UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF OHIO
EASTERN DIVISION

TERVES LLC, Plaintiff, v. YUEYANG AEROSPACE NEW MATERIALS CO., LTD. *et al.*, Defendants.	)	CASE NO.: 1:19-CV-1611 JUDGE DONALD C. NUGENT <u>MEMORANDUM OPINION AND ORDER</u>

This matter is before the Court for claim construction. The parties have filed opposing Opening Claim Construction Briefs and Responses in support of their respective interpretations of disputed terms (ECF # 36, 37, 45, 46). The Court has heard oral arguments on the issue, and the parties filed a post-hearing Joint Notice of agreement on certain disputed terms. (ECF #83, 86). The issues are now fully briefed and ripe for consideration.

FACTUAL AND PROCEDURAL HISTORY

Terves LLC ("Terves") filed this action against Yueyang Aerospace New Materials Co., ("Yueyang"), Ecometal Inc., and Nick Yuan alleging violations of three U.S. Patents, Numbers 9,903,010 ("the '010 Patent"), 10,329,653 ("the '653 Patent"), and 10,689,740 ("the '740 Patent"). The Patents relate to dissolvable magnesium materials for use as components in oil drilling. Originally Terves contended that none of the patent terms require court construction. Ecometal and

Mr. Yuan (collectively "Ecometal"), on the other hand, submitted several terms for construction. Throughout the course of these proceedings the parties convened and came to an agreement on the meaning of several of the originally disputed terms. There now remain seven terms that Ecometal is asking the Court to construe.

LEGAL STANDARD

In order to determine the proper construction of disputed claims, the Court must look to several sources identified by the Patent Act, and by those Federal Courts that have interpreted and clarified the requirements of the Act. However, non-technical terms may not require elaborate interpretation. *See Brown v. 3M*, 265 F.3d 1349, 1352 (Fed. Cir. 2001). "The criterion [for claim construction] is whether the explanation aids the court and the jury in understanding the term as it is used in the claimed invention." *Funai Elec. Co. V. Daewoo Elecs. Corp.*, 616 F.3d 1357, 1366-67 (Fed. Cir. 2010).

"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.'" *Philips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005)(*quoting Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111 (Fed. Cir. 2004); *see also Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)("we look to the words of the claims themselves . . . to define the scope of the patented invention"). Further, although Congress has required that a patent specification should include a segment wherein the inventor "shall particularly specify and point out the part, improvement, or combination, which he claims as his own invention or discovery," (Act of July 4, 1836, ch. 357, § 6, 5 Stat. 117, 119), the Supreme Court has long since made clear that the claims themselves are "of

primary importance, in the effort to ascertain precisely what it is that is patented." *Merrill v. Yeomans*, 94 U.S. 568, 570 (1876); *see also, e.g.*, *White v. Dunbar*, 119 U.S. 47, 52 (1886); *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 339 (1961).

In determining what a claim means, the Federal Circuit has repeatedly held that the words of the claim are generally to be given their ordinary and customary meaning, and has defined "ordinary and customary meaning" as "the meaning that the term would have to a person of ordinary skill in the art in question" at the time of the effective filing date of the patent application. *Philips*, 415 F.3d at 1312-13 (citations omitted). A person of ordinary skill in the art is presumed to have read the claim not only in the context of the particular claim containing the disputed term, but in the context of the entire patent, including the specification, and with knowledge of the prosecution history. *Multiform Desiccants, Inc. v. Medzan, Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998).

