IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

3M COMPANY and 3M INNOVATIVE PROPERTIES COMPANY,	:	
Plaintiffs,	:	
v.	:	C. A. No. 17-1730-LPS
KERR CORPORATION,	:	
Defendant.	:	

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MEMORANDUM OPINION

June 7, 2019
Wilmington, Delaware

STARK, U.S. District Judge:

Plaintiffs 3M Company and 3M Innovative Properties Company (collectively, "3M" or "Plaintiffs") brought this suit against Defendant Kerr Corporation ("Kerr" or "Defendant") asserting infringement of 3M's U.S. Patent No. 6,572,693 (the "'693 patent"). The '693 patent generally relates to dental composites.

Presently before the Court is the issue of claim construction. The parties submitted technology tutorials (D.I. 116, 117), objections to such technology tutorials (D.I. 123, 124), claim construction briefs (D.I. 94, 95, 106, 108), exhibits (D.I. 96, 107, 110), an expert declaration (D.I. 109), and supplemental letters (D.I. 162, 164). The Court held a claim construction hearing on February 22, 2019, at which both sides presented oral argument. (D.I. 144 ("Tr."))

I. LEGAL STANDARDS

The ultimate question of the proper construction of a patent is a question of law. *See Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 837 (2015) (citing *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 388-91 (1996)). "It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (internal quotation marks omitted).

"[T]here is no magic formula or catechism for conducting claim construction." *Id.* at 1324. Instead, the Court is free to attach the appropriate weight to appropriate sources "in light of the statutes and policies that inform patent law." *Id.*

"[T]he words of a claim are generally given their ordinary and customary meaning . . . [which is] the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application."

Id. at 1312-13 (internal citations and quotation marks omitted). "[T]he ordinary meaning of a claim term is its meaning to the ordinary artisan after reading the entire patent." *Id.* at 1321 (internal quotation marks omitted). The patent specification "is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

While "the claims themselves provide substantial guidance as to the meaning of particular claim terms," the context of the surrounding words of the claim also must be considered. *Phillips*, 415 F.3d at 1314. Furthermore, "[o]ther claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment . . . [b]ecause claim terms are normally used consistently throughout the patent." *Id.* (internal citation omitted).

It is likewise true that "[d]ifferences among claims can also be a useful guide. . . . For example, the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim." *Id.* at 1314-15 (internal citation omitted). This "presumption is especially strong when the limitation in dispute is the only meaningful difference between an independent and dependent claim, and one party is urging that the limitation in the dependent claim should be read into the independent claim." *SunRace Roots Enter. Co., Ltd. v. SRAM Corp.*, 336 F.3d 1298, 1303 (Fed. Cir. 2003).

It is also possible that "the specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor's lexicography governs." *Phillips*, 415 F.3d at 1316. It bears emphasis that "[e]ven when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope

using words or expressions of manifest exclusion or restriction." *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1372 (Fed. Cir. 2014) (quoting *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004)) (internal quotation marks omitted).

In addition to the specification, a court "should also consider the patent's prosecution history, if it is in evidence." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370 (1996). The prosecution history, which is "intrinsic evidence," "consists of the complete record of the proceedings before the PTO [Patent and Trademark Office] and includes the prior art cited during the examination of the patent." *Phillips*, 415 F.3d at 1317. "[T]he prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Id.*

In some cases, "the district court will need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period." *Teva*, 135 S. Ct. at 841. Extrinsic evidence "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Markman*, 52 F.3d at 980. For instance, technical dictionaries can assist the court in determining the meaning of a term to those of skill in the relevant art because such dictionaries "endeavor to collect the accepted meanings of terms used in various fields of science and technology." *Phillips*, 415 F.3d at 1318. In addition, expert testimony can be useful "to ensure that the court's understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to

establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field." *Id.* Nonetheless, courts must not lose sight of the fact that "expert reports and testimony [are] generated at the time of and for the purpose of litigation and thus can suffer from bias that is not present in intrinsic evidence." *Id.* Furthermore, "statements made by a patent owner during an IPR [inter partes review] proceeding . . . can be considered for claim construction." *Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1362 (Fed. Cir. 2017). Overall, while extrinsic evidence "may be useful" to the court, it is "less reliable" than intrinsic evidence, and its consideration "is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence." *Id.* at 1318-19. Where the intrinsic record unambiguously describes the scope of the patented invention, reliance on any extrinsic evidence is improper. *See Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1308 (Fed. Cir. 1999) (citing *Vitronics*, 90 F.3d at 1583).

Finally, "[t]he construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that "a claim interpretation that would exclude the inventor's device is rarely the correct interpretation." *Osram GmbH v. Int'l Trade Comm'n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (quoting *Modine Mfg. Co. v. U.S. Int'l Trade Comm'n*, 75 F.3d 1545, 1550 (Fed. Cir. 1996)).

