IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

NINGDE AMPEREX TECHNOLOGY, LIMITED,	§	
	§	
Plaintiff,	§	
	§	
v.	§	CIVIL ACTION NO. 2:24-CV-00728-JRG
	§	
ZHUHAI COSMX BATTERY CO., LTD.,	§	
	§	
Defendant.	§	
	§	

CLAIM CONSTRUCTION ORDER

Before the Court is Plaintiff's Opening Claim Construction Brief (Dkt. No. 118) filed by Ningde Amperex Technology, Limited ("Plaintiff" or "ATL"). Also before the Court is the Defendant's Responsive Claim Construction Brief (Dkt. No. 130) filed by Zhuhai Cosmx Battery Co., Ltd. ("Defendant" or "Cosmx"), along with Plaintiff's Reply Claim Construction Brief (Dkt. No. 134).

The Court held a hearing on January 20, 2026. Having considered the parties' briefing, submitted evidence, and heard arguments from counsel, the Court resolves the disputes as ordered herein.

I. BACKGROUND

Plaintiff alleges infringement of six patents, of which four patents contain disputed terms and are the subject of this claim construction proceeding: U.S. Patent No. 11,575,148 ("the '148 Patent"), U.S. Patent No. 11,769,910 ("the '910 Patent"), U.S. Patent No. 11,799,131 ("the '131 Patent"), and U.S. Patent No. 12,015,118 ("the '118 Patent") (collectively, "the Patents-at-Issue").

The Patents-at-Issue relate to energy storage devices and, in particular, the inner workings of lithium-ion batteries.

The ’148 Patent is titled, “Porous film and lithium-ion battery,” and its Abstract sets forth as follows:

> A porous film, including a binder and inorganic particles. The porous film includes pores formed by the binder. The pores at least include a part of the inorganic particles. The inorganic particles have particle sizes that Dv10 is in a range of 0.015 μm to 3 μm, Dv50 is in a range of 0.2 μm to 5 μm, and Dv90 is in a range of 1 μm to 10 μm. Dv10 of the inorganic particles is less than Dv50 of the inorganic particles, and Dv50 of the inorganic particles is less than Dv90 of the inorganic particles, and the inorganic particles have particle sizes that the ratio of Dv90 to Dv10 is in a range of 2 to 100.

The ’910 Patent is titled, “Electrolyte and electrochemical device,” and its Abstract sets forth as follows:

> An electrolyte including a dinitrile compound, a trinitrile compound, and propyl propionate. Based on the total weight of the electrolyte, the weight percentage of the dinitrile compound is X, the weight percentage of the trinitrile compound is Y, and the weight percentage of the propyl propionate is Z, wherein, about 2.2 wt %≤(X+Y)≤about 8 wt %, about 0.1≤(X/Y)≤about 2.3, about 5 wt %≤Z≤about 50 wt %, 1 wt %<Y<5 wt %, and about 0.02≤(Y/Z)≤about 0.3; wherein wherein the dinitrile compound is one or more compounds selected from the group consisting of butanedinitrile, adiponitrile, and 1,4-dicyano-2-butene; and the trinitrile compound is one or more compounds selected from the group consisting of 1,3,6-hexanetricarbonitrile, 1,2,6-hexanetricarbonitrile and 1,2,3-tris(2-cyanoethoxy)propane.

The ’131 Patent is titled, “Electrolyte and electrochemical device,” and its Abstract sets forth as follows:

> An electrochemical device, including an electrode and an electrolyte. The electrolyte including a dinitrile compound, a trinitrile compound, and propyl propionate. Based on the total weight of the electrolyte, the weight percentage of the dinitrile compound is X, the weight percentage of the trinitrile compound is Y, and the weight percentage of the propyl propionate is Z. Wherein about 2 wt %≤(X+Y)≤ about 11 wt %, about 0.1≤(X/Y)≤ about 8. The electrode including a coating, which including a single-sided sub-coating and a double-sided coating, the electrode with the single-sided sub-coating has an electrode compaction density D1, and the electrode with the double-sided coating has an electrode compaction

> density D2, where about 0.8≤D1/D2≤ about 1.2. The electrolyte and D1/D2 of the electrodes has a significant effect on the cycle performance of the electrochemical device.

The ’118 Patent is titled, “Electrode electrochemical device and electronic device,” and its Abstract sets forth as follows:

> An electrode includes a current collector; a first active material layer including a first active material; and a second active material layer including a second active material; wherein the first active material layer is arranged between the current collector and the second active material layer. The first active material layer is formed on a surface of the current collector, and a particle size of 90% accumulative volume of the first active material is less than 40 μm. The active material layer is used to ensure that the electrochemical device and the electronic device do not generate a short circuit when pressed by an external force, thereby ensuring the mechanical safety performance of the electrochemical device and the electronic device.

II. LEGAL STANDARDS

“‘[T]he 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) (*en banc*) (quoting *Innova/Pure-Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). “[T]he court has the power and obligation to construe as a matter of law the meaning of language used in the patent claim.” *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (*en banc*); *aff’g,* 517 U.S. 370, 390 (1996).

To ascertain the meaning of claims, courts look to three primary sources: the claims, the specification, and the prosecution history. *Markman*, 52 F.3d at 979. The specification must contain a written description of the invention that enables one of ordinary skill in the art to make and use the invention. *Id.* A patent’s claims must be read in view of the specification, of which they are a part. *Id.* For claim construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims. *Id.* “One purpose for examining the specification is to determine if the patentee has limited the scope of the claims.”

Watts v. XL Sys., Inc., 232 F.3d 877, 882 (Fed. Cir. 2000).