The specification is "the single best guide to the meaning of a disputed term," and the specification "acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication." *Philips* at 1320 (*quoting Vitronics*, 90 F.3d at 1582; *Irdeto Access, Inc. v. Echostar Satellite Corp.*, 383 F.3d 1295, 1300 (Fed. Cir. 2004)). Section 112 of the Patent Act, 35 U.S.C. § 112, states that the specification

> shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains ... to make and use the same... [and] ... shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Although reference to the specification is potentially highly useful in construing or defining specific terms, or in providing context to terms within the individual claims, the Federal Circuit has warned courts against reading limitations from the specification, most especially from the description of

specific or preferred embodiments, into an individual claim. *Philips* at 1322; *Texas Digital Systems, Inc. v. Telegenix, Inc.,* 308 F.3d 1193 (Fed. Cir. 2002); *Nazomi Communications, Inc. v. ARM Holdings, PLC*, 403 F.3d 1364, 1369 (Fed. Cir. 2005); *Gemstar-TV Guide Int'l, Inc. v. ITC*, 383 F.3d 1352, 1366 (Fed. Cir. 2004). "The written description part of the specification itself does not delimit the right to exclude. That is the function and purpose of the claims." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995)(en banc)(reaffirmed by *Philips* at 1312). "The patentee is free to chose a broad term and expect to obtain the full scope of its plain and ordinary meaning unless the patentee explicitly redefines the term or disavows its full scope." *Thorner v. Sony Computer Entertainment America, LLC,* 669 F.3d 1362, 1367 (Fed. Cir. 2012).

The prosecution history may also be relevant in construing a claim, in so far as it may provide some evidence as to how the inventor, and the United States Patent and Trademark Office ("PTO") understood the patent, and as to whether the inventor, by disclaiming a particular interpretation of the patent, "limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Philips* at 1317 (citing *Vitronics*, 90 F.3d at 1582-83); *see also Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1384 (Fed. Cir. 2005); *ZMI Corp. V. Cardiac Resuscitator Corp.*, 844 F.2d 1576, 1580 (Fed. Cir. 1988).

The language of the claim, the information contained in the specification, and the prosecution history available through the public notice requirements in the patent process are all considered intrinsic sources for determining the meaning of disputed terms in a patent claim. In addition, outside or extrinsic sources such as dictionaries, treatises, and expert testimony may all be considered to discern the meaning of disputed terms so long as they do not "contradict claim

meaning that is unambiguous in light of the intrinsic evidence." *Philips* at 1324 (*citing Vitronics*, 90 F.3d at 1583-84; *Intel Corp. v. VIA Techs., Inc.*, 319 F.3d 1357, 1367 (Fed. Cir. 2003).

ANALYSIS

The parties have agreed on definitions for nine terms, and have identified seven disputed terms within the patents that the Ecometal Defendants still believe require construction. (ECF #86). The parties agree that the remaining terms originally identified by Ecometal as disputed do not require construction.

A. Agreed Terms

The agreed constructions are as follows:

1. "*composite*": a material made of two or more components
2. "*in situ*": in place
3. "*precipitation*"/"*precipitate*"/"*precipitated*"/"*precipitant*": something having a new phase different from what existed before
4. "*controlled selection of a mixing technique*": a non-random selection of a mixing technique
5. "*solutionizing*": a heat treatment process step
6. "*additive material*": a material that is added
7. "*secondary metal*": an additional metal that is added
8. "*forming*": coming into existence
9. "*morphology*": shape

B. Disputed Terms

The disputed terms are discussed individually below.

1. *Intermetallic phase*

The phrase "intermetallic phase" appears in Claims 1, 2, 14-20, 28, 29, and 37-42 of the '010 Patent, and claims 1, 12, 49, 73, and 74 of the '653 Patent. Terves contends no construction is necessary for this term, but, alternatively proposes that it be defined as "compound that has two or more metals." Ecometal proposes the following definition: "solid phase involving two or more metallic or semi-metallic elements with an ordered structure and well-defined and fixed stoichiometry." Terves, at the hearing and through its briefing, accepts that in the context of the relevant Patents, the intermetallic phase refers to solid particles, and that it contains magnesium or a magnesium alloy and an additive material. (ECF #36). In its claim construction brief, Terves describes how the patent specifications support defining "intermetallic phase" as "the solid particles formed by the combination of magnesium and the additive material. . . ." Therefore, the Ecometal Defendants' inclusion of "solid" in the definition is both supported and substantively uncontested.

