IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

INGEVITY CORPORATION and
INGEVITY SOUTH CAROLINA, LLC,

Plaintiffs,

v.

BASF CORPORATION,

Defendant.

No. 18-cv-1391-RGA

MEMORANDUM OPINION

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June 3, 2019

ANDREWS, U.S. DISTRICT JUDGE:

Presently before the Court are Plaintiffs' motion for a preliminary injunction (D.I. 13) and Defendant's related motions for leave to file a sur-reply (D.I. 50) and leave to file a supplemental brief (D.I. 92). I have reviewed the parties' briefing and related filings (D.I. 14, 21, 36, 50, 52, 91, 92). For the following reasons, Plaintiffs' motion is **DENIED**. Therefore, Defendant's motions to file additional briefing are **DISMISSED AS MOOT**.

I.   BACKGROUND

On September 6, 2018, Plaintiffs brought this action against Defendant alleging infringement of U.S. Patent No. RE38,844 ("the '844 patent"). (D.I. 1). The '844 patent is a reissue of U.S. Patent No. 6,540,815. (*Id.* ¶ 14).

The '844 patent relates to "a method for reducing emissions from evaporative control systems," specifically, by using "vapor-adsorbing materials in hydrocarbon fuel consuming engines." '844 patent at 1:14-23. Evaporation of gasoline from motor vehicles is a major source of hydrocarbon air pollution. *Id.* at 1:27-28. The claimed invention is aimed at targeting a subset of evaporative emissions known as "diurnal breathing loss" emissions. *Id.* at 3:43-45. Such emissions typically occur when a vehicle is parked and subject to ambient temperature changes. '844 patent at 2:44-47.

Evaporative emissions are commonly controlled by canister systems that use activated carbon to adsorb and hold the vapor that evaporates. *Id.* at 1:32-42. The adsorbed vapor is periodically removed from the carbon, which then allows the regenerated carbon to adsorb additional vapor. *Id.* Not all vapor is removed in the regeneration step, however, and the residual vapor may be emitted through diurnal breathing losses. *Id.* at 2:37-47. The claimed

invention aims to address that issue "by the use of multiple layers, or stages, of adsorbents." *Id.*
at 3:43-45.

Key to the claimed invention is the use of multiple adsorbents having different adsorption
characteristics. *See id.* at 3:46-53. Each claim of the '844 patent requires the use of materials
with certain "incremental adsorption capacity." For example, claim 1 provides:

> A method for reducing fuel vapor emissions in automotive evaporative
> emissions control systems comprising the steps of contacting the fuel vapor
> with an initial adsorbent volume having *incremental adsorption capacity* at 25°
> C. of greater than 35 g n-butane/L between vapor concentrations of 5 vol %
> and 50 vol % n-butane and at least one subsequent adsorbent volume having an
> *incremental adsorption capacity* of less than 35 g n-butane/L between vapor
> concentrations of 5 vol % and 50 vol % n-butane.

Id. at 10:36-44 (emphasis added). The '844 patent does not define "incremental adsorption
capacity."

II. LEGAL STANDARD

"A plaintiff seeking a preliminary injunction must establish [1] that he is likely to
succeed on the merits, [2] that he is likely to suffer irreparable harm in the absence of
preliminary relief, [3] that the balance of equities tips in his favor, and [4] that an injunction is in
the public interest." *Winter v. Nat. Res. Def. Council, Inc.*, 555 U.S. 7, 20 (2008). "A
preliminary injunction is an extraordinary remedy never awarded as of right." *Id.* at 24.

To establish a likelihood of success on the merits in a patent infringement suit, the
patentee "must show that it will likely prove infringement, and that it will likely withstand
challenges, if any, to the validity of the patent." *Tinnus Enterprises, LLC v. Telebrands Corp.*,
846 F.3d 1190, 1202 (Fed. Cir. 2017) (quoting *Titan Tire Corp. v. Case New Holland, Inc.*, 566
F.3d 1372, 1376 (Fed. Cir. 2009)). "An accused infringer 'can defeat a showing of likelihood of
success on the merits by demonstrating a substantial question of validity or infringement.'" *Id.*
(quoting *Trebro Mfg., Inc. v. Firefly Equip., LLC*, 748 F.3d 1159, 1165 (Fed. Cir. 2014)).

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Showing a substantial question of validity requires less proof than the clear and convincing evidence necessary to establish invalidity itself. *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1359 (Fed. Cir. 2001). In addition, "[i]nstead of the alleged infringer having to persuade the trial court that the patent is invalid, at this stage it is the patentee, the movant, who must persuade the court that, despite the challenge presented to validity, the patentee nevertheless is likely to succeed at trial on the validity issue." *Titan Tire*, 566 F.3d at 1377.

