IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CHEMOURS COMPANY FC, LLC, Plaintiff, v. DAIKIN INDUSTRIES, LTD. and DAIKIN AMERICA, INC., Defendants.	)	Civil Action No. 17-1612-MN-CJB

REPORT AND RECOMMENDATION

In this action filed by Plaintiff Chemours Company FC, LLC ("Chemours" or "Plaintiff") against Defendants Daikin Industries, Ltd. and Daikin America, Inc. ("Daikin" or "Defendants"), Chemours alleges infringement of United States Patent Nos. 7,122,609 (the "'609 patent") and 8,076,431 (the "'431 patent" and collectively with the '609 patent, "the asserted patents" or the "patents-in-suit"). Presently before the Court is the matter of claim construction. (D.I. 179; D.I. 184) The Court recommends that the District Court adopt the constructions set forth below.

I. BACKGROUND

Chemours commenced this action on November 8, 2017. (D.I. 1) On December 21, 2018, the case was stayed pending completion of *inter partes* review ("IPR") proceedings involving the asserted patents. (*See* D.I. 77 at 32-33) On November 12, 2019, the United States Patent and Trademark Office's Patent Trial and Appeal Board ("PTAB") issued two Final Written Decisions finding all claims of both asserted patents unpatentable. (*See* D.I. 80 at 2) Chemours appealed these decisions, and on July 22, 2021, the United States Court of Appeals for the Federal Circuit reversed the PTAB's unpatentability decisions. (*Id.*); *see also Chemours Co. FC, LLC v. Daikin Indus., Ltd.*, 4 F.4th 1370 (Fed. Cir. 2021).

On August 3, 2021, the District Court lifted the stay of the case. (D.I. 81) The case was thereafter referred to the Court by United States District Judge Maryellen Noreika to hear and resolve all pretrial matters up to and including expert discovery matters. (D.I. 98) A trial is set to begin on July 11, 2022. (D.I. 87 at ¶ 20)

The asserted patents are directed to specific fluorinated ethylene propylene ("FEP") polymer compositions that are used to insulate communications cables. (*See* D.I. 153 at 1, 3) Both patents are entitled "High Melt Flow Fluoropolymer," and they claim priority to an application filed on May 14, 2003. (D.I. 158, exs. 1-2)[1] The specification explains that prior to the invention, there was a need for FEPs capable of being extruded at high speeds while still producing a high quality wire coating. ('609 patent, col. 1:10-49) The inventors of the asserted patents created an FEP that can be processed at high speeds and over a broad range of operating conditions. (*Id.*, Abstract; *id*., col. 1:53-62) The claimed FEP has: (1) a minimal concentration of alkali metal salt; (2) a high melt flow rate; and (3) a low number of unstable end groups. (*Id.*; *see also* D.I. 153 at 1)

Chemours alleges that Daikin's copolymers, including Neoflon® FEP NP-1108, Neoflon FEP NP-1109 and Neoflon FEP NP-3180, infringe certain claims of the asserted patents. (D.I. 13 at ¶¶ 35, 51) Further details regarding the asserted patents will be provided below in Section III.

On October 15, 2021, the parties filed their joint claim construction brief. (D.I. 153) Both parties subsequently submitted Notices of Supplemental Evidence in support of their claim

[1] The asserted patents appear on the docket in this action more than once. The two patents-in-suit share the same specification. (*See* D.I. 153 at 3) Further citations will simply be to the '609 patent, and all citations to the patent specification will be to the '609 patent unless otherwise indicated.

construction decisions, which relate to depositions taken after submission of the joint claim construction brief. (D.I. 197; D.I. 213) The Court conducted a *Markman* hearing on November 16, 2021. (D.I. 246 (hereinafter, "Tr.")) In December 2021, Daikin submitted a Notice of Supplemental Authority in support of its claim construction positions. (D.I. 241)

II. STANDARD OF REVIEW

The Court has often set out the relevant legal standard for claim construction, including in *Vytacera Bio LLC v. CytomX Therapeutics, Inc.*, Civil Action No. 20-333-LPS-CJB, 2021 WL 4621866, at *2-3 (D. Del. Oct. 7, 2021). The Court hereby incorporates by reference its discussion in *Vytacera Bio* of these legal standards and will follow them herein. To the extent consideration of the disputed terms here necessitates discussion of other, related legal principles, the Court will discuss those principles in Section III below.

III. DISCUSSION

The parties set out three disputed terms or sets of terms (hereinafter, "terms") for the Court's review. The Court takes up the terms in the order in which they were argued.

A. "melt flow rate"

The first disputed term, "melt flow rate" (also referred to as "MFR" below), appears, *inter alia*, in claims 1 and 2 of the '609 patent and claims 3 and 4 (as depending from claim 1) of the '431 patent. The parties' competing proposed constructions for "melt flow rate" are set out in the chart below:

Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"melt flow rate"	Plain and ordinary meaning, which is "the amount of mass or volume of a viscous material moving past a	"the rate of extrusion of molten resins through a die of specified length and diameter under prescribed conditions of temperature, load, and

	reference point as a function of time"	piston position in the barrel as the timed measurement is being made, in accordance with ASTM D-1238 and ASTM D-2116"

(D.I. 153 at 32-33) The parties' dispute with respect to this term is whether it should be construed to require measurements made in accordance with specific industry standards (i.e., ASTM D-1238 and ASTM D-2116, or the "ASTM standards"). (*See id.* at 35-36; Tr. at 11, 14) Chemours argues that it is not necessary to import into the claims various limitations relating to testing methods set out in the ASTM standards; Daikin asserts that the proper construction of "melt flow rate" requires reference to such standards. (D.I. 153 at 35-36, 47; Tr. at 11) For the following reasons, the Court concludes that the plain and ordinary meaning of "melt flow rate" does not align with Daikin's proposed construction.

