respondent in the investigation. Under section 337(f)(1), the Commission may issue a cease and desist order ("CDO") in addition to, or instead of, an exclusion order. 19 U.S.C. § 1337(f)(1). The Commission generally issues a cease and desist order directed to a domestic respondent when there is a "commercially significant" amount of infringing, imported product in the United States that could be sold, thereby undercutting the remedy provided by an exclusion order. *See Certain Crystalline Cefadroxil Monohydrate*, Inv. No. 337-TA-293, USITC Pub. 2391, Comm'n Op. on Remedy, the Public Interest and Bonding at 37-42 (June 1991); *Certain Condensers, Parts Thereof and Prods. Containing Same, Including Air Conditioners for Automobiles*, Inv. No. 337-TA-334 (Remand), Comm'n Op. at 26-28 (Sept. 10, 1997). Additionally, during the 60-day period of Presidential review under 19 U.S.C. § 1337(j), "articles directed to be excluded from entry under subsection

[REDACTED]

(d) . . . shall . . . be entitled to entry under bond prescribed by the Secretary in an amount determined by the Commission to be sufficient to protect the complainant from any injury.” *See* 19 U.S.C. § 1337(j)(3).

Here, Complainants seek a limited exclusion order against each respondent and a bond of 100% (alternatively, 4.5%). *See* CIB at 145-146. “The complainant bears the burden of establishing the need for a bond” during the Presidential Review period. *See Certain Robotic Vacuum Cleaning Devices and Components Thereof Such as Spare Parts*, Inv. No. 337-TA-1057, Comm’n Op. at 68 (Feb. 1, 2019).

As to a limited exclusion order, Respondents repeat their arguments regarding importation (*see* RIB at 142-143; RRB at 72), but argue that if a violation is found:

[A]ny limited exclusion order should identify and apply to only (1) the specific parties who import into the U.S., sell for importation into the U.S., or sell within the U.S. the specific products that infringe the asserted claims of the ’725 patent and (2) those specific product and models found to infringe the asserted claims of the ’725 patent.

RIB at 143; *see* RRB at 72 (“remedy should be limited to the specific parties and specific products found to violate Section 337.”). Respondents further request a “provision permitting certification for imported products that are not subject to exclusion.” *Id.*

Respondents’ requests are mostly recommended. Limited exclusion orders are typically issued against the parties named as respondents in the investigation, and additionally “any of their affiliated companies, parents, subsidiaries, agents, or other related business entities, or its successors or assigns.” *See, e.g.*, EDIS Doc. ID 884079. But the orders are also typically directed to articles “that infringe” one or more claims of an asserted patent, without further specification. *See, e.g., id.* Further, the orders do not apply (and must not apply) to importations under license from, or with the permission of, the patent owner or as provided by law. *See, e.g., id.* It is

[REDACTED]

recommended that limited exclusion orders issue with these typical terms should a violation be found. Thus, Respondents' request to limit the orders to the particular PVDF products at issue in this investigation (assumedly, by model number) is not recommended. But certification provisions are at this point a general agency practice to aid CBP in the proper enforcement of any exclusion order. *Certain Road Milling Machines and Components Thereof*, Inv. No. 337-TA-1067, Comm'n Op. at 15, 15 n. 5 (Aug. 7, 2019). These are recommended for this reason.

As to the need for a bond, Complainants argue there is competition between the DI Products and the Accused Products as evidenced by testimony from Mr. Finelli and Mr. Jarosz, with actual [REDACTED] having occurred in the Chinese market. CIB at 146 (citing Hr'g Tr. (Finelli) at 151:10-12, 80:19-24, 85:18-87:22, 89:25-90:3; Hr'g Tr. (Jarosz) at 675:16-23). Complainants take the position that because Respondents did not produce pricing information to demonstrate a pricing differential, a 100% rate is warranted. *Id.* (citing Hr'g Tr. (Jarosz) at 676:23-677:7). Otherwise, they argue a 4.5% rate is next-most appropriate based on industry licensing rates. *Id.* (citing Hr'g Tr. (Jarosz) at 677:9-16). Respondents object to the imposition of any bond in part because they have not yet imported any product that could cause Complainants injury, and they otherwise blame Complainants for failing to make a "meaningful effort to obtain pricing data" beyond one request for admission and an interrogatory limited to products imported to the U.S. *See* RIB at 144-145.