When construing claims, "[t]here is a heavy presumption that claim terms are to be given their ordinary and customary meaning." *Aventis Pharm. Inc. v. Amino Chems. Ltd.,* 715 F.3d 1363, 1373 (Fed. Cir. 2013) (citing *Phillips,* 415 F.3d at 1312–13). Courts must therefore "look to the words of the claims themselves . . . to define the scope of the patented invention." *Id.* (citations omitted). "[T]he ordinary and customary meaning of a claim term 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." *Phillips,* 415 F.3d at 1313. This "person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id.*

There are, however, two exceptions to this rule. The first exception is when a patentee sets out a definition and acts as his own lexicographer. The second exception is when the patentee disavows the full scope of a claim term either in the specification or during prosecution. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1580 (Fed. Cir. 1996).

The patentee is free to be his own lexicographer, but any special definition given to a word must be clearly set forth in the specification. *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1388 (Fed. Cir. 1992). As the Supreme Court stated long ago, "in case of doubt or ambiguity it is proper in all cases to refer back to the descriptive portions of the specification to aid in solving the doubt or in ascertaining the true intent and meaning of the language employed in the claims." *Bates v. Coe*, 98 U.S. 31, 38 (1878). Although the specification may indicate that certain embodiments are preferred, particular embodiments appearing in the specification will not be read into the claims when the claim language is broader than the embodiments. *Electro Med. Sys., S.A.*

v. Cooper Life Sciences, Inc., 34 F.3d 1048, 1054 (Fed. Cir. 1994).

But "[w]here the specification makes clear that the invention does not include a particular feature, that feature is deemed to be outside the reach of the claims of the patent, even though the language of the claims, read without reference to the specification, might be considered broad enough to encompass the feature in question." *Scimed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1341 (Fed. Cir. 2001). "The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope." *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). "Absent a clear disavowal in the specification or the prosecution history, the patentee is entitled to the full scope of its claim language." *Home Diagnostics, Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1358 (Fed. Cir. 2004). A disavowal or disclaimer must be clear and unmistakable. *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1366-67 (Fed. Cir. 2012),

The prosecution history also continues to play an important role in claim interpretation. Like the specification, the prosecution history helps to demonstrate how the inventor and the United States Patent and Trademark Office ("PTO") understood the patent. *Phillips*, 415 F.3d at 1317. Because the file history, however, "represents an ongoing negotiation between the PTO and the applicant," it may lack the clarity of the specification and thus be less useful in claim construction proceedings. *Id.* Nevertheless, the prosecution history is intrinsic evidence that is relevant to the determination of how the inventor understood the invention and whether the inventor limited the invention during prosecution by narrowing the scope of the claims. *Id.*; *see Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1350 (Fed. Cir. 2004) (noting that

"a patentee's statements during prosecution, whether relied on by the examiner or not, are relevant to claim interpretation").

Intrinsic evidence, therefore, is the primary resource for claim construction. *See Power-One, Inc. v. Artesyn Techs., Inc.,* 599 F.3d 1343, 1348 (Fed. Cir. 2010) (citing *Phillips,* 415 F.3d at 1312). But for claim terms with less-apparent meanings, courts consider " 'those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean[,] [including] the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.' " *Phillips,* 415 F.3d at 1314 (quoting *Innova*, 381 F.3d at 1116). In those situations, "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 Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015) (citation omitted). "In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factual findings about that extrinsic evidence. These are the 'evidentiary underpinnings' of claim construction that we discussed in *Markman*, and this subsidiary factfinding must be reviewed for clear error on appeal." *Id.* (citing 517 U.S. 370).

However, the intrinsic record may not be sacrificed in favor of extrinsic evidence. According to *Phillips*, reliance on dictionary definitions, for example at the expense of the specification had the effect of "focus[ing] the inquiry on the abstract meaning of words rather than on the meaning of claim terms within the context of the patent." *Id.* at 1321.

The Supreme Court of the United States has "read [35 U.S.C.] § 112, ¶ 2 to require that a patent's claims, viewed in light of the specification and prosecution history, inform those skilled

in the art about the scope of the invention with reasonable certainty." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910, 134 S. Ct. 2120, 2129 (2014). "[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Id.* The claims "must be precise enough to afford clear notice of what is claimed," but that consideration must be made while accounting for the inherent limitations of language. *Id.* at 908. "Indefiniteness must be proven by clear and convincing evidence." *Sonix Tech. Co. v. Publ'ns Int'l, Ltd.*, 844 F.3d 1370, 1377 (Fed. Cir. 2017).

III. AGREED TERMS

The parties have reached agreement on the following terms as reflected in their Joint Claim Construction Chart Pursuant to P.R. 4-5(d) (Dkt. No. 136):

Claim Term	Agreed Construction
"a dinitrile compound" ('910 Patent, claims 1, 2, 12, 16, 20, 21) ('131 Patent, claims 1, 4-5, 14, 17)	"a compound with two cyano groups"

"a trinitrile compound"" ('910 Patent, claims 1, 2, 12, 16, 20, 21) ('131 Patent, claims 1, 6, 14)	"a compound with three cyano groups"
"is one selected from the group consisting of … and any combination thereof" ('910 Patent, claims 1, 12, 20) ('131 Patent, claims 1, 5, 10, 14, 17)	The dinitrile/trinitrile compounds in the electrolyte consist of only the named compounds and no others.
"the positive plate" "the negative plate" ('498 Patent, claims 1, 9, 17, 20-22)	"the positive electrode" "the negative electrode"
All "wherein" clauses (All Asserted Claims)	Limiting

IV. DISPUTED TERMS

1. "a weight percentage of the dinitrile compound is X"/"a weight percentage of the trinitrile compound is Y"

Claim Term	Plaintiff's Construction	Defendant's Construction
"a weight percentage of the dinitrile compound is X"/ "a weight percentage of the trinitrile compound is Y" ('910 Patent, claims 1, 4, 6, 12, 18-20, 22-25) ('131 Patent, claims 1, 7, 14)	Plain and ordinary meaning	"a weight percentage of all dinitrile compounds present in the electrolyte is X"/ "a weight percentage of all trinitrile compounds present in the electrolyte is Y"

The first disputed issue is whether all dinitrile compound X and trinitrile compound Y present in the electrolyte must be limited to those compounds identified in the Markush groups

(and thereby form the basis of the weight percentage calculation), or whether other unidentified dinitrile and trinitrile compounds may also be present in the electrolyte. As stated above, the parties have agreed that the phrase "is one selected from the group consisting of … and any combination thereof" ('910 Patent, Claims 1, 12, 20; '131 Patent, Claims 1, 5, 10, 14, 17) means "the dinitrile/trinitrile compounds in the electrolyte consist of only the named compounds and no others."