III. ANALYSIS

For the following reasons, I find Defendant has raised a substantial question of invalidity based on indefiniteness. Therefore, Plaintiffs have not shown a likelihood of success on the merits and no preliminary injunction is warranted.

Defendant's indefiniteness theory is based on *Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc.*, 789 F.3d 1335 (Fed. Cir. 2015). In *Teva*, the relevant claims required the use of materials at a certain "molecular weight." *Id.* at 1338. It was undisputed that "molecular weight" could refer to any of three measures—peak average, number average, or weight average—wherein each measure is calculated in a different way and would typically yield a different result. *Id.* at 1341. The district court found that "molecular weight" meant peak average molecular weight in the context of the claimed invention, and thus found the claims not indefinite. *Id.* at 1338-39. Neither the patent specification nor prosecution history defined "molecular weight" or discussed any of the three measures. *Id.* at 1341, 1343. During prosecution of two related patents, both continuations of the asserted patent, the examiner rejected the term "molecular weight" as indefinite for failing to specify which measure of "molecular weight" applied. *Id.* at 1343-44. The patentee overcame both rejections by defining the measure, but did so inconsistently, selecting different measures for each patent. *Id.* The Federal Circuit concluded, taking into

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account the district court's underlying factual findings, that the claim was invalid for indefiniteness. *Id.* at 1345. The court held, "[R]ead in light of the specification and the prosecution history, the patentee has failed to inform with *reasonable certainty* those skilled in the art about the scope of the invention. On [that] record, there is not reasonable certainty that molecular weight should be measured using [peak average]." *Id.*

Here, Defendant argues that, like in *Teva*, the asserted claims are indefinite because the patentee has failed to inform with reasonable certainty those skilled in the art which of several available tests should be used to determine "incremental adsorption capacity." (D.I. 21 at 7-10). It is undisputed that the '844 patent does not define "incremental adsorption capacity." The parties also agree that it is not a term of art. (*See* D.I. 22 at 6; D.I. 36 at 7-8; D.I. 22, Ex. 9 at 48:21-25). In fact, Plaintiffs' expert, Dr. Ritter, stated that he believed the '844 patent inventors "coined" the term. (D.I. 22, Ex. 9 at 50:4-8).

Nonetheless, Dr. Ritter opined that the meaning of "incremental adsorption capacity" is evident in view of the '844 patent. All four independent claims require "incremental adsorption capacity at 25 °C" of either "greater than" or "less than" "35 g n-butane/L between vapor concentrations of 5 vol % and 50 vol % n-butane." '844 patent at 10:35-14:64 (claims 1, 18, 31, and 43). Dr. Ritter explained:

> As set forth in the claims, "adsorption capacity" refers to the well-known phenomenon of adsorption and the quantity of adsorbate (the thing being adsorbed) that can be adsorbed by a given quantity of adsorbent (the thing doing the adsorbing). In this case, the adsorbate is n-butane and the quantity of adsorbate is expressed in grams (mass), whereas the adsorbent is an activated carbon and the quantity of adsorbent is expressed in liters (volume). Adsorption capacity is known to be temperature dependent, so "25 °C" simply refers to the temperature at which adsorption is being considered. Moreover, it is well known that adsorption varies with the concentration of the adsorbate— as adsorbate concentration increases, so does adsorption. Thus, adsorption must be expressed in terms of the concentration of adsorbate, in this case "5 vol %" and "50 vol %" concentrations of n-butane. "Incremental" refers to a

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change—an increment. *Thus, "incremental adsorption capacity at 25 °C of [greater than] [less than] 35 g n-butane/L between vapor concentrations of 5 vol % and 50 vol % n-butane" refers to the change in adsorption capacities measured at 5 volume % and 50 volume % of the specified adsorbate (n-butane) at the specified conditions (25 °C).*

(D.I. 14, Ex. A ¶ 18 (emphasis added)).