As an initial matter, in order to determine the correct answer here, it is important to first understand what these ASTM standards actually are. It is undisputed that ASTM D-1238 is a test method that is used measure melt flow rate. (D.I. 153 at 34-35; D.I. 155, ex. 28 at DKN0001130; Tr. at 17, 48) It is also undisputed that the specification of the asserted patents states that "[t]he melt flow rates (MFR) of FEP copolymers are determined in accordance with ASTM D1238[.]" ('609 patent, col. 2:38-39; *see also* D.I. 153 at 34-36; *see also* Tr. at 62 (Chemours' counsel acknowledging that "I agree that [the] person skilled in the art reading the patent in [light of] the specification understands that [the] melt flow rate is determined using the ASTM standard"))[2]

[2] The ASTM D-2116 standard defines FEPs and states that the melt flow rate is determined by the test method described in ASTM D-1238. (D.I. 155, ex. 29 at ¶¶ 1.1, 11.1.1) The ASTM D-2116 standard is not mentioned in the patents. (*See* D.I. 153 at 35)

Understanding this then, and absent strong evidence in the record to the contrary, it does not seem right to say that a *test method* used to *measure* a property (i.e., "melt flow rate") would amount to the plain and ordinary meaning *of the property itself*. (D.I. 153 at 35; Tr. at 18, 26-27) Chemours agrees, and asserts that a person of ordinary skill in the art ("POSITA") would instead understand the plain and ordinary meaning of "melt flow rate" to be simply "the amount of mass or volume of a viscous material . . . [moving] past a reference point as a function of time." (D.I. 153 at 33-34 (citing D.I. 158, ex. 8 at ¶ 26))[3]

Turning next to the intrinsic record, the claims' language provides support for Chemours' proposed construction. Claim 1 of the '431 patent recites an FEP composition "having a melt flow rate of within the range of about 30±3 g/10 min as determined by ASTM D1238 at 372° C[.]" ('431 patent, col. 10:13-14) The reference to ASTM D-1238 was added by the patentee in response to a rejection by the Examiner during prosecution of the '431 patent. (D.I. 154, ex. 18 at CHEM00001627, CHEM00001646) The claim had been drafted without reference to ASTM D-1238 or a temperature, and the Examiner had stated that the language "'having a melt flow rate of within the range of about 30±3 g/10 min' may render the claim indefinite. It is unclear what is the actual temperature measured. As known in the art, the number of melt flow depends on the measured temperature very much." (*Id.* at CHEM00001646) The patentee then elected to amend the claim language to include reference to ASTM D1238 and a particular temperature, instead of attempting to traverse the rejection. (*Id.* at CHEM00001627) Meanwhile, during

[3] Even Daikin's expert seems to agree that the meaning of melt flow rate, as a general matter, is not the same as the *test method* by which melt flow rate is determined. (D.I. 154, ex. 19 at ex. B at ¶ 49 (Daikin's expert noting that "[t]he rate at which a melted material can be extruded is known as the melt flow rate" and that melt flow rate "is the measure of the amount of material, after being heated to a specified temperature, that extrudes from a test device in a given amount of time and under a given weight load"))

prosecution of the '609 patent, no such indefiniteness rejection was made. As a result, claim 1 of that patent recites an FEP composition "having a melt flow rate of within the range of about 30±3 g/10 min"—without reference to the ASTM standard or any particular temperature. (*See* D.I. 158, ex. 5; '609 patent, col. 10:20)

This claim language in the respective patents helps Chemours' case, for the following reasons:

- For one thing, the fact that claim 1 of the '431 patent explains that the melt flow rate is "determined by ASTM D1238 at 372° C" just seems to underscore the fact that the ASTM standard is not the melt flow rate itself. Instead, it is a tool used to *determine* the melt flow rate. (Tr. at 9-10)[4]

- Additionally, the difference in language between the claims of the '609 patent and the '431 patent counsels in favor of Chemours' proposed construction. If the meaning of the term "melt flow rate" inherently included the concept that the rate must be determined by the ASTM D-1238 standard at 372° C, then there would have been no need for the patentee to separately inject those limitations into the '431 patent claims, in order to overcome the Examiner's objections. (*Id.* at 50-51) And, of course, the '609 patent's claims do not contain this standard/temperature language at all. In the end, when the patentee wanted to claim a specific test method for determining melt flow rate, it knew how to do so (and it knew it had to add additional words to the claims to do so, beyond just "melt flow rate"). (D.I. 153 at 34-35); *see, e.g.*, *Forest Labs., Inc. v. Teva Pharms. USA, Inc.*, C.A. No. 14-121-LPS, 2016 WL 54910, at *7-8 (D. Del. Jan. 5, 2016) (rejecting the defendant's attempt to limit a term to particular plasma memantine concentration profiles, where other claims in certain of the asserted patents specifically claimed such particular plasma memantine

[4] Chemours cites to deposition testimony of one of the inventors of the asserted patents, which also emphasizes that the ASTM standard is not the melt flow rate itself. (D.I. 213, ex. 5 at 52 of 97 (Thomas Earnest, Jr. testifying that melt flow rate is "a general . . . descriptor . . . in the polymer industry . . . that describes how much material comes out of . . . the machine that's set in certain conditions over a certain amount of time" and that you *determine* the melt flow rate of a polymer utilizing ASTM "industry standard test methods") (emphasis added))

concentration profiles, indicating that "when the applicants wanted to limit this term to cover only mean plasma concentration profiles, they knew how to do so"); *St. Clair Intell. Prop. Consultants, Inc. v. Acer, Inc.*, No. CA 09-354-LPS, CA 09-705-LPS, CA 10-282-LPS, 2012 WL 3536454, at *8 (D. Del. Aug. 7, 2012) (rejecting defendants' attempt to define "a power switching circuit" with reference to memory cells, where aside from four claims in one asserted patent, the other claims in the asserted patents did not contain any reference to memory cells).