Plaintiff ATL argues that although only the specific dinitrile and trinitrile compounds enumerated in the Markush groups form the basis of the weight percentage calculation, other dinitrile and trinitrile compounds may also be present in the electrolyte without being counted toward the claimed weight percentage calculation. Plaintiff contends that the agreed-upon closed list construction applies to the terms "the dinitrile compound" and "the trinitrile compound," not to the term "electrolyte" itself. Because the independent claim recites "an electrolyte, comprising a dinitrile compound [and] a trinitrile compound," Plaintiff argues that "a" means "one or more," such that the electrolyte of claim 1 of the '910 Patent can contain many different dinitrile and trinitrile compounds.

Plaintiff finds support by citing tables in the '910 Patent specification that list additional trinitrile compounds not included in the Markush group. Plaintiff also notes that claim 1 of the '131 Patent limits only trinitriles to a Markush group and does not limit dinitriles, which are restricted only in dependent claim 5. Moreover, the list of trinitriles in claim 1 of the '131 Patent is broader than in the '910 Patent, which Plaintiff argues further supports that X and Y include only compounds named in the respective Markush groups, not all dinitrile or trinitrile compounds that may be present.

Defendant CosMX contends that all dinitrile and trinitrile compounds present in the electrolyte must be limited to those identified in the Markush groups. In other words, no unidentified dinitrile or trinitrile compounds may be present in the electrolyte. Defendant contends that Plaintiff's position is undermined by the parties' agreed construction, which establishes that Markush groups are closed lists that define the electrolyte composition itself.

Defendant cites *Abbott Laboratories v. Baxter Pharmaceutical Products, Inc*., 334 F.3d 1274, 1280 (Fed. Cir. 2003), for the proposition that Markush group claiming is "a listing of specified alternatives of a group in a patent claim" and constitutes a "closed" list. Defendant argues that because claim 1 of the '910 Patent recites specific weight percentages and specifies that the compounds are "selected from the group consisting of" (closed Markush groups), the closed Markush groups necessarily limit the claimed electrolytes to electrolytes containing one or more of the enumerated compound types and no others. According to Defendant, the claimed scope of "the dinitrile compound" and "the trinitrile compound" for weight percentage measurements and for the electrolyte itself are one and the same, and are both limited to the compounds listed in the Markush groups.

The Court begins its analysis with an examination of the claim language. Claim 1 of the '910 Patent is representative and reads as follows, with the disputed term in bold:

> 1. An electrolyte, comprising a dinitrile compound, a trinitrile compound, and propyl propionate, wherein, based on a total weight of the electrolyte, **a weight percentage of the dinitrile compound is X, a weight percentage of the trinitrile compound is Y** and a weight percentage of the propyl propionate is Z; wherein,
>
> about 2.2 wt %≤(X+Y)≤about 8 wt %,
>
> about 0.1≤(X/Y)≤about 2.3,
>
> 5 wt %≤Z≤20 wt % or 30 wt %≤Z≤50 wt %, and
>
> about 0.02≤(Y/Z)≤about 0.3;

> wherein the dinitrile compound is one or more compounds selected from the group consisting of butanedinitrile, adiponitrile, ethylene glycol bis(2-cyanoethyl) ether, and 1,4-dicyano-2-butene; and the trinitrile compound is one or more compounds selected from the group consisting of 1,3,6-hexanetricarbonitrile , 1,2,6-hexanetricarbonitrile and 1,2,3-tris(2-cyanoethoxy)propane;
>
> wherein the electrolyte further comprises a compound having a sulfur-oxygen double bond.

The claim structure supports Plaintiff's open-ended interpretation. The claim is written in a hierarchical manner with a progressive funneling of elements. It begins by broadly identifying "[a]n electrolyte, comprising **a** dinitrile compound, **a** trinitrile compound, and propyl propionate," then calculating a weight percentages of "**the** dinitrile compound" and the weight percentage of "**the** trinitrile compound," identified earlier, based on a "total weight of the electrolyte," and further limiting "**the** dinitrile compound" and "**the** trinitrile compound" to "one or more compounds" selected from a short list of compounds.

As a preliminary matter, the claim's use of the word "comprising" is critical. "Comprising" is a well-established term of art in patent law demonstrating the inventor's intent to leave the claim open-ended. "Comprising" permits additional, unrecited elements beyond those specifically claimed. *See Genentech, Inc. v. Chiron Corp*., 112 F.3d 495, 501 (Fed. Cir. 1997) (" 'Comprising' is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim.") (citation omitted). Here, the preamble recites "[a]n electrolyte, comprising a dinitrile compound, a trinitrile compound, and propyl propionate," which leaves the overall composition of the electrolyte open to additional components. Indeed, Defendant agreed during oral argument that the claim's use of "comprising" means that items can be present that are not specifically recited in the body of the claim.

Within that electrolyte, there must be "a dinitrile compound" and "a trinitrile compound." While "a" can mean "one or more," as Defendant contends, the definite article "the" in the body of the claim ("the dinitrile compound," "the trinitrile compound") refers back to the indefinite article "a" used in the preamble ("a dinitrile compound," "a trinitrile compound"), creating a clear chain of antecedent basis. The Markush grouping that follows further defines which specific dinitrile and trinitrile compounds are "the dinitrile compound" and "the trinitrile compound" introduced earlier. This Markush limitation, however, does not act to cap the total number or types of dinitrile and trinitrile compounds that may be present in the electrolyte, which are left open-ended by the "[a]n electrolyte, comprising…" language. So long as one or more of the enumerated dinitrile and trinitrile compounds are present, this element of the claim is met.

