United States District Court,
S.D. New York.

INFOSINT, S.A,
Plaintiff.
v.
H. LUNDBECK A/S, et al,
Defendants.

No. 06 Civ. 2869(LAK)

March 27, 2009.

Background: Patent owner filed action against competitor alleging infringement of patent claiming improved process for synthesis of chemical compound used as intermediate product in synthesis of citalopram. Court set forth to construe disputed claims.

Holdings: The District Court, Lewis A. Kaplan, J., held that:
(1) phrase, "[a] process for the synthesis of citalopram," was claim limitation;
(2) term, "citalopram," included S-enantiomer, R-enantiomer, racemate, or any other mixture of enantiomers;
(3) term, formaldehyde, included all synthetically useful forms of formaldehyde including solid forms of formaldehyde such as paraformaldehyde and trioxane;
(4) phrase, "or a formaldehyde precursor," as used in some claims, had not been rendered superfluous by such construction of formaldehyde in patent as a whole;
(5) phrase, "fuming sulfuric acid containing at least 20% SO3," meant 20% sulfur trioxide, SO3, up to amount to which sulfuric acid would have been considered an impurity; and
(6) phrase, "the process is conducted in an open, non-pressurized reactor," meant reactor that allowed gases to escape during reaction, where substantial pressures were not applied or allowed to build up during reaction requiring pressure or sealed reactor.

Ordered accordingly.

6,458,973. Construed.

James Wright Galbraith, Kenyon & Kenyon, for the Plaintiff.

Benjamin Adam Lasky, Kirkland & Ellis LLP, for the Defendants.

MEMORANDUM OPINION

LEWIS A. KAPLAN**, District Judge.**

Plaintiff charges defendants with infringing its patent claiming an improved process for the synthesis of a chemical compound used in the manufacture of certain pharmaceuticals by selling in the United States the antidepressant drug citalopram, which defendants allegedly made using the compound synthesized according to plaintiff's patented process. Defendants have filed a counterclaim for declaratory judgment against plaintiff.

Magistrate Judge Ronald L. Ellis held a Markman FN1 hearing to determine the construction of a number of disputed terms in the patent and issued a Report and Recommendation ("R & R") construing the disputed terms. Defendants object.

FN1. *See* Markman v. Westview Instruments, Inc., 52 F.3d 967, 977-78 (Fed.Cir.1995) (en banc), *aff'd,* 517 U.S. 370, 388-90, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996).

Background

Plaintiff Infosint, S.A. ("Infosint") owns the patent at issue in this case, U.S. Patent 6,458,973 (the "'973 patent"). It claims an improved process for making the compound 5-carboxyphthalide, which is used as an intermediate product in the synthesis of citalopram. Citalopram is a well-known antidepressant marketed in the United States under the names Celexa and Lexapro. FN2

FN2. Pl. Ex. B at col. 1:21-28; Pl. Ex. E para. 9.

The compound 5-carboxyphthalide had been synthesized successfully prior to the inventors' application for the '973 patent. What the inventors claimed was a superior manufacturing process, especially useful in industrial settings. FN3 Their innovations included reacting the constituent compounds at a lower temperature and in a manner that did not generate a noticeable emission of gases.FN4 Additionally, the inventors claimed the use of a new reaction medium, fuming sulfuric acid, in place of liquid sulfur trioxide. FN5

FN3. Pl. Ex. B at col. 1:30-50.

FN4. Pl. Ex. H at 90-91, 108, 123.

FN5. Pl. Ex. B at col. 1: 44-55; Pl. Ex. H at 90-91.

In general terms, the process involves adding terephthalic acid to fuming sulfuric acid containing at least 20 percent sulfur trioxide, SO_3. Fuming sulfuric acid, also known as oleum,FN6 is a mixture of sulfuric acid and sulfur trioxide.FN7 Next, formaldehyde is added to the mixture, which is heated at 120-145 (deg.) C. The resulting 5-carboxyphthalide then is isolated from the solution FN8.