- Moreover (and relatedly), Daikin's proposed construction, were it correct, would render the reference to ASTM D-1238 in the claims of the '431 patent superfluous. (D.I. 153 at 44) This further indicates that Daikin's proposal is wrong. *See, e.g.*, *Monaghan Med. Corp. v. Smiths Med. ASD, Inc.*, C.A. No. 17-712-LPS-CJB, 2018 WL 3323823, at *4 (D. Del. July 6, 2018) (rejecting constructions incorporating additional limitations that were redundant).[5]

The Court turns next to the specification. Daikin asserts that its proposal "flows" from the specification, because the proposal is consistent with the following excerpt from the patent:

> The melt flow rates (MFR) of FEP copolymers are determined in accordance with ASTM D1238. The MFR of polymers according to this invention are in the range of about 27 to 33 g/10 min, preferably about 28 to 32 g/10 min.

(D.I. 153 at 38 (quoting '609 patent, col. 2:38-41), 48; Tr. at 45, 68) Yet this excerpt does not amount to clear lexicography that narrows the construction of "melt flow rate" in the manner Daikin suggests. (D.I. 153 at 45; Tr. at 58-59) With regard to the first sentence above, again, it speaks to how melt flow rates *are determined*, not necessarily to what is the *meaning of the term*

[5] Daikin argues that the claim language of claim 1 of the '609 patent supports its proposed construction because the claimed "melt flow rate" is measured in "g/10 min[,]" which is the measurement unit required by ASTM D-1238. (D.I. 153 at 37; *see also* D.I. 155, ex. 28 at ¶ 12.1) But as Chemours retorts, just because the patentee referenced in the claims a mass measurement of grams and a period of time that is common in the industry, that does not mean that the patentee intended to import the entirety of the ASTM standard into the "melt flow rate" limitation. (D.I. 153 at 45)

"melt flow rate." Additionally, it is not as if that first sentence is clearly definitional; it does not, for example, read: "As used herein, melt flow rate shall mean . . ." (Tr. at 46-47) Instead, the sentence notes only that melt flow rates of FEP copolymers—*generally*—are determined in accordance with ASTM D-1238. It is the second sentence that zeros in on the melt flow rate of polymers "according to this invention"; that sentence simply provides a range of the melt flow rate of the claimed polymers—it does not expressly incorporate ASTM D-1238. (*Id.*) So nothing in this excerpt suggests that the patent is providing a clear definition for the term "melt flow rate" (let alone one that imports the ASTM standards into such a definition). *See Baxalta Inc v. Genentech, Inc.*, 972 F.3d 1341, 1349 (Fed. Cir. 2020) ("Indeed, the standard for lexicography is exacting, requiring the patentee to clearly express an intent to redefine a term.") (internal quotation marks and citation omitted).

In sum, the intrinsic record does not support adoption of a narrower construction of "melt flow rate" than is called for by the term's plain and ordinary meaning. Daikin does not seem to seriously dispute that "melt flow rate" is, as a general matter, "the amount of mass or volume of a viscous material moving past a reference point as a function of time." (*See* D.I. 153 at 43, 44; Tr. at 59) While Daikin argues that Chemours' proposal "contradicts the claim language" since the claims specify "melt flow rate" as a specific mass unit per a particular time period, (D.I. 153 at 43), the Court is not persuaded that this is a problem, since adoption of Chemours' construction for the term would still mean that the "amount of mass or volume of a viscous material moving past a reference point as a function of time" of the claimed copolymer is "within the range of about 30±3 g/10 min[,]" ('609 patent, col. 10:19-20; '431 patent, col. 10:14-15).[6]

[6] It is clear that Daikin believes that Chemours' construction would render the asserted claims indefinite. (D.I. 153 at 41-42) But the Court makes no such finding on this

For these reasons, the Court recommends that "melt flow rate" be construed to mean "the amount of mass or volume of a viscous material moving past a reference point as a function of time."

B. "about 30±3 g/10 min"/"about 30±2 g/10 min"/"about" (the "about" terms)

Claim 1 of the '609 patent and claims 3 and 4 of the '431 patent (as depending from claim 1) recite a copolymer that has, *inter alia*, "a melt flow rate of within the range of *about 30±3 g/10 min*[.]" ('609 patent, col. 10:19-20 (emphasis added); '431 patent, col. 10:13-14, 19-22 (emphasis added)) Claim 2 of the '609 patent recites a copolymer that has, *inter alia*, "a melt flow rate of within the range of *about 30±2 g/10 min*[.]" ('609 patent, col. 10:22-23 (emphasis added)) The parties' proposed constructions for these terms are as follows:

Term	**Plaintiff's Proposed Construction**	**Defendants' Proposed Construction**
"about"	"approximately"	"about" must be read in the context of the term that it modifies, e.g., "about 30±3 g/10 min"

record. Such a finding would require clear and convincing evidence, and Daikin has not shown by such clear and convincing evidence that the patentee has failed to inform with reasonable certainty those skilled in the art about the scope of the invention. *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 789 F.3d 1335, 1341, 1344-45 (Fed. Cir. 2015) (finding that claim 1 was invalid for indefiniteness where it was undisputed that "molecular weight" could be ascertained by any of three possible measures, but the claims or the specification did not indicate which measure to use, and the term "molecular weight" did not have plain meaning to one of skill in the art). For example, Daikin has not demonstrated that using different methods or conditions with respect to ascertaining melt flow rate would be outcome determinative with respect to infringement. (D.I. 153 at 47) Indeed, during the *Markman* hearing, Daikin confirmed that it was not now attempting to make this showing. (Tr. at 36)

At this stage, then, the Court's job is simply to construe the claim term at issue and give it the meaning warranted by the intrinsic and extrinsic evidence. *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1377-78 (Fed. Cir. 2015); *0912139 B.C. Ltd. v. Rampion USA Inc.*, CASE NO. C18-1464JLR, 2019 WL 3426058, at *16 (W.D. Wash. July 30, 2019). It has done so.