The record is fairly clear, and Respondents do not dispute, that the DI Products are potentially direct substitutes for the Accused Products. *See, e.g.*, CX-1974C (Sinochem document comparing SF-5130 to SN-25628); JX-0699C.1 (Youcheng stating, "[REDACTED] [REDACTED]"). Thus, the economic harm to Complainants from importations of infringing PVDF is shown. Nevertheless, the burden to show a bond is on the complainant, and Respondents persuasively argue that Complainants did not issue

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adequate discovery requests to determine a price differential. *See* CX-0942C.33 (“Admit that You have at least once set a price for at least one of Your Accused Products in U.S. dollars.”); CX-0932C.29 (seeking information on shipments of Accused Products to the United States). Complainants could have but did not dispute this discovery effort in their reply brief. *See* CRB at 75. Thus, a 100% bond due to incomplete price information is not warranted. Correspondingly, however, Respondents do not dispute Complainants’ lower 4.5% bond based on industry standard licensing. *See* RRB at 72. So Mr. Jarosz’s undisputed testimony on this point is accepted (Hr’g Tr. (Jarosz) at 677:8-16), and it is recommended a 4.5% bond issue as reflective of a licensing royalty rate.

VIII. INITIAL DETERMINATION AND ORDER

Based on the foregoing,⁶ it is my Initial Determination that there is a violation of Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain polyvinylidene fluoride resins in connection with the asserted claims of U.S. Patent No. 8,337,725.

The undersigned hereby certifies to the Commission this Initial Determination, together with the Record of the hearing in this investigation consisting of the following: the transcript of the evidentiary hearing, with appropriate corrections as may hereafter be ordered; and the exhibits accepted into evidence in this investigation.⁷

⁶ The failure to discuss any matter raised by the parties or any portion of the Record herein does not indicate that said matter was not considered. Rather, any such matter(s) or portion(s) of the Record has/have been determined to be irrelevant, immaterial or meritless. Arguments made on brief which were otherwise unsupported by Record evidence or legal precedent have been accorded no weight.

⁷ The pleadings of the parties filed with the Secretary need not be certified as they are already in the Commission’s possession in accordance with Commission rules.



Pursuant to 19 C.F.R. § 210.42(h), this Initial Determination shall become the determination of the Commission sixty (60) days after the date of service of the Initial Determination, unless a party files a petition for review of the Initial Determination within twelve (12) days after service of the Initial Determination pursuant to 19 C.F.R. § 210.43(a) or the Commission, pursuant to 19 C.F.R. § 210.44, orders on its own motion, a review of the Initial Determination or certain issues therein. Any issue or argument not raised in a petition for review, or response thereto, will be deemed to have been abandoned and may be disregarded by the Commission in reviewing the Initial Determination pursuant to 19 C.F.R. § 210.43(b) and (c).

[REDACTED]

Confidentiality Notice:

This Initial Determination is being issued as confidential, and a public version will be issued pursuant to Commission Rule 210.5(f). Within seven (7) days of the date of this Initial Determination, the parties shall jointly submit: (1) a proposed public version of this opinion with any proposed redactions bracketed in red; and (2) a written justification for any proposed redactions specifically explaining why the piece of information sought to be redacted is confidential and why disclosure of the information would be likely to cause substantial harm or likely to have the effect of impairing the Commission's ability to obtain such information as is necessary to perform its statutory functions.⁸

SO ORDERED.



Cameron Elliot
Administrative Law Judge

⁸ Under Commission Rules 210.5 and 201.6(a), confidential business information includes: information which concerns or relates to the trade secrets, processes, operations, style of works, or apparatus, or to the production, sales, shipments, purchases, transfers, identification of customers, inventories, or amount or source of any income, profits, losses, or expenditures of any person, firm, partnership, corporation, or other organization, or other information of commercial value, the disclosure of which is likely to have the effect of either impairing the Commission's ability to obtain such information as is necessary to perform its statutory functions, or causing substantial harm to the competitive position of the person, firm, partnership, corporation, or other organization from which the information was obtained, unless the Commission is required by law to disclose such information. *See* 19 C.F.R. § 201.6(a). Thus, to constitute confidential business information the disclosure of the information sought to be designated confidential must likely have the effect of either: (1) impairing the Commission's ability to obtain such information as is necessary to perform its statutory functions; or (2) causing substantial harm to the competitive position of the person, firm, partnership, corporation, or other organization from which the information was obtained.