The remainder of Ecometal's proposed definition, however, is unsupported by the patent language and adds limitations not included in the patent claims. Nothing in the patent or in the extrinsic evidence before the Court supports limiting "intermetallic phase" to combinations "with an ordered structure and well-defined and fixed stoichiometry." Adopting such a definition would narrow the claim term beyond that which was included in the plain language of the patent, effectively eliminating compositions expressly addressed within the patent itself. For these reasons, the Court adopts the following definition that reflects the parties' agreement that phase represents a solid state, and a combination of metals, without narrowing the claim by adding extraneous limitations not

contained in the language of the patent. "Intermetallic phase" is construed to mean: "solid compound that has a combination of two or more metals."

2. *Galvanically-active*

The term "galvanically active" is found in the '010 Patent and the '653 Patent. Ecometal proposes defining "galvanically active" as having "a higher or lower galvanic potential compared to the magnesium or magnesium alloy." Terves contends no construction is necessary, but alternatively suggest that it could be defined as "allowing for an electrochemical reaction."

The Court finds that this term should be construed according to its ordinary and customary meaning without imposing any further definition which may limit or expand the claim language itself. Further explanation is not necessary to aid the court or the jury in understanding this term as it is used in the claimed invention. It appears clear from the parties' submissions that a person of ordinary skill in the art ("POSITA") would understand what this phrase means after reviewing the patents, including the specification language in the '010 and '653 Patents, which has been cited by Ecometal. (ECF #37, PageID # 899-900). To the extent that the request for further construction is aimed at assisting potential jurors in understanding this term, the Court finds that the language in the patent itself is not so far out of the realm of common experience that a juror could not understand its meaning. Further, neither of the proposed definitions would be likely to enhance a jurors understanding of the term. Therefore, no further construction is warranted.

3. *Unalloyed additive material*

The parties have agreed on the meaning of "additive material" as used in the '010 and the '653 Patents. They have defined it as "a material that is added." Ecometal seeks to further define "unalloyed additive material" as "unreacted additive material" while Terves argues either for no

construction or for defining it as a "portion of the additive material that does not form a new compound." In its briefing, Terves further describes this term as "the portion of the additive material that does not bond with the magnesium to form a new compound." Ecometal admits that the definitions advanced by both parties are technically similar, and that the patent specification language, in combination with the claims language, would allow a POSITA to understand what the term means. As there is no substantive dispute as to the meaning of the term in the context of this patent, and as the patent language itself would properly inform a POSITA of the meaning of the term, the Court finds that this term should be construed according to its ordinary and customary meaning and no further definition need be provided. Further explanation is not necessary to aid the court or the jury in understanding this term as it is used in the claimed invention.

4. *Sufficient quantities*

This term is found in Claims 49 and 73 of the '653 Patent. Ecometal proposes it be defined as "present in sufficient but unspecified quantities to cause the composite to have a specified dissolution rate." As evidenced by the use of the word "sufficient" within the definition of that same term, Ecometal's proposed definition does not so much define the term as expand upon it. Terves argues no definition is necessary, and alternatively proposes defining it simply as "enough." The Court finds that this term is self-explanatory and should be construed according to its ordinary and customary meaning without imposing any limitations or restrictions not specifically included in the claim language itself. A POSITA would certainly understand its meaning within the context of the Patent and further explanation is not necessary to aid the court or the jury in understanding this term as it is used in the claimed invention

5. *Improve tensile strength, ductility, or combination thereof*

This term is found in Claims 10, 11, 24, and 25 of the '010 Patent. Ecometal suggests that the entire phrase be defined as "any increase or decrease in properties that would have been desirable." Ecometal obtained this proposed definition not from the language or context of the Patents at issue in this case but from an Examiner's opinion of what the word "improve" should mean in an allegedly "related" Patent. This definition is over broad and indefinite. It does not limit the properties at issue to tensile strength and ductility, and does not give the reader any indication as to whether an increase or decrease is desirable for each relevant property in the context of the '010 Patent.