"about 30±3 g/10 min"	"approximately 30±3 g/10 min"	"26 to 33 g/10 min"
"about 30±2 g/10 min"	"approximately 30±2 g/10 min"	"27 to 32 g/10 min"

(D.I. 153 at 50) The crux of the dispute here is whether the constructions should reflect a precise melt flow rate range; Daikin argues that it should, while Chemours asserts that it should not. (*Id.* at 52, 56-57; Tr. at 72) Specifically, Daikin asserts that "about" provides, at most, -1 g/min at the lower end and no increased melt flow rate at the upper end. (D.I. 153 at 55; *see also id.* at 53)[7] The Court agrees with Chemours.

Generally, a patentee's use of the term "about" in connection with a numeric range is intended to avoid a "strict numerical boundary" to the specified parameter. *See, e.g.*, *Par Pharm., Inc. v. Hospira, Inc.*, 835 F. App'x 578, 584 (Fed. Cir. 2020); *Genentech, Inc. v. Amgen Inc.*, Civ. No. 18-924-CFC, Civ. No. 18-1363-CFC, 2019 WL 2493446, at *9 (D. Del. June 14, 2019). The ordinary meaning of "about" is "approximately[,]" and "about" should be given its ordinary meaning unless the patentee has clearly redefined the meaning of the term in the specification. *Merck & Co., Inc. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1369-72 (Fed. Cir. 2005); *see also Ferring B.V. v. Watson Labs., Inc.-Fla.*, 764 F.3d 1382, 1389 (Fed. Cir. 2014); *Silvergate Pharms. Inc. v. Bionpharma Inc.*, Civil Action No. 16-876, 2018 WL 1610513, at *4 (D. Del. Apr. 3, 2018) ("Where a patentee has not acted as his own lexicographer in redefining the word 'about,' courts have construed 'about' to mean 'approximately.'").

For the reasons discussed below, the Court concludes that the patentee did not act as his own lexicographer in redefining the term "about." Instead, in claiming a range of "about 30±3"

[7] The parties are most focused on the impact of Court's claim construction on the upper end of the range, as that is apparently where a key infringement battle in the case will be fought. (Tr. at 113)

(and "about 30±2"), the patentee contemplated melt flow rate values that could be less than 27 and greater than 33 g/10 min (and less than 28 and greater than 32 g/10 min).

In arguing to the contrary, Daikin first contends that the specification states that a precise numerical range is required for the "about" terms because it describes a melt flow rate range of 27-33 g/10 min as being "critical to the invention." (D.I. 153 at 56; *see also id.* at 54, 73-74; Tr. at 123-24, 127-28) Daikin points in particular to the following portion of the specification, which describes Example H:

Example H (The Invention)

> . . . The same result is obtained when the MFR of the copolymer is varied within the range of 28-32 g/10 min. . . . As the MFR or melt temperature moves out of these ranges, the occurrence of sparks and lumps increases drastically. The MFR range of 30±3 g/10 min and melt temperature range of 393° C.±6° C. include the transition from acceptable quality to borderline quality, the narrower MFR and melt temperature ranges giving the most consistent highest quality results.

('609 patent, col. 5:38-62 (cited in D.I. 153 at 54, 56, 74; Tr. at 123-24, 127-28)) According to Daikin, this passage, in describing "[t]he [i]nvention[,]" conveys that the range of 27 to 33 g/10 min is the "sweet spot" required for obtaining a copolymer that is of acceptable quality. (D.I. 153 at 54, 56; *see also* Tr. at 123-24, 127-28) Thus, Daikin asserts that the "about" terms cannot be construed in a way that would extend the range "above 33 or below 26" because neither is "'acceptable[;]'" expanding beyond this range will drastically increase the occurrence of sparks and lumps. (D.I. 153 at 56-57, 73-74)[8]

[8] Daikin also contends that the specification's description of Examples E and F reinforce its proposed construction. (D.I. 153 at 73 n.25, 74 n.26) Example E had a melt flow rate of 26 g/10 min that reported "acceptable quality[,]" but at a melt temperature that is "narrower than the variation in melt temperature typically present in the industry." ('609 patent, col. 5:15-22) Daikin explains that, in light of this example, its proposed construction allows for