FN6. Pl. Ex. B at col. 2:19.

FN7. *See* Pl. Ex. H at 91; Def. Ex. EE at 36150.

FN8. Pl. Ex. B at col. 2:26-44; col. 2:49-col. 4:17.

Defendants, H. Lundbeck A/S, a Danish corporation, Lundbeck, Inc., its U.S. subsidiary (collectively "Lundbeck"), Forest Laboratories, Inc., and Forest Pharmaceuticals, Inc., both Delaware corporations, (collectively "Forest"), manufacture, market, and sell citalopram.FN9 Lundbeck synthesizes 5-carboxyphthalide at seven manufacturing facilities located outside of the United States.FN10 It manufactures also the antidepressant drugs citalopram and escitalopram in Denmark.FN11 Plaintiff alleges Lundbeck uses the 5-carboxyphthalide synthesized according to the process described in the ' 973 patent as an intermediate product in its production of citalopram and escitalopram. Forest markets and sells in the United States citalopram and escitalopram produced by Lundbeck under the trademarks Celexa and Lexapro, respectively.FN12

FN9. Ans. at 2-3.

FN10. *See generally* Scott Decl., Ex. E to Memorandum in Support of Defendants' Motion for Summary Judgment of Non-Infringement.

FN11. Ans. at 2.

FN12. *Id*. at 2-3; Pl. Ex. 16 to Plaintiff's Memorandum in Support of Its Motion for Summary Judgment Dismissing Defendants' Counterclaim for Interfering Patents.

Citalopram is a compound with a stereogenic carbon center, or a carbon atom with four substituents bonded to it.FN13 Molecules with stereogenic centers can exist in two different, mirror image forms known as enantiomers. FN14

FN13. Scott Decl., Pl. Ex. E para. 17.

FN14. *Id*.

Enantiomers appear identical in two dimensional depictions, but are revealed as mirror images when viewed in three dimensions.FN15 To avoid confusion, chemists use different notations to differentiate enantiomers in two dimensional drawings.FN16 A molecule with one stereogenic center, like citalopram, has only two

enantiomers.FN17 These are known as the S-enantiomer and R-enantiomer.FN18 When these two enantiomers appear in a mixture in a one-to-one ratio, the mixture is known as a racemate or racemic mixture.FN19 The drug Celexa is composed of racemic citalopram. Lexapro is generally considered more effective, and consists of substantially pure S-citalopram or escitalopram only.FN20

FN15. *Id*.

FN16. *Id*. para. 19.

FN17. *Id*.

FN18. *Id*. para. 18.
A "(+)" or "(-)" is sometimes used to distinguish between enantiomers instead of the letters "R" or "S." Racemates are labeled "R/S," "racemic" or "((plus-or-minus sign))." *Id*.

FN19. *Id*. para. 17.

FN20. *See, e.g.*, Ex. 7 & Ex. 8 at 7 to Infosint's Memorandum in Support of Its Motion for Summary Judgment Dismissing Defendants' Counterclaim for Interfering Patents; Def. Ex. L at 196:18-197:15; *see also* Forest Laboratories, Inc. v. Ivax Pharmaceuticals, Inc., 438 F.Supp.2d 479 (D.Del.2006).

The parties dispute the construction of five terms or phrases contained in the '973 patent. The parties submitted extensive briefing, and a Markman hearing was held on May 1, 2008/ Defendants object to four of the recommended constructions set out in the R & R.

Discussion

A. Objection to the Legal Standard

Defendants object first that Magistrate Judge Ellis applied an incorrect legal standard in analyzing the construction of the '973 patent claims. Specifically, defendants object to the R & R's statement that "[g]enerally, claims should be given their broadest meaning unless clearly disavowed in the specification of the patent." FN21 They argue that in Phillips v. AWH Corp.,FN22 the case cited for this proposition, the Federal Circuit stated that claims are given their "broadest reasonable construction" only during prosecution before the Patent and Trademark Office ("PTO").FN23

FN21. R & R at 2.