There is no dispute that the Markush grouping applies to limit the claim phrase "one or more compounds [are] selected from the group consisting of [list]." As the Federal Circuit has explained, "[a] Markush group, incorporated in a claim, should be 'closed,' *i.e.* it must be characterized with the transition phrase 'consisting of,' rather than 'comprising' or 'including.' " *Abbott Labs*., 334 F.3d at 1280-1281 (citing Stephen A. Becker, Patent Applications Handbook § 2:17 (9th ed. 2000)). The Markush group here uses the closed transition "selected from the group consisting of," which clearly limits "the dinitrile compound" and "the trinitrile compound" to the enumerated lists. However, the preamble phrase "[a]n electrolyte, comprising" does not create or incorporate a Markush group.

The parties' agreed construction confirms this interpretation. The agreed construction states that "the dinitrile/trinitrile compounds in the electrolyte consist of only the named compounds and no others." (Dkt. No. 82 at 1.) This agreed language describes exactly the limitation imposed by the Markush grouping itself: it limits which specific compounds are "the

dinitrile compound" and "the trinitrile compound." Notably, like the definite articles in the body of the claim, the agreed construction consistently refers to "the" dinitrile/trinitrile compounds. The agreed construction does not add a further limitation on the overall composition of the electrolyte or preclude the presence of additional, unclaimed dinitrile or trinitrile compounds.

Accordingly, for purposes of calculating the weight percentages X and Y, only the specific compounds identified in the Markush groups are counted. That is, only "the dinitrile compound" (the one or more compounds selected from the Markush group) is counted toward X, and only "the trinitrile compound" (the one or more compounds selected from the Markush group) is counted toward Y.

Defendant's proposal to exclude all unlisted dinitrile or trinitrile compounds from the electrolyte conflicts with the plain language of the claim. If the claims required the electrolyte to contain only the specified dinitriles and trinitriles from the Markush groups, the inventor would have used "consisting of" rather than "comprising" in the preamble. As the inventor clearly understood the difference between the open and closed terms of art (by making use of Markush grouping in one part of the claim but not others), that evidences a deliberate choice to leave the first recitation of "comprising" open-ended. Defendant's proposed construction would therefore improperly narrow the intended language of the claim.

The claims in the '131 Patent are written slightly differently yet support the same conclusion. In claim 1 of the '131 Patent, only trinitriles are limited by a Markush group, whereas dinitriles are unrestricted until a later dependent claim. Plaintiff concedes that in such a configuration, weight percentage X includes "all dinitriles in the electrolyte." In other words, when no Markush group restricts the dinitrile compound, the weight percentage X accounts for all dinitriles present, not just a specific subset.

Dependent claim 5 of the ’131 Patent then adds a Markush group that limits the dinitrile compound to specific enumerated types. Thus, claim differentiation supports Plaintiff’s position: only when a Markush group is present to specify the identity of “the dinitrile compound” does that specified compound become the sole basis for determining weight percentage X. When the Markush group is absent (as in independent claim 1 of the ’131 Patent), all dinitriles contribute to the weight percentage calculation. The structure confirms that the Markush groups operate to identify which specific compound or compounds constitute “the dinitrile compound” and “the trinitrile compound” for purposes of the weight percentage calculation, but do not restrict the overall composition of the electrolyte to exclude other dinitrile or trinitrile compounds.

The specification supports Plaintiff’s position that an electrolyte may comprise dinitrile and trinitrile compounds outside the Markush group listings. For example, Tables 1 and 2 in the ’910 Patent consider formulation B3, which includes PTCN (1,3,5-Pentanetricarbonitrile), a trinitrile compound that is not listed in the Markush group of claim 1. Although the specification frequently describes “the dinitrile compound” and “the trinitrile compound” in the context of the electrolyte, the language consistently refers to the claimed compounds identified by the Markush groups, and not to the exclusion of all other dinitrile or trinitrile compounds that may be present.

To the extent Defendant relies on prosecution history in which the Examiner found that prior art disclosed the Markush group compounds and therefore met the electrolyte limitation, it does not establish that only those compounds can be present in the claimed electrolyte. Prior art may teach the existence of claimed compounds, but such a finding does not exclude other unclaimed compounds from the scope of the patent. Patent Office examination focuses on whether the claim limitations are met by the prior art, not on what additional unclaimed elements might

exist in either the prior art or the claimed invention. Thus, the file history does not inform on the scope of this claim term.

In sum, the electrolyte does not preclude additional components, such as additional dinitrile or trinitrile compounds beyond "the dinitrile compound" and "the trinitrile compound" specifically identified by the Markush groups. The closed Markush group applies only to define which specific compound or compounds are "the dinitrile compound" and "the trinitrile compound" introduced in the preamble, and does not act to limit the electrolyte composition as a whole.

For the foregoing reasons, the Court finds "a weight percentage of the dinitrile compound is X" and "a weight percentage of the trinitrile compound is Y" **should be given their plain and ordinary meaning.**

2. "only a single-sided coating or a double-sided coating present on the same electrode"

Claim term	Plaintiff's Construction	Defendant's Construction
"only a single-sided coating or a double-sided coating present on the same electrode" ('910 Patent, claim 14)	Plain and ordinary meaning Judicially corrected to "only a singlesided coating or a double-sided coating is present on the same electrode"	Indefinite

The Court addresses whether claim 14 of the '910 Patent is invalid as indefinite under 35 U.S.C. § 112.

Claim 14 of the '910 Patent depends from claim 13, which itself depends from claim 12. The relevant claim language is reproduced below, with the disputed term in bold:

> Claim 12: "An electrochemical device, wherein the electrochemical device comprises electrodes...."

> Claim 13: "The electrochemical device according to claim 12, wherein the electrode comprises a cathode, the cathode comprises a current collector, a single-sided coating and a double-sided coating...."