Terves argues that no construction is necessary for this term. Alternatively, it would have the Court define this term as "to provide a greater tensile strength (resistance of a material to break under tension), greater ductility (ability to undergo deformation before rupture), or both." Ecometal agreed at the hearing to Terves' proposed definitions of tensile strength ("resistance of a material to break under tension") and ductility ("ability to undergo deformation before rupture"), leaving only the word "improve" in dispute. Where Terves would define improve as "to provide greater," tensile strength and/or ductility, Ecometal's proposal would define "improve" as any desirable increase or decrease in those properties. This would not make sense as there is no basis upon which to believe, in the context of the Patent, that a POSITA could read that Patent in such a way that they would understand a decrease in those properties would ever be desirable. While the Court believes that a POSITA would need no construction of this phrase, Terves' proposed instruction could assist a jury in understanding the terms "improve," "tensile strength," and "ductility," within the context of the Patent at issue. Therefore, the Court adopts Terves' proposed construction of these terms and

defines "improve tensile strength, ductility, or combinations thereof" as "provide a greater tensile strength (resistance of a material to break under tension), greater ductility (ability to undergo deformation before rupture), or combinations thereof."

6. *Melting point/ Melting temperature*

The term "melting point" or "melting point temperature" is used in the '010 Patent to describe both the temperature of "magnesium or magnesium alloy" and of "additive material." The parties agree that the term "melting point" is generally known to be the temperature at which a solid material melts or reaches its liquid state. Therefore, using "melting point" to describe the temperature of a pure metal would need no construction, as it is fully liquified at the same temperature at which it begins to liquify. However, because the term is used within the '010' Patent not only in connection with pure substances but with alloys, or combined , the question becomes more complicated. An alloy includes a mix of elements, which may each have different melting points. Therefore, a solid alloy may begin to liquify at one temperature, but not fully liquify until it reaches a higher temperature. The temperature at which an alloy begins to melt is called the solidus temperature, while the temperature at which it is fully liquified is called the liquidus temperature. In between these two temperatures, in the solidus-liquidus range, the material includes both solid and liquid phases of the alloy simultaneously. The parties disagree on whether the term melting point temperature refers to the solidus or liquidus temperature when the Patent refers to the melting point temperature of an alloy.

Ecometal's admits that no construction is necessary when the term "melting point" is used to describe the temperature of magnesium with zero additive. However, it seeks to define the melting point of an alloy as the liquidus temperature. It further attempts to define the melting temperature of

an additive using both terms, advocating for the construction: "melting point temperature or liquidus temperature" of the additive material. Terves originally contended that the melting point temperature should simply be defined as "the temperature at which liquid is formed." At the hearing, they honed that definition slightly acknowledging the solidus/liquidus discrepancy in the liquification of alloys, and clarifying that they believe the melting temperature is that at which liquid is first formed. This would be the equivalent of the solidus temperature.

The ASM handbook defines that melting point temperatures that at which "a pure metal, compound, or eutectic changes from solid to liquid; [sic] the temperature at which the liquid and the solid are in equilibrium." A state of equilibrium implies a balance between two states, not necessarily a completed transition from one to the other. This better supports Terves' definition of melting point which describes the temperature at which that transition begins to occur, not the temperature at which it has concluded. In addition, Claim 1 of the '653 Patent, when comparing the melting point temperature of additive material with that of the magnesium composite (which is made up of magnesium or magnesium alloy), refers to the solidus temperature of the magnesium [composite]. This again supports Terves' interpretation of melting point as the temperature at which the material begins to melt (the solidus temperature). In addition, the common usage of the phrase melting point refers to that point in time when a solid begins to melt, not when it has completely liquified. Therefore, absent some other indicator within the Patent language, the melting point temperature is better defined at the temperature at which the referenced solid begins to melt, than the temperature at which it is fully liquified. The phrase "melting point temperature" is thus construed to mean "the temperature at which liquid is first formed."