FN22. 415 F.3d 1303 (Fed.Cir.2005) (en banc).

FN23. Def. Obj. at 8-9 (quoting Phillips, 415 F.3d at 1316).

The Phillips court used the "broadest reasonable construction" language in the course of describing the PTO's examination process. But defendants erroneously focus their attention on only this single sentence in Phillips.

[1] The Federal Circuit in Phillips provided extensive guidance on the basic principles of claim construction.FN24 It instructed that courts are to give the words of a claim "their ordinary and customary meaning," which it defined as the meaning that "the term would have to a person of ordinary skill in the art in question at the time of the invention." FN25 To determine the customary meaning of claim terms, courts are directed to look to the context of the entire patent, including the other claims, the specification, and the prosecution history.FN26 Finally, extrinsic evidence may be considered in light of the intrinsic evidence, but courts should give it "less significan[ce] than the intrinsic record." FN27

FN24. Phillips, 415 F.3d at 1312.

FN25. Id. at 1313 (internal quotation marks omitted).

FN26. Id. at 1313-17.

FN27. Id. at 1317-19.

Magistrate Judge Ellis fully and accurately summarized these claim construction principles and applied them correctly to the analysis of each of the disputed terms. Accordingly, even if, as defendants argue, the "broadest meaning absent disavowal" formulation applies only before the PTO,FN28 the use of the phrase did not affect the result-a result with which this Court independently agrees.

FN28. *See* Halliburton Energy Servs., Inc. v. M-I LLC, 514 F.3d 1244, 1254 (Fed.Cir.2008) (declining to adopt "broadest possible construction" of ambiguous claim because such a construction "could retard innovation").

B. "Citalopram"

1. Claims 21 and 24

Defendants object to the R & R's construction of claims 21 and 24.

The '973 patent states in relevant part:

"What is claimed is:

"1. A process for the preparation of 5-carboxyphthalide of formula A [figure A] which comprises adding formaldehyde and terephtalic acid of formula I [figure I] to fuming sulfuric acid containing at least 20% of SO_3, heating the mixture at 120-145 (deg.) C. and isolating the 5-carboxyphthalide thus obtained.

* * *

"21. A process for the synthesis of citalopram, in which a process for the synthesis of 5-carboxyphthalideaccording to claim 1 is contained.

* * *

"23. A process for the preparation of 5-carboxyphthalide of formula A [figure A] which comprises adding formaldehyde (or a formaldehyde precursor) and terephthalic acid of formula I [formula I] to fuming sulfuric acid containing at least 20% of SO_3, heating the mixture at 120-145 (deg.) C. and isolating the 5-carboxyphthalide thus obtained, wherein the process is conducted in an open, non-pressurized reactor.

"24. A process for the synthesis of citalopram, comprising the process for the synthesis of 5-carboxyphthalide according to claim 23." FN29

FN29. Pl. Ex. B at col. 7-8.

The R & R concluded that the phrase "[a] process for the synthesis of citalopram" limited claims 21 and 24.FN30 Defendants contend that the phrase is non-limiting preamble and does not define the ' 973 patent's claims.

FN30. R & R at 6.

[2] [3] "In general, a claim preamble is limiting if it recites essential structure or steps, *or* if it is necessary to give life, meaning, and vitality to the claim." FN31 On the other hand, "if the body of the claim 'describes a structurally complete invention such that deletion of the preamble phrase does not affect the structure or steps of the claimed invention,' the preamble is generally not limiting unless there is 'clear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art.' " FN32

FN31. Intirtool, Ltd. v. Texar Corp., 369 F.3d 1289, 1295 (Fed.Cir.2004) (internal quotation marks omitted) (emphasis added).

FN32. Id. (quoting Catalina Mktg., Int'l v. Coolsavings.com, 289 F.3d 801, 808-09 (Fed.Cir.2002)).