II. CONSTRUCTION OF DISPUTED TERMS

A. "being not fully densified"[1]

3M "where the association among the nano-sized particles is such that the cluster has open porosity with respect to such particles and therefore is not near theoretical density"
Kerr Indefinite Alternatively, "not near theoretical density"
Court "where the association among the nano-sized particles is such that the cluster has open porosity with respect to such particles and therefore is not near theoretical density"[2]

Claim 1 is representative and recites "[a] material comprising: (a) a hardenable resin; and (b) a filler comprising (i) clusters of nano-sized particles, said clusters comprising non-heavy metal oxide particles and heavy metal oxides and being not fully densified and (ii) non-agglomerated nano-sized particles . . . ." ('693 patent, cl. 1) The parties' dispute over this first claim term is whether it is indefinite.

Pursuant to 35 U.S.C. § 112, "a patent's claims, viewed in light of the specification and prosecution history, [must] inform those skilled in the art about the scope of the invention with reasonable certainty." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014); *see also Cox Commc'ns, Inc. v. Sprint Commc'n Co. LP*, 838 F.3d 1224, 1231 (Fed. Cir. 2016) (noting relevant inquiry is "whether the 'claims,' not particular claim terms" inform one of scope

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[1] This term appears in claims 1 and 11 of the '693 patent.

[2] 3M's discovery request to compel Kerr to produce testing documents concerning the densification of Kerr's products is hereby DENIED AS MOOT. 3M stated during the claim construction hearing that its request was tied to Kerr's indefiniteness contention with respect to this first claim dispute. (*See* Tr. at 94)

with reasonable certainty). "Indefiniteness must be proven by clear and convincing evidence." *Sonix Tech. Co., Ltd. v. Publications Int'l, Ltd.*, 844 F.3d 1370, 1377 (Fed. Cir. 2017).

As a matter of grammar and syntax, the term "being not fully densified" modifies "said clusters," which refers to "clusters of nano-sized particles." The specification is consistent with this understanding, as it states that "the clusters are not fully densified." ('693 patent at 4:42-43)

The Court agrees with 3M that the specification makes "a clear structural distinction between the clusters of multiple particles that are described in the patent and the conventional solid particles of the prior art." (Tr. at 10) The patent distinguishes the inventive clusters of nano-sized particles from conventional filler particles used in the prior art, which were large, solid, monolithic particles with no open porosity. (*See* D.I. 109 at 5-6) (Declaration of Dr. Christopher Kloxin) "Unlike conventional filler particles, the clusters are not fully densified." ('693 patent at 4:42-43) A person of ordinary skill in the art ("POSA") would understand that the patent is making a binary distinction between large solid particles (which were "fully densified"), on the one hand, and clusters of nano-sized particles (which are not "fully densified"), on the other hand. Accordingly, in the context of this patent, whether or not a substance is fully densified presents a binary inquiry – either it is fully densified or it is not. (*See* Tr. at 10, 13) The term is not a term of degree.

The patent defines "fully densified" as "a particle that is near theoretical density, having substantially no open porosity detectable by standard analytical techniques." ('693 patent at 4:43-46) Kerr argues that the phrase "not near theoretical density" renders the claim indefinite – while a POSA could calculate theoretical density for a particular substance, a POSA would not know how much a substance can deviate from theoretical density and still be covered by the

claim. (*See* Tr. at 33, 38, 39) 3M responds that "open porosity" and "not near theoretical density" are qualitative concepts that describe the clusters as "fundamentally different structures" for solid particles. (*See id.* at 43-45) Since a not fully densified substance has open porosity, it must also not be near theoretical density. (*Id.* at 45) Thus, a substance that is "not fully densified" simply would not have the characteristics that are included in the definition of "fully densified." (*See* D.I. 108 at 6) Again, this is not a term of degree.[3]

B. "clusters of nano-sized particles, said clusters comprising non-heavy metal oxide particles and heavy metal oxides and being not fully densified"[4]

3M No construction necessary
Kerr "clusters of particles that are less than 1 micron in size, said clusters include but are not limited to non-heavy metal oxide particles and heavy metal oxides and are not near theoretical density"
Court No construction necessary

The parties dispute whether "comprising" as used here permits the resin to be included as part of the "clusters of nano-sized particles." The Court agrees with 3M that the resin is not part of the clusters of nano-sized particles.

The plain language of the claim provides that the clusters are comprised of nano-sized particles and nothing else. (*See* Tr. at 54) Claim 1 recites a "material" comprised of a "hardenable resin" and "clusters of nano-sized particles." ('693, cl. 1) Thus, the resin is a

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[3] The Court has resolved the parties' first claim construction dispute principally based on intrinsic evidence. The Court has not considered 3M's extrinsic evidence of Kerr's prior representations in various courts. (*See* D.I. 108 at 10-14)

[4] This term appears in claims 1 and 11 of the '693 patent.

separate component of the overall claimed material.