> Claim 14: "The electrochemical device according to claim 13, wherein both the single-sided coating and the double-sided coating are present on the same electrode, **or only a single-sided coating or a double-sided coating present on the same electrode**...."

The parties agree that claim 14 contains a typographical error in the form of a missing verb. The parties have agreed that the claim should be judicially corrected to read "only a single-sided coating or a double-sided coating **is** present on the same electrode." Besides the typographical correction, the substantive dispute between the parties is whether claim 14 is indefinite. For purposes of evaluating the substance of this dispute, the Court will assume the typographical correction is appropriate per the parties' agreement.

The core issue submitted to the Court is whether claim 14 is invalid due to lack of antecedent basis. Specifically, whether it is coherent for claim 14 to require at least two electrodes when it depends from claim 13, which provides for "the electrode" (singular), even though independent claim 12 provides for plural "electrodes."

Claim 13 requires that "the cathode comprises a current collector, a single-sided coating **and** a double-sided coating." Claim 14 then provides two alternatives: (1) "both the single-sided coating and the double-sided coating are present on the same electrode," or (2) "only a single-sided coating **or** a double-sided coating is present on the same electrode." The dispute concerns whether the second alternative creates an irreconcilable contradiction with claim 13's requirement that the cathode have both coating types.

Plaintiff contends that claim 14 is not indefinite because it reads on batteries with multiple electrodes where individual electrodes have differing coating configurations. According to Plaintiff, the disputed term finds antecedent basis in claim 12's plural "electrodes," and not solely in claim 13's singular cathode. Plaintiff argues that a person of ordinary skill in the art reading claim 13 in light of claim 12 would realize that claim 13 speaks to one of many possible electrodes that may exist per claim 12. Plaintiff also contends that "a cathode" means "one or more" cathodes, or equivalently, "at least one" cathode.

Plaintiff's expert, Dr. Horn, opines that claim 14 is definite based on two alternative interpretations. First, Dr. Horn suggests that "claim 13's recitation of 'the electrode' may refer only to the cathode, whereas claim 14 does not specify whether its electrode is a cathode or an anode." (Dkt. No. 118-5 at ¶ 46.) Second, Dr. Horn opines that "claim 13's teachings regarding 'the electrode' could refer to multiple cathodes rather than a singular cathode." (*Id.* at ¶ 47.) Plaintiff argues that these interpretations, supported by the specification's disclosure of laminated-type cells with multiple electrodes, demonstrate that claim 14 is reasonably certain in scope.

Defendant contends that claim 14 is indefinite for lack of antecedent basis. According to Defendant, claim 14 depends from claim 13, which recites a single electrode (a cathode) that must have **both** a single-sided coating and a double-sided coating. Claim 14 then requires an electrode with either only a single-sided coating **or** only a double-sided coating. No such electrode exists in claim 13, creating an impossible contradiction. Defendant contends that whether claim 12 refers to multiple electrodes is irrelevant because claim 13 narrows the scope to one electrode.

Defendant emphasizes that claim 14 is nonsensical because it depends from claim 13, not from claim 12, and therefore must incorporate all of claim 13's limitations, including the requirement that the cathode have both coating types. Defendant argues that Plaintiff improperly

attempts to bypass claim 13 to reach back to claim 12's plural "electrodes," which violates the fundamental principle that dependent claims must further limit, not broaden, their parent claims.

The Court evaluates whether the claim structure limits claim 14 to a singular electrode and concludes that it does. Under 35 U.S.C. § 112(d), a dependent claim must "contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed." The statute requires that dependent claims incorporate by reference all limitations of the parent claims and further narrow the scope. Reading claims 12-14 together, the claim structure is: "An electrochemical device, wherein the electrochemical device comprises electrodes...." (claim 12), "wherein the electrode comprises a cathode, the cathode comprises a current collector, a single-sided coating and a double-sided coating...." (claim 13), and "wherein ... only a single-sided coating or a double-sided coating [is] present on the same electrode" (claim 14).

The claim structure clearly narrows from multiple electrodes in claim 12 to a singular electrode (claim 13). Even Plaintiff acknowledges this natural reading when agreeing that "[a] POSITA reading claim 13 in light of claim 12 would realize that claim 13 speaks to **one of the many possible electrodes** that may exist." (Dkt. 118 at 9 (emphasis added).) The singular electrode in claim 13 must furthermore be a cathode that comprises both a single-sided coating and a double-sided coating.

The term "electrode" is a generic or umbrella term for either a cathode or an anode, so the singular electrode can only be a singular cathode and not multiple cathodes. The specification confirms this understanding. Column 3:4-8 states: "According to an embodiment of the present application, the electrodes include a cathode and an anode." Column 20:45-50 provides: "The electrochemical device of the present application comprises a cathode and an anode, a separator and an electrolyte. The electrode includes a current collector and a coating on the current collector.

The coating includes a single-sided coating, a double-sided coating, or a combination thereof." Column 22:1-2 further confirms: "In some embodiments, the electrode may be a cathode or an anode." Plaintiff's expert, Dr. Horn, also agrees with this interpretation: "it is my understanding that claim 13's recitation of 'the electrode' may refer only to the cathode." (Dkt. No. 118-5 at ¶ 46.) Therefore, claim 13 provides that the single electrode is a single cathode having both a single-sided coating and a double-sided coating.

Plaintiff's argument that "a cathode" can mean "one or more" cathodes does not resolve the indefiniteness problem. While "a" can sometimes mean "one or more" in patent claims, the context here limits "a cathode" to a single cathode. Claim 13 narrows the plural electrodes to the singular "electrode [that] comprises a cathode." So, Plaintiff is incorrect that "a cathode" here can mean "one or more." Nor does reading "a cathode" as one or more cathodes bring multiple electrodes back into the scope of claim 13, which deliberately isolates "the electrode" in a singular manner, particularly in contrast to the patentee's intentional recitation in claim 12 of plural electrodes.