[4] The R & R correctly concluded that the phrase "[a] process for the synthesis of citalopram" is necessary to give "life, meaning and vitality" to the claims. An examination of the text of Claim 21 demonstrates this. In its entirety, it states: "What is claimed is: ... 21. A process for the synthesis of citalopram, in which a process for the synthesis of 5-carboxyphthalide according to claim 1 is contained." In other words, far from being preamble, the disputed phrase constitutes the body of Claim 21. Without it, Claim 21 loses all

meaning. The same analysis applies with equal force to Claim 24, which is substantially the same as Claim 21. The phrase thus limits the claims.

Citing Intirtool, the defendants argue that in order to determine whether a claim preamble is limiting or not, the court must first ascertain precisely what the invention is, and then analyze whether the preamble defines "additional ... steps underscored as important by the specification." FN33 Insofar as the Court has concluded that the disputed phrase contains the substance of the claim, the preamble analysis does not apply. But even if it did, this is not what Intirtool says. In that case, the alleged infringer Texar Corporation argued that whether a preamble is limiting "is determined in part on the basis of 'the invention as described in the specification....' " FN34 However, the Intirtool court declined to adopt Texar's proposed method of analysis and ruled against Texar, holding that the disputed preamble was not limiting.FN35

FN33. Def. Obj. at 11 (citing Intirtool, 369 F.3d at 1295).

FN34. Intirtool, 369 F.3d at 1294 (emphasis added).

FN35. Id. at 1294-95.

Moreover, the case Texar relied upon to support its argument is distinguishable. In Applied Materials, Inc. v. Advanced Semiconductor Materials America, Inc.,FN36 the Federal Circuit explained that when a court evaluates whether "a preamble stating the purpose and context of an invention" constitutes a limitation, it must look to the overall form of the claim and the invention as described in the specification and illuminated in the prosecution history.FN37 Here, however, the disputed phrase does not state the purpose and context of the invention, but rather forms the substance of the claims. Thus, application of Applied Materials' guidance is unnecessary to the resolution of the instant claim construction issue.

FN36. 98 F.3d 1563 (Fed.Cir.1996).

FN37. Id. at 1572-73.

2. The Claimed Processes for Synthesizing Citalopram

Defendants argue that if this Court adopts the R & R's recommendation construing "[a] process for the synthesis of citalopram" as a claim limitation, it should adopt also the R & R's "recommendation to limit the claimed processes for making citalopram to those disclosed in the incorporated '431 and '724 Applications." FN38 The R & R made no such recommendation, and the Court declines so to hold.

FN38. Def. Obj. at 15.

3. The Meaning of "Citalopram"

[5] The R & R construed the term "citalopram" in the '973 patent to include "the S-enantiomer, the R-

enantiomer, the racemate, or any other mixture of enantiomers." FN39 Defendants object to this proposed construction for several reasons.

FN39. R & R at 1.

First, defendants object that the R & R did not cite to portions of the intrinsic evidence. The '973 patent refers only to "citalopram" without defining the term, but incorporates by reference two patent applications that did define the term.FN40 The first is the International Patent Application 0023431 ("'431 application"), entitled "Method for the Preparation of Citalopram," which was published on April 27, 2000.FN41 The second is the Italian Patent Application MI 99A 001724 ("'724 application"), which claimed a process for the preparation of an isobenzofuran derivative, an intermediate compound used in the preparation of citalopram.FN42

FN40. *See* Pl. Ex. B at col. 1:24-28 (incorporating '431 and '724 applications by reference).

FN41. Pl. Ex. F.

FN42. Pl. Ex. G at 11:8-9.

The defendants argue that the R & R failed to consider particular portions of the '431 and '724 applications. But the R & R considered the manner in which both of the patent applications used "citalopram" and concluded that the applications used the term to refer to citalopram's S-enantiomer, R-enantiomer, racemate, or enantiomers in any other combination.FN43

FN43. R & R at 6.