But even after taking into account the specification's description of Example H (and of the other examples described therein), the Court is not convinced that Daikin is correct. (*Id.* at 65-68; Tr. at 90-91, 94-99) To be sure, Example H is entitled "The Invention" and there is no doubt that what it discloses is meaningful. But this portion of the patent is teaching that a property of the polymer (the melt flow rate) and a processing condition (melt temperature) can both have an important effect on the production of a copolymer of acceptable quality or unacceptable quality. ('609 patent, col. 5:56-62; *see also id*., col. 5:40-51; D.I. 153 at 66-67 (Chemours noting that "MFR values are [not] included or excluded in a vacuum"); Tr. at 95, 99) For instance, Example G describes a test in which the melt flow rate of the copolymer was 30 g/10 min (thus clearly within the claimed range); however, the test was processed at a melt temperature of 404° C and it ultimately produced an insulated conductor of inadequate quality. ('609 patent, cols. 4:30-31, 5:33-36; *see also id*., col. 5:40-55 (noting that the results from Example G differed—and a result of acceptable quality was obtained—when the melt temperature was changed to 393° C, and also explaining how other changes to the melt temperature, melt flow rate and draw-down ratio can produce results of acceptable quality)) Example H also explains that when the melt temperature was decreased below 388° C or above 399° C, the quality of the conductor becomes unacceptable, even when the melt flow rate of the polymer was between 27 g/10 min to 33 g/10 min. (*Id.*, cols. 5:58-6:3)

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the low end of the claimed range to go down to 26 g/10 min. (D.I. 153 at 74; Tr. at 129-30) Example F had a melt flow rate of 35 g/10 min that resulted in "inadequate quality[,]" ('609 patent, col. 5:26-29), which Daikin contends "corroborates the specification's express definition of the upper MFR limit for 'acceptable quality' lying between 32-33 g/10 min[,]" (D.I. 153 at 74 n.26).

With this in mind, it becomes significant that the patent claims do not impose a limitation requiring that a particular melt temperature be used during processing. (D.I. 153 at 66; Tr. at 89) Melt temperature is clearly an important variable in the process of producing high-quality insulated wire—and as set out above, using a too high or too low melt temperature can (depending on other variables) cause a sample to be of poor quality. One of those variables is the melt flow rate of the polymer. And what the specification teaches is that if certain particular melt temperatures are used, then it is possible that a melt flow rate of outside of the 27 to 33 g/10 min band could provide acceptable results. (D.I. 153 at 65-66 ("[T]he Examples are not mere variations of MFR, but instead illustrate the flexibility of the invention by changing various operating conditions."); *Toro Co. v. Deere & Co.*, 355 F.3d 1313, 1319-20 (Fed. Cir. 2004) (explaining that claims should not be limited to specific numerical parameters from preferred embodiments unless the embodiment is the entire invention presented by the patentee). Indeed, that seems to be what is going on in Example E, where the melt flow rate was 26 g/10 min (i.e., a rate that Example H describes as generally undesirable), but the example still states that insulated conductor of "acceptable quality can be produced"—so long as a "narrow[]" variation in melt temperature is utilized (one that, admittedly, is outside of the "variation . . . typically present in the industry"). ('609 patent, col. 5:15-22)

In the end, even Daikin seems to acknowledge that the specification *alone* would not warrant narrowing the "about" terms to the precise numerical ranges reflected in its proposed constructions. (D.I. 153 at 74 ("[T]he intrinsic record *suggests* that the MFR range should exclude 33 g/10 min and above[.]") (emphasis added); Tr. at 152-53 (Daikin's counsel noting that the patentee put "about" into the claims because it "didn't want to be cabined to just 27-33" and because varying the melt temperature can impact the MFR)) Indeed, back in 2018, before

the case was stayed pending IPR proceedings, Daikin had proposed that the term "about 30±3 g/10 min" be construed to mean "greater than 26 g/10 min and less than *34 g/10 min*" and that the term "about 30±2 g/10 min" be construed to mean "greater than 27 g/10 min and less than 33 g/10 min[,]" citing to, *inter alia*, the description in Example H of the specification in support. (D.I. 62, ex. A at 8 (emphasis added) (cited in D.I. 153 at 53-54)) Thus, at least at that point, Daikin was not arguing that the specification mandated that the claimed melt flow rate could never be above 33 g/10 min.

However, Daikin now asserts that during the IPR proceedings, Chemours "erased any doubt about whether the claims reach MFRs higher than 33 g/10 min[.]" (D.I. 153 at 74; *see also id.* at 57; Tr. at 133-35) According to Daikin, in the IPR, Chemours "*broadly* insisted . . . that increasing MFR would impair product quality and mechanical properties" and thus "cannot now say that 'about 30±3 g/10 min' permits doing precisely what Chemours insisted skilled artisans would *never* do, increasing MFR beyond the claimed MFR range." (D.I. 153 at 76-77 (emphasis in original); Tr. at 138)

The Court thus turns to Chemours' statements from the IPR proceedings. In doing so, it asks: Do those statements amount to prosecution disclaimer with respect to the "about" terms? (*See* D.I. 153 at 57; Tr. at 141, 148) "The doctrine of prosecution disclaimer precludes . . . patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution." *SanDisk Corp. v. Memorex Prods., Inc.*, 415 F.3d 1278, 1286 (Fed. Cir. 2005) (brackets and citation omitted). Statements made by patentees during an IPR proceeding can be considered for prosecution disclaimer, though in order to invoke the doctrine, such statements must be "both clear and unmistakable." *Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1361 (Fed. Cir. 2017) (internal quotation marks and citation omitted). Here, the Court concludes that

during the IPR proceedings, Chemours did not make a clear and unmistakable argument that the "about" terms should be limited in the manner suggested by Daikin.