Claim 14 depends from claim 13 and incorporates all of claim 13's limitations, which requires that the cathode have **both** a single-sided coating and a double-sided coating. Claim 14 goes on to reference "the same electrode"[1] and then provides two alternatives that must be possible: (1) "both the single-sided coating and the double-sided coating are present on the same electrode," or (2) "only a single-sided coating or a double-sided coating [is] present on the same electrode." The first alternative is consistent with claim 13. The second alternative, however, creates an irreconcilable contradiction. It requires that "only a single-sided coating or a double-

[1] Claim 14's recitation of "the same electrode" reinforces the understanding that it is talking about the same electrode identified in claim 13 as "the electrode." Despite Plaintiff's argument, the phrasing does not bring back into claim 14 the presence of multiple electrodes.

sided coating [is] present on the same electrode." The word "only" is critical: it means that the electrode has exclusively one coating type, not both. It directly contradicts claim 13's requirement that the cathode have both coating types.

A dependent claim cannot simultaneously require that an electrode have both coating types (per claim 13) and only one coating type (per claim 14's second alternative). The phrase "the same electrode" in claim 14 naturally refers back to "the electrode" described in claim 13—the cathode that must have both coatings. Claim 14's second alternative, which requires only one coating, lacks antecedent basis because no electrode with only one coating has been introduced in claim 13.

Plaintiff's attempt to find antecedent basis by reaching back to claim 12's plural "electrodes" fails. Claim 14 explicitly states "according to claim 13," not "according to claim 12." According to the well-understood structure of dependent claims, claim 14 must incorporate all of claim 13's limitations. Claim 14 cannot bypass claim 13 to directly access claim 12's broader scope. To hold otherwise would allow dependent claims to broaden their parent claims, contrary to 35 U.S.C. § 112(d). For these reasons, the disputed term in claim 14 cannot be reconciled and must be found indefinite.

Plaintiff's arguments to the contrary are unpersuasive. Plaintiff argues that the specification describes laminated-type cells with multiple electrodes having different coating configurations. While the specification does disclose such embodiments ('910 Patent at 20:45-21:16), they are unclaimed embodiments. Only the embodiment showing both single-sided and double-sided coatings on electrode C in Figure 4 is captured in claim 13. Similarly, the wound-type cell having "both a single-sided coating and a double-sided coating" on the same electrode (*Id.* at 21:4-7) is consistent with claim 13. In contrast, the laminated-type cell having "only a single-sided coating

or a double-sided coating on the same electrode" (*Id.* at 21:7-11) describes an unclaimed embodiment.

Nor has Dr. Horn articulated a reasonable understanding of claim 14 that aligns with the dependent claim structure. Dr. Horn offered two alternative interpretations, neither of which is persuasive. First, Dr. Horn suggested that "claim 13's recitation of 'the electrode' may refer only to the cathode, whereas claim 14 does not specify whether its electrode is a cathode or an anode." (Dkt. No. 118-5 at ¶ 46.) That is incorrect. Claim 14 depends from claim 13, which explicitly requires that "the electrode comprises a cathode" with both coating types. Under 35 U.S.C. § 112(d), claim 14 incorporates all of claim 13's limitations. Claim 14 cannot introduce a new electrode not defined in claim 13.

Second, Dr. Horn opined that "claim 13's teachings regarding 'the electrode' could refer to multiple cathodes rather than a singular cathode." (*Id.* at ¶ 47.) That is also incorrect. Claim 13 by its own terms is limited to a singular electrode. Dr. Horn's own testimony acknowledged that "claim 13's recitation of 'the electrode' may refer only to the cathode," which supports the singular understanding. Because Dr. Horn's opinion rests on incorrect premises regarding the dependent claim structure, his testimony is unreliable and will not be credited in the Court's analysis.

For the foregoing reasons, the Court finds that Defendant has met its burden of proving indefiniteness by clear and convincing evidence. The claim language creates an irreconcilable contradiction: claim 13 requires that the cathode have both coating types, while claim 14's second alternative requires only one coating type. A skilled artisan would not be able to ascertain with reasonable certainty the scope of claim 14.

Accordingly, the Court finds the term "only a single-sided coating or a double-sided coating present on the same electrode" **is indefinite.**

3. "wherein the electrode comprises an anode"

Claim term	Plaintiff's Construction	Defendant's Construction
"wherein the electrode comprises an anode" ('910 Patent, claim 15)	Plain and ordinary meaning to a POSITA Judicially corrected to depend from claim 12, not claim 13	Indefinite

The parties agree that claim 15 as written does not make sense. Claim 13 requires "the electrode comprises a cathode." Claim 15, which depends from claim 13, then states "the electrode comprises an anode." The same electrode cannot simultaneously be both a cathode and an anode. The parties dispute whether judicial correction is appropriate to save claim 15 from indefiniteness by correcting the claim dependency to read "according to claim 12" instead of "according to claim 13."

Plaintiff argues that claim 15 contains an obvious drafting error and that judicial correction is appropriate. According to Plaintiff, the error is evident from the face of the patent; it is obvious that claim 15 cannot refer to the same electrode as claim 13 because claim 13 describes properties of a cathode, whereas claim 15 describes properties of an anode. Plaintiff supports its position with testimony from Dr. Horn, who opined that a cathode and an anode are described in the '910 Patent as two different electrodes. (Dkt. No. 118-5 at ¶ 50.) In addition, Plaintiff notes that claims 13 and 15 provide for different compaction density ranges for a cathode and anode that precisely align with disclosures in the specification. Plaintiff characterizes claims 13 and 15 as "sister claims" that are drafted in parallel structure, with claim 13 addressing the cathode and claim 15 addressing the anode, evidencing a typographical error. Plaintiff further argues that there is no evidence of a different interpretation in the prosecution history. Plaintiff notes that Defendant's own *Inter Partes*

Review (IPR) petition of the ’910 Patent assumes that claim 15 applies to an anode meeting the limitations of claim 12, which supports a judicial correction.