This conclusion is supported by both the intrinsic and extrinsic evidence. Those skilled in the art specify particular enantiomers and the racemate by adding labels to the chemical name of the compound.FN44 Both the '431 and '724 applications refer to "citalopram" as "1-[3-(dimethylamino)propyl]-1-(4-fluorophenyl)-1, 3-dihydro-5-isobenzofurancarbonitrile." FN45 This, the full chemical name for citalopram, does not specify a particular enantiomeric form or the racemate.FN46

FN44. Pl. Ex. E para.para. 18, 20, 27.

FN45. Pl. Ex. F at 1; Pl. Ex. G at 2.

FN46. Pl. Ex. E para. 27; *see also* Pl. Ex. K at 5256 (labeling compound "racemic"); Def. Ex. H para. 34 (denoting enantiomers with addition of "(S)" and "(R)" before full chemical name for citalopram).

Both applications provide also a two dimensional figure depicting citalopram.FN47 Those skilled in the art use certain conventions for indicating enantiomers in two dimensional depictions. FN48 For example, a solid wedge instead of a simple line indicates atoms that extend above the plane of the paper, and a hashed wedge or line indicates atoms extending downward.FN49 Neither application's depiction of citalopram indicates a specific enantiomeric form.FN50 This indicates "citalopram" is used in the applications to refer to citalopram in either or both of its enantiomeric forms.

FN47. Pl. Ex. F at 2; Pl. Ex. G at 2; *see also* Pl. Ex. E para. 24.

FN48. Pl. Ex. E para. 19; Williams Dep., Def. Ex. Q at 203:14-19.

FN49. Pl. Ex. E para. 19.

FN50. Pl. Ex. E para. 26.

This understanding is confirmed by plaintiff's and defendants' experts. Dr. Scott stated that, "[a]bsent definition of the three-dimensional stereochemistry via a stereochemical indicator, the chemical name or structure includes the S-enantiomer, the R-enantiomer, the racemate, or any other mixture of enantiomers." FN51 Defendants' expert, Dr. Williams, testified similarly. He stated that "if the lines as drawn [in the figure of the citalopram compound] are all the same width ... that would not tell me that that structure corresponds to S-citalopram, it would be ambiguous, and then I would assume that that structure would be corresponding to ... either R or S or racemic citalopram." FN52

FN51. Pl. Ex. E para. 20.

FN52. Pl. Ex. L at 207:11-19.

This understanding is reinforced also by the description of the invention in the '724 application. There, it is described as one that "allows the preparation of two enantiomers of citalopram." FN53 Claim 1, however, states that it is "[a] process for the preparation of citalopram and of its pharmaceutically acceptable salts." FN54 Reading Claim 1 in light of this earlier description indicates that the term "citalopram" must include either or both of citalopram's enantiomers.

FN53. Pl. Ex. G at 11:9.

FN54. Pl. Ex. G at 20:1.

Likewise, the '431 application states that it "relates to a method for the preparation of ... citalopram." Later in the specification, it states that the invention described "relates to a novel method for the preparation of

citalopram, its enantiomers and acid addition salts thereof." FN55 This indicates that the '431 application used the term "citalopram" in its broader sense and added references to its enantiomers to clarify that the process permitted the synthesis of both the racemate and individual enantiomers.

FN55. Pl. Ex. F at 3.

Examining the applications as a whole thus demonstrates that the inventors used the term "citalopram" to refer to the compound 1-[3-(dimethylamino)propyl]-1-(4-fluorophenyl)-1, 3-dihydro-5-isobenzofurancarbonitrile generally, in any of its forms: the S-enantiomer, the R-enantiomer, the racemate, or a mixture of the enantiomers in any other combination. At other times, the applications added the term "enantiomers" in order to clarify or emphasize what was being claimed.FN56 The additional clarification in places, however, cannot limit the use of the more general term "citalopram" when the applications read as a whole indicate the term was used in its broader sense.FN57

FN56. *See, e.g.,* Pl. Ex. F at 18.