7. *Portion of said additive materials forming solid particles/a portion of said additive material remaining unalloyed additive material*

This term is found in Claims 20, 28, 29 and 37-42 of the '010 Patent, and Claims 12 and 71 of the '653 Patent. Ecometal claims that this language fails to inform a POSITA of the scope of the invention in the above listed claims and that it is, therefore, indefinite. Terves argues that the term needs no construction and that it adequately describes the claimed limitations. Several segments of this phrase have already been defined in the constructions set forth above. The parties previously agreed to define "additive material" as "a material that is added." Further, the Court found that "unalloyed additive material" needs no further construction, as set forth above. Similarly, none of the remaining terms in this phrase require construction. The language used is straight forward and its meaning is apparent on its face.

Ecometal's argument that this language renders the claims indefinite is not well taken at this juncture. Ecometal has the burden of proving indefiniteness by clear and convincing evidence. *See BASF Corp. v. Johnson Matthey Inc.*, 875 F.3d 1360, 1365 (Fed. Cir. 2017). That burden has not been met. A patent claims is indefinite only if when "read in the light of the specification delineating the patent, and the prosecution history, [the claim] fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124, 189 L.Ed.2d 37 (2014). Arguing that a claim is over broad is not a basis upon which to determine indefiniteness. *See, SmithKline Beecham Corp. v. Apotex Corp.*, 403 F.3d 1331, 1341 (Fed. Cir. 2005). Ecometal submits only extrinsic evidence in the form of own expert's argument in support of its position that these claims are indefinite because a POSITA could not determine what portion of additive material forms solid particles versus what portion remains unalloyed in the

claimed invention. There is no evidence to suggest, however, that the invention requires any particular ratio of alloyed and unalloyed materials is required by the invention so long as some portion of the additive material reacts with magnesium to form a solid and some remains unalloyed. Ecometal's expert admitted during deposition that a POSITA would be able to understand that the scope of the invention is defined not by the existence of a specific portion of additive material meeting the remaining limitation conditions, but of any portion meeting those conditions. (Medlin Depo., ECF #36-5, 81:19-82:13). Terves' expert also opined that a POSITA would understand this from the claim language, especially as supported by the specification language from the '010 and '653 Patents. (Swanger Report, ECF #36-4, at 12-13). There is no evidence, at this point, to suggest that amount of each portion is relevant to whether a competing product meets this limitation of the claimed invention. Further, even Ecometal believes the limitation is overly broad and the portion size should be limited to a specific amount or range of amounts, that would not support a finding of indefiniteness. "Breadth is not indefiniteness." *SmithKline Beecham Corp. v. Apotex Corp.*, 403 F.3d 1331, 1341 (Fed. Cir. 2005); *see also, BASF Corp. V. Johnson Matthey Inc.,* 875 F.3d 1360, 1365 (Fed. Cir. 2017). For these reasons, Ecometal has not satisfied its burden of showing that this claim term is indefinite by clear and convincing evidence, and the term in question needs no further construction.

CONCLUSION

For the reasons set forth above, the Court adopts the following construction of the disputed terms in the relevant patents:

1. "intermetallic phase": solid compound that has a combination of two or more metals

2. "improve tensile strength, ductility, or combinations thereof": provide a greater tensile strength (resistance of a material to break under tension), greater ductility (ability to undergo deformation before rupture), or combinations thereof

3. "melting point/melting point temperature": the temperature at which liquid is first formed

The remaining disputed terms require no further construction and shall be given their ordinary and customary meanings. IT IS SO ORDERED.

DONALD C. NUGENT
UNITED STATES DISTRICT JUDGE

Date: March 29, 2021