Defendant responds that judicial correction is inappropriate because the proposed correction seeks to change the claim dependency, which affects claim scope and is not a minor clerical error. In addition, Defendant contends that the proposed correction is subject to reasonable debate because there is another plausible alternative correction: Claim 15 might be corrected to claim a second “cathode” with the recited different compaction density range in lieu of the currently recited “anode.” According to Defendant, the compaction densities disclosed in the specification are merely exemplary embodiments and do not mandate that the claimed ranges must correspond exclusively to a cathode or an anode.

Defendant notes that Plaintiff’s position is inconsistent with its arguments regarding claim 14, where Plaintiff argued that claim 14 was not indefinite because it reaches back to the plural “electrodes” in claim 12 to refer to a second cathode, even though claim 13 only explicitly recites one cathode. Defendant contends that if claim 14 could reasonably be read to claim a second cathode not specifically recited in claim 13 in order to avoid indefiniteness, then claim 15 could also reasonably be read to claim a second cathode with a different compaction density range. Defendant argues that Plaintiff should not be permitted to adopt inconsistent positions.

The Court first reviews the claim language, reproduced in relevant part:

12: "An electrochemical device, wherein the electrochemical device comprises electrodes...."	
13. The electrochemical device according to claim 12, wherein the electrode comprises a cathode, the cathode comprises a current collector, a single-sided coating and a double-sided coating;	15. The electrochemical device according to **claim 13,** wherein the electrode comprises an anode, the anode comprises a current collector, a single-sided coating and a double-sided coating;

a first part of the current collector is provided with the single-sided coating and a second part of the current collector is provided with the double-sided coating; an electrode compaction density of the single-sided coating is D1, and, an electrode compaction density of the double-sided coating is D2, wherein, about 0.8≤D1/D2≤about 1.2; and, 3.5 g/cm3≤D2≤4.3 g/cm3.	a first part of the current collector is provided with the single-sided coating and a second part of the current collector is provided with the double-sided coating; an electrode compaction density of the single-sided coating is D1, and, an electrode compaction density of the double-sided coating is D2, wherein, about 0.8≤D1/D2≤about 1.2; and, 1.2 g/cm3≤D2≤1.8 g/cm3.

The general rule regarding correcting claim language is that "[t]he district court can correct an error only if the error is evident from the face of the patent." *Group One, Ltd. v. Hallmark Cards, Inc.*, 407 F.3d 1297, 1303 (Fed. Cir. 2005). In addition, two other requirements must be met: "A district court can correct a patent only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims." *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1357 (Fed. Cir. 2003). If these conditions are satisfied, the patent should not be invalidated based on the error unless there is "evidence of culpability or intent to deceive by delaying formal correction." *Hoffer v. Microsoft Corp.*, 405 F.3d 1326, 1331 (Fed. Cir. 2005). The purpose of judicial correction is to avoid invalidating patents based on obvious clerical errors when the correct meaning is clear from the patent itself.

Here, the error is evident from the face of the patent. Claim 15 cannot claim the electrode comprises an anode if it depends from claim 13, where the electrode comprises a cathode. The claim dependency creates a logical impossibility and both sides agree that claim 15 does not make sense as written. The specification confirms that cathodes and anodes are distinct and mutually exclusive electrode types and consistently treats cathodes and anodes as separate electrodes with

different properties, materials, and compaction densities. (*See, e.g.,* '910 Patent at 3:4-8, 19:40-22:10.) Clearly, claim 15 was intended to address an anode, as recited, but the dependency was incorrectly written as "according to claim 13" instead of "according to claim 12."

The Court finds that the proposed correction is not subject to reasonable debate based on consideration of the claim language and patent specification. Claims 13 and 15 are written in parallel structure: Both should depend from claim 12, both address "the electrode," and both specify an electrode compaction density with a defined range. The only substantive difference is the type of electrode and the compaction density range:

- Claim 13: "the electrode comprises a cathode" with compaction density Dl of about 3.5 g/cm³ to about 4.3 g/cm³
- Claim 15: "the electrode comprises an anode" with compaction density D2 of about 1.2 g/cm³ to about 1.8 g/cm³

These compaction density ranges precisely mirror the disclosure in the specification for cathodes and anodes: "In some embodiments, the electrode may be a cathode or an anode. When the electrode is a cathode, about 3.5 g/cm³ ≤ D2 ≤ about 4.3 g/cm³.... When the electrode is an anode, about 1.2 g/cm³ ≤ D2 ≤ about 1.8 g/cm³." ('910 Patent at 22:1-9). The specification's disclosure of specific compaction density ranges for cathodes and anodes, combined with the parallel claim structure, demonstrates that claim 15 was intended to address an anode with the anode-specific compaction density range, and not a second cathode. Moreover, the patent repeatedly describes "electrodes" as including both a cathode and an anode. Dr. Horn, Plaintiff's expert, opined that a skilled artisan would know that claim 15 is not referring to the same electrode as claim 13 and that, in the context of electrochemical devices described in the patent, the terms "anode" and "cathode" clearly describe different electrodes with different properties. (Dkt. No. 118-5 at ¶ 50.)

Defendant's alternative suggestion that claim 15 could be read to claim a second cathode with a different compaction density range lacks support from the intrinsic or extrinsic evidence. The Court does not find it to be a reasonable alternative. Defendant submits no expert declaration supporting the proposition that the compaction density range of about 1.2 g/cm³ to about 1.8 g/cm³ specified in claim 15 could be applicable to a cathode. To the contrary, the specification expressly associates this specific range with anodes. While it is true that the specification describes compaction densities as "some embodiments," the specification does not suggest that the specific numerical ranges are interchangeable between cathodes and anodes. Rather, the patent makes clear that electrode compaction density matters significantly to electrochemical performance, which is why specific ranges are claimed for cathodes and anodes separately.