FN57. *See, e.g.,* Bell & Howell Document Mgmt. Prods. Co. v. Altek Systems, 132 F.3d 701, 707 (Fed.Cir.1997) ("Moreover, defining a state of affairs with multiple terms should help, rather than hinder, understanding.").

Defendants argue that the fact that the '973 patent refers to "citalopram" as a "well known antidepressant drug" indicates that "citalopram" must refer only to the racemate because the racemic form of citalopram was the only well-known antidepressant on the market at the time the patent application was filed.FN58 But, as discussed above, the term "citalopram" was used in the '431 and '724 applications in a broader sense. The term encompassed the racemate-then and now a "well known antidepressant drug"-as well as citalopram's other forms.

FN58. Def. Obj. at 16.

Defendants assert also that their interpretation of citalopram is supported by Forest Laboratories, Inc. v. Ivax Pharmaceuticals, Inc.FN59 As the R & R stated, the issue in Forest Labs was whether patent claims for substantially pure S-citalopram were invalid because they were anticipated or obvious in light of prior art that disclosed the presence of both of citalopram's enantiomers but provided the chemical structure of the R-enantiomer only.FN60 The court found that the patents were valid because the process for synthesizing substantially pure S-citalopram was unknown at the time the application was filed. The court's conclusion, however, does not answer the question here, as the Forest Labs court did not interpret the use of the term "citalopram" standing on its own.

FN59. 438 F.Supp.2d 479 (D.Del.2006).

FN60. Id. at 486-87.

Finally, defendants argue that the court should examine the IP Rights Agreement to shed light on the patent drafters' contemporaneous interpretation of "citalopram." FN61 The contract states that Norpharma S.p.A., the applicant for the '724 patent, "is engaged in research and development on methods for manufacturing" racemic citalopram.FN62 However, even if the Court assumes that Norpharma was engaged exclusively in researching and developing racemic citalopram, an IP contract presumably drafted by attorneys does not reflect the intentions or understanding of the inventors.FN63 Thus, considering the balance of the evidence, most significantly the patent applications read as a whole, the Court overrules the objection and adopts the R & R's interpretation of the term "citalopram."

FN61. Def. Obj. at 19.

FN62. Pl. Ex. K at 5256.

FN63. *See* Middleton, Inc. v. Minnesota Mining and Mfg. Co., 311 F.3d 1384, 1389 (Fed.Cir.2002) ("If a contract supplies some insight into the understanding of skilled artisans at the time of the invention, it may have some relevance to claim construction.").

C. Formaldehyde

[6] The R & R found that formaldehyde, as used in the '973 patent, "includes 'all synthetically useful forms of formaldehyde including solid forms of formaldehyde such as paraformaldehyde and trioxane.' " FN64 Defendants object, arguing that "formaldehyde" should be interpreted to mean monomeric formaldehyde (HCHO) only. Monomeric formaldehyde is a gas at room temperature.FN65 According to defendants, use of the R & R's construction requires different definitions of the same term throughout the claims and would render certain claims superfluous.

FN64. R & R at 10.

FN65. Pl. Ex. E para. 34.

[7] " 'The descriptive part of the specification aids in ascertaining the scope and meaning of the claims inasmuch as the words of the claims must be based on the description. The specification is, thus, the primary basis for construing claims' " FN66 and " '[t]he best source for understanding a technical term' " FN67 used in the claims. As Magistrate Judge Ellis correctly found, when the term is understood within the context of the patent as a whole, it is clear that "formaldehyde: was intended include forms other than monomeric formaldehyde.

FN66. Phillips v. AWH Corp., 415 F.3d 1303, 1315 (Fed.Cir.2005) (quoting Standard Oil Co. v. Am. Cyanamid Co., 774 F.2d 448, 452 (Fed.Cir.1985)).

FN67. Id. (quoting Multiform Desiccants, Inc. v. Medzam, Ltd., 133 F.3d 1473, 1478 (Fed.Cir.1998)) (alteration in original).