The specification also supports this conclusion. It teaches that to assess whether a cluster is fully densified, it is necessary to look at the association among the nano-sized particles, irrespective of what substances fills the voids amongst the particles. (*See* Tr. at 70, 74; *see also* '693 patent at 4:21-31) Furthermore, the characteristics of the substance that fills the voids amongst the nano-sized particles are irrelevant to the densification of the particles. (*See* Tr. at 64-65; *see also* '693 patent at 4:23-27)

Having resolved the parties' dispute, the Court finds that it is not necessary also to construe the disputed claim term.

C. "nano-sized particles"[5]

3M "particles with an average diameter of less than 200 nm"
Kerr "particles that are less than 1 micron in size"
Court "particles with an average diameter of less than 200 nm"

The Court agrees with 3M that the patentee acted as its own lexicographer with respect to this term. The "Detailed Description of the Invention" provides, under the sub-heading "Filler Particles," that "[t]he average diameter of the nano-sized particles, preferably based on TEM, is less than 200 nm, preferably less than 100 nm, more preferably less than 50 nm, and most preferably less than 20 nm." ('693 patent at 4:14-18) While the other sizes noted in this sentence are noted as preferable embodiments, the "average diameter . . . ***is*** less than 200 nm" –

[5] This term appears in claims 1, 6, 7, 11, 16, and 17 of the '693 patent.

which (in context) would be understood by a POSA as a clear and unequivocal statement of claim scope, ***not*** merely a preferred embodiment. That the average diameter is preferably ***measured*** using TEM is irrelevant to the dispute.

Kerr's reliance on extrinsic evidence for the ordinary meaning of "nano" does not overcome the patentee's express definition. *See 3M Innovative Props. Co. v. Avery Dennison Corp.*, 350 F.3d 1365, 1371 (Fed. Cir. 2003) ("[A] definition of a claim term in the specification will prevail over a term's ordinary meaning if the patentee has acted as his own lexicographer and clearly set forth a different definition.").

D. "said nano-sized particles"[6]

3M "said particles with an average diameter of less than 200 nm"
Kerr Indefinite
Court Claim 7: "said 'nano-sized particles' referred to in claim element 1(b)(ii)" Claim 17: "said 'nano-sized particles' referred to in claim element 11(ii)"

The parties disagree over whether the term "said nano-sized particles" in dependent claim 7 refers to the nano-sized particles in the clusters of claim element 1(b)(i) or the non-agglomerated nano-sized particles in claim element 1(b)(ii).[7] Claim 7 is representative and recites "[t]he material of claim 1, wherein said filler comprises at least about 60% by weight of said clusters and at most about 40% by weight of said nano-sized particles, based on the total

[6] This term appears in claims 7 and 17 of the '693 patent.

[7] Similarly, with respect to claim 17, the issue is whether the term "said nano-sized particles" in dependent claim 17 refers to the nano-sized particles in the clusters of claim element 11(i) or the non-agglomerated nano-sized particles in claim element 11(ii).

filler." ('693 patent, cl. 7) The "filler" in claim element 1(b) has two components: (1) clusters of nano-sized particles and (2) non-agglomerated nano-sized particles. (*Id.*, cl. 1) Similarly, claim 7 refers to claim 1 and notes that the "filler comprises . . . said clusters and . . . said nano-sized particles, based on the total filler." (*Id.*, cl. 7)

It would be illogical for "said nano-sized particles" to refer to those that make up the clusters in claim element 1(b)(i), because claim 7 recites the two filler components (i.e., clusters and nano-sized particles) as making up certain weights of the total filler. Therefore, a POSA would understand that "said nano-sized particles" must refer to those in claim 1(b)(ii).

Although the patentee knew how to call out "non-agglomerated nano-sized particles" and did so in dependent claim 6, the Court is not persuaded that claim 6 undermines its conclusions with respect to claim 7, because claim 6 does not follow the same structure as claims 1 and 7.

Kerr has failed to prove by clear and convincing evidence that the claim is indefinite. 3M's proposed construction, however, does not resolve the parties' dispute. Accordingly, the Court will adopt its own construction.

III. CONCLUSION

The Court construes the disputed terms as explained above. An appropriate Order follows.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

3M COMPANY and 3M INNOVATIVE PROPERTIES COMPANY,	:	
Plaintiffs,	:	
v.	:	C. A. No. 17-1730-LPS
KERR CORPORATION,	:	
Defendant.	:	

ORDER

At Wilmington, this **7th** day of **June, 2019**:

For the reasons set forth in the Memorandum Opinion issued this date,

IT IS HEREBY ORDERED that the claim terms in this case are construed as follows:

Claim Term	**Court's Construction**
"nano-sized particles"	"particles with an average diameter of less than 200 nm"
"being not fully densified"	"where the association among the nano-sized particles is such that the cluster has open porosity with respect to such particles and therefore is not near theoretical density"
"clusters of nano-sized particles, said clusters comprising non-heavy metal oxide particles and heavy metal oxides and being not fully densified"	No construction necessary
"said nano-sized particles" (claim 7)	"said 'nano-sized particles' referred to in claim element 1(b)(ii)"
"said nano-sized particles" (claim 17)	"said 'nano-sized particles' referred to in claim element 11(ii)"

UNITED STATES DISTRICT JUDGE