In those proceedings, Daikin had argued that the patents were obvious over a prior art reference called "Kaulbach." (D.I. 158, ex. 7 at 55) Kaulbach taught that copolymers should have a melt flow rate of 15 g/10 min or higher, and disclosed a sample with a melt flow rate of 24 g/10 min. (*Id.*) Importantly, the invention of Kaulbach had a "very narrow molecular-weight distribution[.]" (D.I. 154, ex. 15 at col. 3:34-35; *see also id.*, ex. 12 at 12; D.I. 156, ex. 31 at 26); *see also Chemours Co.*, 4 F.4th at 1375. Daikin's position in the IPR proceedings was that it would have been obvious to modify the sample in Kaulbach to yield a copolymer with a melt flow rate of 30±3 g/10 min. (D.I. 158, ex. 7 at 52, 55-56)

The IPR statements that Daikin points to as amounting to "a [h]ard and [f]ast [n]umeric [l]ine" for the upper limit of the "about" terms cannot be viewed in a vacuum. (D.I. 153 at 76 (citing D.I. 156, ex. 31 at 31, 32; *id.*, ex. 32 at 2, 10)); *see also, e.g.*, *Galderma Labs., L.P. v. Amneal Pharms. LLC*, 806 F. App'x 1007, 1010 (Fed. Cir. 2020). Rather, viewed in proper context, Chemours' arguments to the PTAB were focused on *the disclosures in Kaulbach*. In other words, Chemours was explaining that, given those disclosures, a POSITA would not have been motivated to increase the melt flow rate of 24 g/10 min referenced in Kaulbach to the range claimed in the asserted patents—because doing so would involve *broadening the molecular weight distribution of the polymer*. (D.I. 153 at 69-71) To that end, Chemours argued to the PTAB that:

- "As of the invention of the '431 patent, a number of methods were known for adjusting an FEP's . . . melt flow rate. But to avoid the problems discussed above associated with overall molecular weight reduction, these methods often resulted in broadening the molecular weight distribution of the polymer. . .

> . [T]he conventional wisdom in the art was that a broad molecular weight distribution was necessary to create a polymer that could be processed at high speeds, with a high melt flow rate, without sacrificing coating quality[.]" (D.I. 156, ex. 31 at 24-25) Chemours then provided examples of disclosures that broadened molecular weight distributions to create copolymers with higher melt flow rates. (*Id.* at 25)
>
> - "Kaulbach [] recognized that broader molecular weight distributions were typically believed necessary to increase polymer melt flow rate without sacrificing coating quality." (*Id.*);
>
> - "Consistent with his stated goal, Kaulbach teaches against common practices that were known to broaden the molecular weight distribution of a polymer and thereby increase melt flow rate." (*Id.* at 26);
>
> - Daikin's expert fails to "explain why one of skill in the art would be motivated to increase Kaulbach's melt flow rate *while retaining its narrow molecular weight distribution*, in light of the significant drawbacks in coating quality, or how one of skill would have known how to achieve this objective using ordinary skill and known methods." (*Id.* at 32-33 (emphasis added))

Similarly, in appealing the PTAB's findings of obviousness to the Federal Circuit, Chemours asserted that "[e]ven if one wanted to increase Kaulbach's melt flow rate, the known methods for doing so without sacrificing quality involved *broadening the molecular weight distribution of the FEP*." (D.I. 157, ex. 33 at 7-8 (emphasis added)) The Federal Circuit agreed with Chemours, concluding that the PTAB, in finding that a POSITA would have been motivated to increase the melt flow rate of the sample in Kaulbach to within the claimed range, "did not adequately grapple with why a skilled artisan would find it obvious to increase Kaulbach's melt flow rate to the claimed range while retaining its critical 'very narrow molecular-weight distribution.'" *Chemours Co.*, 4 F.4th at 1376 (citation omitted).

In light of this record, Chemours made no clear and unmistakable statement that the claimed invention is limited to the precise numeric range recited in Daikin's proposed constructions (or that increasing MFR above 33 g/10 min would always unduly impair product quality and mechanical properties). Instead, its IPR-related arguments were more nuanced—they were specific to the Kaulbach reference and to the interplay between increased melt flow rate *and its impact on narrow molecular weight distribution*. (D.I. 153 at 70); *see, e.g.*, *Asetek Danmark A/S v. CoolIT Sys. Inc.*, Case No. 19-cv-00410-EMC, 2020 WL 4207520, at *26 (N.D. Cal. July 22, 2020) (finding that the defendant's statements relating to prior art did not amount to clear and unmistakable disclaimer).

In sum, the intrinsic record does not support an interpretation of the "about" terms that requires adoption of the precise melt flow rate ranges reflected in Daikin's proposals. And in the absence of Chemours redefining "about" to require a precise range, the Court agrees that "about" should be construed to mean "approximately," that "about 30±3 g/10 min" be construed to mean "approximately 30±3 g/10 min" and that "about 30±2 g/10 min" be construed to mean "approximately 30±2 g/10 min." *See, e.g.*, *Sun Pharm. Indus. Ltd. v. Saptalis Pharms., LLC*, Civil Action No. 18-648-WCB, 2019 WL 2549267, at *4-5 (D. Del. June 19, 2019) (giving "about" its ordinary meaning of "approximately" and in doing so, rejecting the defendant's attempt to impose a strict 10% lower bound on the meaning of the term "about 15[%,]" where the specification did not clearly redefine "about"); *Genentech, Inc.*, 2019 WL 2493446, at *9 (giving "about" its ordinary meaning of "approximately" while rejecting the defendant's request that the court construe "about 1 mmol/l" to have a strict cutoff that excludes concentrations

below 1 mmol/l, where there was no support in the intrinsic evidence for deviating from the ordinary meaning of "about").[9]

C. "unstable endgroups"

The term "unstable endgroups" appears in, *inter alia*, claims 1 and 6 of the '609 patent and claims 3 and 4 (as depending from claim 1) of the '431 patent. The claims are directed to FEP polymer compositions that have, *inter alia*, "no more than about 50 unstable endgroups[.]" ('609 patent, col. 10:21; '431 patent, col. 10:15) The parties' competing proposed constructions for "unstable endgroups" are set out in the chart below:

Term	**Plaintiff's Proposed Construction**	**Defendants' Proposed Construction**
"unstable endgroups"	"chemical structures at the end of the polymer chains that react, usually by decomposition, under conditions at which fluoropolymers are melt-processed; endgroups other than CF_3"	"unstable endgroups include $-CONH_2$, $-CF_2CH_2OH$, -COF, and -COOH and do not include $-CF_2H$"

[9] Daikin suggests that such a construction would be improper because the Court needs to resolve the parties' dispute regarding the appropriate numerical scope of the "about" terms. (D.I. 153 at 55, 61) To this, the Court notes that its rejection of Daikin's proposed constructions *does* resolve at least one claim construction-related dispute between the parties: it makes clear that the terms are not absolutely limited to a melt flow rate of 33 g/10 min at the upper end. (*Id.* at 72) To the sure, the parties may have other disputes that relate to these terms, but those are *infringement* disputes. And on that score, the issue of whether the accused products have melt flow rates that fall within the claimed range will be a task for the fact-finder to resolve. *See, e.g.*, *PPG Indus. v. Guardian Indus. Corp.*, 156 F.3d 1351, 1355 (Fed. Cir. 1998) (explaining that a court may not, under the rubric of claim construction, "give a claim whatever additional precision or specificity is necessary to facilitate a comparison between the claim and the accused product. Rather, after the court has defined the claim with whatever specificity and precision is warranted by the language of the claim and the evidence bearing on the proper construction, the task of determining whether the construed claim reads on the accused product is for the finder of fact"); *see also Par Pharm.*, 835 F. App'x at 584 (noting that when "about" has its plain and ordinary meaning of "approximately," applying the claims to the accused device presents a question of technological fact as to whether the accused device meets a reasonable meaning of "about" in the particular circumstances).

(D.I. 153 at 6)

The crux of the dispute between the parties is whether the term should be construed to exclude -CF_2H endgroups. (*Id.* at 7, 13, 15, 24; Tr. at 212) While Daikin asserts that "[t]he Court should hold, based on the intrinsic evidence, that -CF_2H is a stable endgroup" (and thus adopt its construction that provides that "unstable endgroups" do not include -CF_2H), (D.I. 153 at 30), Chemours argues that Daikin's proposal to exclude -CF_2H from the scope of the limitation is improper, (*id*. at 13-15). For the reasons discussed below, the Court again agrees with Chemours.

Daikin's proposed construction is problematic for two reasons.

First, as to the part of the construction that makes reference to a list of non-limiting examples, this does not really provide guidance as to what the term "unstable endgroups" actually means. (*Id.* at 10; *id*. at 12 n.2) In its briefing, at one point Daikin *does* actually describe what the term means—"chemical moieties at the end of polymer chains . . . that are not stable[.]" (*Id.* at 15) Yet this language does not appear in its proposal. And in its briefing, Daikin never explains how a list of non-limiting examples would assist the trier of fact in understanding the term's meaning. Thus, the Court is not persuaded that the construction for "unstable endgroups" should include this grouping of examples. *See, e.g.*, *Certusview Techs. LLC v. S & N Locating Servs., LLC*, No. 2:13cv346, 2014 WL 2090550, at *26-27 (E.D. Va. May 16, 2014) (rejecting a proposed construction that included examples, where those examples did not define the outer limits of the claim).

Second, Daikin's proposed negative limitation (i.e., that "unstable endgroups" *do not* include -CF_2H) is not a proper use of the claim construction process. (D.I. 153 at 13, 29-30; Tr. at 175-76) The specification and the patents' prosecution history do not even mention -CF_2H.

(D.I. 153 at 13; *see also id.* at 18) However, Daikin's prior products apparently include -CF_2H endgroups. Chemours contends that Daikin's proposal amounts to an "attempt to have this Court make a factual finding that the -CF_2H endgroups in Defendants' prior products are stable endgroups." (*Id.* at 13) And that does seem like what Daikin is up to here. (*Id.* at 15 (Daikin noting that "[t]he mere fact that a construction could invalidate the patents does not make it improper"))

In support of its proposal, Daikin contends that "[t]he intrinsic evidence confirms that -CF_2H is not an 'unstable endgroup;' far from it, -CF_2H is 'highly stable' at melt-processing temperatures." (*Id.*; *see also* Tr. at 187 ("[W]hen you look at the term 'unstable end groups' and what does 'unstable end groups' mean, the intrinsic evidence says that -CF_2H is stable.")) Daikin also argues that the evidence demonstrates that even under Chemours' own proposed construction, -CF_2H qualifies as stable. (D.I. 153 at 19-20) But the Court's role at the claim construction stage is to give claim terms the meanings that those terms would have to a POSITA at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005). Its role at this stage is not to determine whether -CF_2H endgroups—endgroups not even mentioned in the patents—in fact constitute "unstable endgroups." Instead, that is an ultimate question relating to liability that the fact-finder would consider. *See, e.g.*, *Key Pharms. v. Hercon Labs. Corp.*, 161 F.3d 709, 714 (Fed. Cir. 1998) (explaining that a determination of anticipation or obviousness involves construction of the claim (a question of law for the court) followed by a comparison of the construed claim to the prior art, which comparison "involves fact-finding, and is for the fact-finder in the first instance"); *Vocalife LLC v. Amazon.com, Inc.*, CIVIL ACTION NO. 2:19-CV-00123-JRG, 2020 WL 1698779, at *12 (E.D. Tex. Apr. 6, 2020) (rejecting the defendants' proposed negative limitation that all Intel x86 and ARM processors are

not "digital signal processor[s]" as "[u]ltimately, whether a particular prior-art or accused processor is a [digital signal processor] is a factual issue of infringement or invalidity for the jury"); *cf. AgroFresh Inc. v. Hazel Techs., Inc.*, C.A. No. 18-1486 (MN), 2020 WL 509161, at *3 (D. Del. Jan. 31, 2020) (declining to construe "molecular encapsulation agent" in a manner that would "exclude all adsorptive carriers[,]" as the question ultimately would be whether a particular compound fits within the definition in the specification, which "is an issue of infringement, not claim construction").