The specification describes one step of the invented process as requiring the "subsequent addition of formaldehyde to the mixture." FN68 Later, in the "detailed description of the invention" section, the patent specifies that "[a]ccording to a preferred embodiment of the process of the present invention, formaldehyde is used in one of its solid forms, currently in form of its precursor 1, 3, 5-trioxane." FN69 This indicates that the patent writers intended to use the term "formaldehyde" to refer to the compound in more than just its monomeric form.

FN68. Pl. Ex. B. at col. 2:20-21.

FN69. *Id*. at col. 2:49-52.

Further supporting this construction is the fact that the claims explicitly include formaldehyde precursors as a type of formaldehyde. For example, Claim 1 requires "adding formaldehyde." FN70 Claims 2 and 3, which are dependent on Claim 1, describe "[a] process according to claim 1 in which formaldehyde is used in form of its precursor 1, 3, 5-trioxane" and "[a] process according to claim 1 in which formaldehyde is used in form of its precursor paraformadehyde." FN71 Thus, Claims 2 and 3 describe more specific restrictions on the broader Claim 1 by specifying the particular form of formaldehyde used.

FN70. *Id*. at col. 7:12.

FN71. *Id*. at col. 7:28-38.

[8] Defendants contend that this construction renders claims and parts of claims superfluous. Claim 23 states in relevant part, "[a] process for the preparation of 5-carboxyphthalide of formula A which comprises adding formaldehyde (or a formaldehyde precursor)." Here, the phrase "or a formaldehyde precursor" is merely an explanatory parenthetical intended to assist understanding and reinforces the definition of formaldehyde used in the patent as a whole. This use of additional words "to help not hinder understanding" is not superfluous.FN72

FN72. Bell & Howell, 132 F.3d at 707 (mutually reinforcing definitions not superfluous).

[9] [10] Defendants contend also that the R & R's construction would render Claim 22 superfluous in its entirety because the only substantive difference between that claim and Claim 23 is the phrase "or a formaldehyde precursor." FN73 However, as Magistrate Judge Ellis noted, the doctrine of claim differentiation " 'is a guide, not a rigid rule.' " FN74 Indeed, " '[i]t is not unusual that separate claims may define [an] invention using different terminology, especially where ... independent claims are involved.' " FN75 Here, Claim 22 depends from independent Claim 1. Claim 23 is independent. Where the claims are independent and the drafters' intentions are otherwise clearly evidenced by the specification as a whole, the

doctrine of claim differentiation does not control.FN76

FN73. Def. Obj. at 20-21.

FN74. Curtiss-Wright Flow Control Corp. v. Velan, Inc., 438 F.3d 1374, 1380 (Fed.Cir.2006) (quoting Laitram Corp. v. Rexnord, Inc., 939 F.2d 1533, 1538 (Fed.Cir.1991)).

FN75. Id. (quoting Hormone Research Foundation, Inc. v. Genentech, Inc., 904 F.2d 1558, 1567 n. 15 (Fed.Cir.1990)).

FN76. *See, e.g.,* Hormone Research Found., 904 F.2d at 1567 n. 15.

D. Fuming Sulfuric Acid

Fuming sulfuric acid, or oleum, is a mixture of sulfuric acid (H_2SO_4) and sulfur trioxide.FN77 The R & R recommends construing the phrase "fuming sulfuric acid containing at least 20% SO_3" to mean "20% SO_3 up to an amount to which sulfuric acid would be considered an impurity." FN78 Defendants object to this construction for several reasons, none of which is persuasive.

FN77. *See* Pl. Ex. H at 91; Pl. Ex. B at col. 2:19; Def. Ex. EE at 36150.

FN78. R & R at 25.