Figure 3 of the '844 patent depicts several butane adsorption curves at 25 °C ("isotherm curves"). Dr. Ritter provided an annotated version of Figure 3 to demonstrate how the patentee calculated the "incremental adsorption capacity" of a particular adsorbent (BAX 1500) based on its isotherm curve.

n-Butane Adsorption Isotherm at 25°C
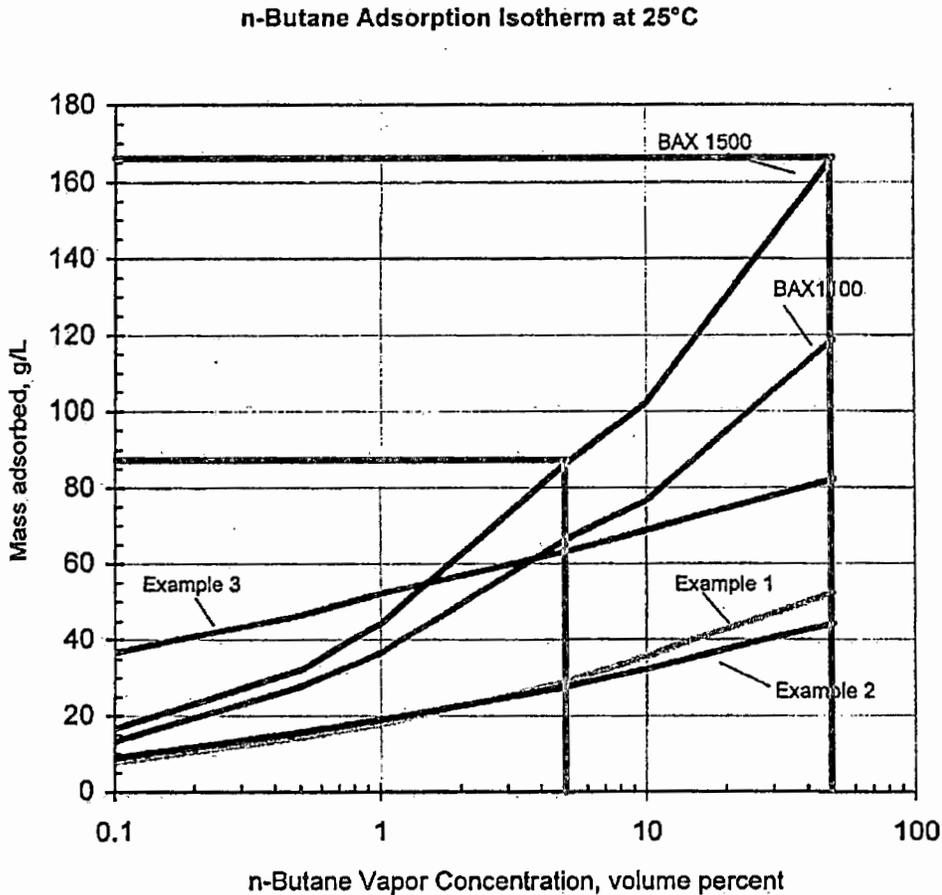
(D.I. 14, Ex. A ¶ 20). The vertical lines are drawn at 5 volume % and 50 volume % butane—the vapor concentrations identified by the '844 patent claims. The horizontal lines mark the

corresponding mass of butane adsorbed per liter of BAX 1500—the adsorption capacity of BAX

1500. (*Id.*). Therefore, the "*incremental* adsorption capacity" of BAX 1500 is the difference

between its adsorption capacities at 5 volume % butane and 50 volume % butane. (*Id.*). Based

on Figure 3, Dr. Ritter estimated the "incremental adsorption capacity" to be 167 g/L – 87 g/L =

80 g/L, the same value reported in the '844 patent. (*Id.*)

Although Dr. Ritter admitted that he could not tell from the '844 patent specification how

the isotherm curves in Figure 3 were measured or derived (D.I. 22, Ex. 9 at 56:6-11), he asserted

that a person of ordinary skill in the art would have known how to do so. (D.I. 36, Ex. J ¶¶ 3-

19). Specifically, he described a method comprised of (1) experimentally measuring butane

adsorption capacity, (2) converting the data into the format shown in Figure 3, and (3) fitting the

converted data with an isotherm curve. (D.I. 14, Ex. A ¶¶ 40-57). It is undisputed that there is

no industry standard method for performing steps one or three. (D.I. 21 at 7-8 (citing D.I. 22,

Ex. 7 at 55:16-18, 83:22-25, Ex. 9 at 41:3-5, 104:6-106:3); D.I. 36 at 7-9).

Regarding step one, Dr. Ritter opined that a person of ordinary skill in the art would have

known of several methods for measuring adsorption capacity, such as the volumetric,

gravimetric, or calorimetric methods. (D.I. 36, Ex. J ¶ 13). Likewise, Plaintiffs' other technical

expert, Dr. Reddy, testified that several apparatuses are available on the market to measure

adsorption capacity, which differ in both equipment and methods, and industry players each use

different systems of measurement. (D.I. 22, Ex. 7 at 38:11-22, 41:13-15).[1] Dr. Ritter opined,

however, that each method "will produce the same result within a reasonable level of uncertainty

due to experimental error inherent in any physical measurement." (D.I. 36, Ex. J ¶ 13).