Having explained why Daikin's proposed construction is improper, the Court must now decide what *is* the proper construction for the term. It will do so by assessing Chemours' proposal.

The language at the end of Chemours' proposal ("endgroups other than CF_3") causes more problems than it solves. (*See* D.I. 153 at 12 n.2) And on that front, Chemours ultimately conceded that a correct construction need not include this text. (Tr. at 175-76 (Chemours' counsel stating that "the first part of [our] claim construction we think is fine, it's sufficient, and the parties can fight about whether or not -CF_2H [or other chemical structures are] stable [or] unstable in front of the jury as a matter of fact"); *see also* Tr. at 180)[10]

That leaves the question of whether the first portion of Chemours' proposed construction (i.e., "chemical structures at the end of the polymer chains that react, usually by decomposition,

[10] The genesis for this language at the end of Chemours' proposed construction is the statement in the specification that "[p]olymers according to this invention are fluorinated as disclosed in U.S. Pat. No. 4,743,658 to convert thermally or hydrolytically unstable end groups *to the stable -CF_3 endgroup*." ('609 patent, col. 3:31-34 (emphasis added); *see also* D.I. 153 at 6, 8-9; Tr. at 176)

under conditions at which fluoropolymers are melt-processed") is consistent with the teachings in the patent. Chemours draws this language from the below passage in the specification:

> Polymers according to this invention are fluorinated as disclosed in U.S. Pat. No. 4,743,658 to convert thermally or hydrolytically unstable end groups to the stable -CF_3 endgroup. By thermally unstable is meant that the endgroup reacts, usually by decomposition, at temperatures at which fluoropolymers are melt-processed, generally between 300 and 400° C.

('609 patent, col. 3:31-37 (cited in D.I. 153 at 8)) Chemours further notes that the claims are not limited to thermally or hydrolytically unstable endgroups. (D.I. 153 at 8, 28-29)

Daikin's briefing did not identify any shortcomings with this portion of Chemours' proposed construction. Indeed, Daikin appears to agree that it is in line with the intrinsic record. (*See id.* at 24) At one point, Daikin explains that "the term 'unstable endgroups' means just that, chemical moieties at the end of polymer chains . . . that are not stable[,]" (*id.* at 15), which is synonymous with "chemical structures at the end of the polymer chains that react." And Daikin further acknowledges that Chemours' proposal's characterization of "unstable" as "'unstable' in melt-processing applications. . . . is consistent with the asserted patents' own definitions[.]" (*Id.* at 19 (emphasis, brackets and internal quotation marks omitted))

Thus, the parties appear to agree that "unstable endgroups," in the context of these patents, can be defined as "chemical structures at the end of the polymer chains that react, usually by decomposition, under conditions at which fluoropolymers are melt-processed[.]"[11]

[11] When pressed about the first portion of Chemours' proposal during oral argument, Daikin seemed to take issue with the fact that the asserted patents only reference thermally or hydrolytically unstable endgroups, and that Chemours' language could allow for endgroups to be thermally unstable, hydrolytically unstable, *or unstable by some other metric*. (Tr. at 184-85; *see also* D.I. 153 at 8, 16; Daikin's *Markman* Presentation, Slide 44) But in the absence of Daikin clearly pressing this argument in the briefing, and with the claims not limited to thermal

For these reasons, the Court recommends that the term "unstable endgroups" be construed in that manner.

IV. CONCLUSION

For the foregoing reasons, the Court recommends that the District Court adopt the following constructions:

1. "melt flow rate" should be construed to mean "the amount of mass or volume of a viscous material moving past a reference point as a function of time"

2. "about" should be construed to mean "approximately," "about 30±3 g/10 min" should be construed to mean "approximately 30±3 g/10 min" and "about 30±2 g/10 min" should be construed to mean "approximately 30±2 g/10 min"

3. "unstable endgroups" should be construed to mean "chemical structures at the end of the polymer chains that react, usually by decomposition, under conditions at which fluoropolymers are melt-processed"

This Report and Recommendation is filed pursuant to 28 U.S.C. § 636(b)(1)(B), Fed. R. Civ. P. 72(b)(1), and D. Del. LR 72.1. The parties may serve and file specific written objections within fourteen (14) days after being served with a copy of this Report and Recommendation. Fed. R. Civ. P. 72(b)(2). The failure of a party to object to legal conclusions may result in the loss of the right to de novo review in the district court. *See Sincavage v. Barnhart*, 171 F. App'x 924, 925 n.1 (3d Cir. 2006); *Henderson v. Carlson*, 812 F.2d 874, 878-79 (3d Cir. 1987).

instability, the Court does not now have good reason to reject this first portion of Chemours' proposed construction.

The parties are directed to the Court's Standing Order for Objections Filed Under Fed. R. Civ. P. 72, dated October 9, 2013, a copy of which is available on the District Court's website, located at http://www.ded.uscourts.gov.

Dated: January 13, 2022

Christopher J. Burke
UNITED STATES MAGISTRATE JUDGE