[11] First, defendants argue that the term "impurity" is ambiguous. They contend that the issue of dispute-the permitted upper limit of SO_3 or minimum amount of sulfuric acid in "fuming sulfuric acid"-improperly will be left for the jury. But defendants' would define "fuming sulfuric acid," a mixture of sulfur trioxide and sulfuric acid, to include otherwise pure sulfur trioxide SO_3 containing a single molecule of water.FN79 In other words, the real issue here is not a supposed ambiguity in the recommended definition, but that defendants would define fuming sulfuric acid to include SO_3 that contains only the slightest impurity. The R & R notes correctly that defendants' evidence does not support such a definition. For example, the deposition testimony cited by the defendants indicates that the properties of SO_3 would be affected by the presence of protons, *i.e.* the presence of sulfuric acid or water, but not that the presence of any protons would transform SO_3 to fuming sulfuric acid.FN80 For example, defendants' expert, Dr. Williams, testified that "commercial grade Sulfan B, liquid sulfur trioxide, contain[s] enough sulfuric acid" that it could prove problematic in a "reaction that is sensitive to the presence of protons," but not that this presence transforms Sulfan B into fuming sulfuric acid.FN81

FN79. Def. Obj. at 27.
The water molecule combines with the sulfur trioxide to form sulfuric acid. *See* Def. Ex. Q at 106:4-10.

FN80. *See* Def. Ex. Q at 107-09; *see also* Def. Ex. HH para.para. 46-47 (Sulfan B is SO_3 not oleum or fuming sulfuric acid).

FN81. Def. Ex. Q at 107-09.

The defendants object also to what they characterize as the R & R's "undue reliance" on the decision of the European Opposition Division. However, as the R & R demonstrates, Magistrate Judge Ellis did not place undue weight on the decision of a foreign patent office. The R & R notes merely that following its review of plaintiff's European counterpart to the '973 patent, the European patent office's construction of the phrase "fuming sulfuric acid" supported Magistrate Judge Ellis' own. This is not improper.FN82

FN82. *See, e.g.,* Minerals Separation v. Hyde, 242 U.S. 261, 269, 37 S.Ct. 82, 61 L.Ed. 286 (1916) (noting agreement with House of Lords on an equivalent patent application).

E. Open, Non-Pressurized Reactor

[12] Magistrate Judge Ellis recommends that the phrase in Claim 23, " 'the process is conducted in an open, non-pressurized reactor,' " means "a reactor that allows gases to escape during the reaction,' where 'substantial pressures are not applied or allowed to build up during the reaction requiring a pressure or sealed reactor.' " FN83 Defendants object and argue the phrase should be construed to mean that " 'the process is conducted at atmospheric pressure in a reactor where there is a bidirectional exchange of gases between the reactor and the atmosphere.' " FN84

FN83. R & R at 15.

FN84. Def. Obj. at 32.

Nothing in the claim supports defendants' contention that the term "open" should be construed to mean "a bidirectional exchange of gases." Nor do defendants point to intrinsic or extrinsic evidence supporting that proposed construction. Dr. Scott's declaration, however, supports the R & R's construction that "open" means permitting gases to escape. He described an open system as "one in which the gases generated in a reaction are allowed to escape from the reaction vessel." The gases may be permitted to escape simply by venting them to the air, or may involve "their collection by use of condensers and/or scrubbers or catalytic burners" as may be appropriate in an industrial setting.FN85

FN85. Pl. Ex. E para. 42.

Defendants contend also that "non-pressurized" means "conducted at atmospheric pressure." But the specification supports Magistrate Judge Ellis's construction. It states that the prior art process required

"pressure reactors" when conducted on an industrial scale.FN86 In contrast, the process described in the '973 patent may be conducted in "no[n-]pressurized reactors." FN87 A non-pressurized reactor therefore does not necessarily mean that the process must be conducted at atmospheric pressure, although it includes reactions run at atmospheric pressure, but rather that a purposely pressurized reactor is not required.FN88 This objection is overruled.

FN86. Pl. Ex. B at col. 2:12-14.

FN87. Id. at col. 2:17-25.

FN88. *See* Pl. Ex. E para. 46.

Conclusion

For the foregoing reasons, defendants' objections to the R & R are overruled. Accordingly, the Court adopts Magistrate Judge Ellis's recommendations.

SO ORDERED.

S.D.N.Y.,2009.
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