Although he noted that "it could be more desirable to choose a certain method over another," he

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[1] Dr. Reddy also stated that he believes industry players were using different apparatuses at the time of the invention. (D.I. 22, Ex. 7 at 40:14-22).

asserted that a person of ordinary skill in the art would know "how and when to make such choices." (*Id.*).

Regarding step three, both Dr. Ritter and Dr. Reddy testified that the experimental data could be fit with several different curve equations. (D.I. 22, Ex. 7 at 55:5-18, Ex. 9 at 40:11-41:5). Dr. Reddy testified that "[e]ach equation has some limitations" and thus could produce different results. (*Id.*, Ex. 7 at 51:13-54:22). Dr. Ritter also explained that there is more than one way to apply the equations—the entire dataset could be fit with a single curve, or subsets of data around 5 volume % butane and 50 volume % butane could each be fit with individual curves. (D.I. 14, Ex. A ¶¶ 57-59). Dr. Ritter obtained slightly different "incremental adsorption capacity" values with each of the two methods. (*Id.* ¶ 65). Again, Dr. Ritter asserted, "A person of ordinary skill in the art would know how to apply different equations depending on the data points." (D.I. 36, Ex. J ¶¶ 14-15).

On the present record, I find Defendant has shown a substantial question exists as to whether the asserted claims are invalid as indefinite. The following facts are undisputed. Although "incremental adsorption capacity" is a limitation of every claim in the '844 patent, it is neither a term of art nor defined by the patentee. (D.I. 22 at 6; D.I. 36 at 7-8; D.I. 22, Ex. 9 at 48:21-25, 50:4-8). To determine the "incremental adsorption capacity," a person of ordinary skill in the art would first need to select between multiple methods of measuring "adsorption capacity." (D.I. 36, Ex. J ¶ 13; *see also* D.I. 22, Ex. 7 at 38:11-22. 41:13-15). After collecting the adsorption capacity data, a person of ordinary skill in the art would use the associated isotherm curve to calculate the "incremental adsorption capacity." (D.I. 22, Ex. 7 at 37:25-38:7). At the time of the invention, persons of ordinary skill in the art routinely used mathematical models to depict isotherm curves. (D.I. 36, Ex. J ¶ 14). A mathematical isotherm curve is

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derived by fitting an equation to the adsorption capacity data. (*Id.* ¶¶ 14-15). A person of ordinary skill in the art would have to select between multiple available equations. (*Id.*; D.I. 22, Ex. 7 at 51:13-54:22). There was no standard equation for deriving isotherms at the time of the invention. (D.I. 22, Ex. 9 at 40:11-41:5; *see also id.*, Ex. 7 at 55:5-18). Applying different methods of calculating "incremental adsorption capacity" to a single data set can produce different results. (D.I. 14, Ex. A ¶¶ 57, 59, 65 (results from two methods differed by 4%)). Therefore, as in *Teva*, the '844 patent may fail to provide reasonable certainty about the scope of the invention. *See Teva*, 789 F.3d at 1345.

Dr. Ritter opined that a person of ordinary skill in the art would know which measurement methods or equations to apply, depending on the circumstances. (D.I. 36, Ex. J ¶¶ 13-15). Whether Dr. Ritter is correct is a relevant question of fact. However, at this stage, given that the intrinsic record provides no direction on which methods should apply to "incremental adsorption capacity," I think Defendant has shown that its indefiniteness theory has substantial merit. I do not think Dr. Ritter's testimony is sufficient to rebut Defendant's showing. Therefore, Plaintiffs have failed to show that they are likely to succeed on the merits of validity. As such, Plaintiffs have not met their burden of justifying the "extraordinary remedy" of a preliminary injunction.

IV.   CONCLUSION

A separate order will be entered.

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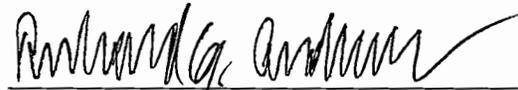
Plaintiffs,

v.

BASF CORPORATION,

Defendant.

No. 18-cv-1391-RGA

ORDER

For the reasons set forth in the accompanying memorandum opinion, **IT IS HEREBY**

ORDERED that Plaintiffs' motion for a preliminary injunction (D.I.13) is **DENIED**, and

Defendant's motions for leave to file a sur-reply (D.I. 50) and leave to file a supplemental brief

(D.I. 92) are **DISMISSED AS MOOT.**

Entered this ___ day of June 2019.

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United States District Judge