Moreover, Defendant's reliance on Plaintiff's arguments regarding claim 14 is misplaced. The dispute over claim 14 involved whether "the same electrode" in claim 14 could refer to a different electrode from the one described in claim 13. The Court has found claim 14 indefinite for lack of antecedent basis because claim 14 depends from claim 13, which defines a specific electrode (a cathode with both coating types). In contrast, the issue here is different. Claim 15 explicitly recites "an anode," which is facially inconsistent with claim 13's definition of "the electrode" as "a cathode." This is not a question of whether claim 15 could reach back to claim 12 to access a different electrode; rather, it is an obvious error in the claim dependency itself. The proper correction is to have claim 15 depend directly from claim 12, which encompasses multiple electrodes (both cathodes and anodes), rather than from claim 13, which is limited to a cathode.

Neither party has argued that the prosecution history suggests a different interpretation of the claims. The prosecution history is silent on the issue of claim 15's dependency. Accordingly, this requirement for judicial correction is satisfied. Nor has either party presented evidence of

culpability or intent to deceive by delaying formal correction. There is no indication that the patentee intentionally left the error uncorrected in order to gain an unfair advantage or deceive the public. The error appears to be a simple drafting mistake.[2]

In addition to the intrinsic evidence, the Court notes that Defendant took the position in filing an IPR on the ’910 Patent that claim 15 depends from claim 12 rather than claim 13. Although the Court is well aware that an IPR cannot reach issues of indefiniteness, it is nonetheless an affirmative election that Defendant chose to make. The inconsistency of Defendant’s position in the IPR with its position now before the Court further supports the reasonableness of the requested correction.

For the foregoing reasons, the Court hereby judicially corrects claim 15 of the ’910 Patent to depend from claim 12 instead of claim 13. The correction is not subject to reasonable debate based on consideration of the evidence. As corrected, claim 15 reads: “The electrochemical device according to **claim 12**, wherein the electrode comprises an anode, . . .” Moreover, the Court finds “wherein the electrode comprises an anode” **should be given its plain and ordinary meaning.**

[2] Defendant's reliance on *Rembrandt Data Techs., LP v. AOL, LLC*, 641 F.3d 1331, 1339-40 (Fed. Cir. 2011) is misplaced. There, the court declined to redraft an element from a method claim (transmitting the trellis encoded frames) to an apparatus claim (transmitter section for) to save it from invalidity for improper hybrid claiming. The substantive redrafting requested there is distinguishable from the typographical error found herein for the stated reasons.

4. "the pores at least comprises a part of the inorganic particles"

Claim term	Plaintiff's Construction	Defendant's Construction
"the pores at least comprises a part of the inorganic particles" ('148 Patent, claims 1, 10)	Plain and ordinary meaning with the correction of comprises" to comprise."	Indefinite

The parties dispute two issues regarding this claim term: (1) whether judicial correction is appropriate to change the singular verb "comprises" to the plural "comprise" to match the plural subject "pores," and (2) whether the term is indefinite due to lack of reasonable certainty in disclosing what percentage of pores must contain inorganic particles.

Regarding judicial correction, Plaintiff urges a simple grammatical correction to align the verb with the subject. Plaintiff argues this correction does not change the meaning of the claim.

Regarding definiteness, Plaintiff contends that the claims are clear. Plaintiff argues that "the porous film comprises pores formed by the binder" means that the outer perimeter of the pore's geometry (the shape and boundaries of the pore wall, but not the pore itself) is defined by the binder. Plaintiff further argues that "the pores at least comprise a part of the inorganic particles" means that part of the inorganic particles must be inside the empty space of the pore, or a particle can be entirely within the pore. As support, Plaintiff points to the method disclosed in the specification for preparing the porous film that results in the binder forming a web-like film with pores throughout. ('148 Patent at 8:33-58.) Dr. Horn explains that "because the solvent solution contained both binder and inorganic particles, as the binder film precipitates, some particles remain inside the binder (i.e., the pore walls), and others become partly exposed within the empty spaces of the pores. As such, the empty spaces necessarily include part of the inorganic particles. In other

words, the particles are not completely hidden inside the binder; they can be visibly observed within the space of the pores themselves." (Dkt. No. 118-5 at ¶ 56.) Plaintiff also points to Figure 2 of the '148 Patent, which shows inorganic particles distributed throughout the visible pores.

Defendant responds that the proposed judicial correction is irrelevant and unsupported. Even with the correction, Defendant argues, a skilled artisan would not be able to determine what portion of the pores must "at least comprise[] a part of the inorganic particles." Defendant suggests that to better align with the specification, the correction should be to the singular: "[each of] the pores at least comprises a part of the inorganic particles." Otherwise, there is no way to determine how many pores must comprise inorganic particles. Additionally, Defendant contends that nothing in the patent specifies that the pore walls must be formed by the binder and that it makes no sense for the claims to require "the pores" to include "a part of the inorganic particles" while simultaneously concluding that those inorganic particles do not constitute, at least in part, the material that surrounds and defines "the pores."

The Court begins with an examination of claim 1 of the '148 Patent, which is representative. The disputed term is emphasized in bold:

> 1. A porous film, comprising:
>
> a binder; and
>
> inorganic particles;
>
> wherein the porous film comprises pores formed by the binder, **the pores at least comprises a part of the inorganic particles**, wherein the inorganic particles have particle sizes that Dv10 is in a range of 0.015 μm to 3 μm, Dv50 is in a range of 0.2 μm to 5 μm, and Dv90 is in a range of 1 μm to 10 μm; Dv10 of the inorganic particles is less than Dv50 of the inorganic particles, and Dv50 of the inorganic particles is less than Dv90 of the inorganic particles, and the inorganic particles have particle sizes that the ratio of Dv90 to Dv10 is in a range of 2 to 100.

The claim language is clear. A porous film is made of a binder and inorganic particles. The porous film comprises pores formed by the binder, and the pores at least include a part of the inorganic particles. (The specification at col. 1:48 uses the phrase "at least includes" interchangeably with "at least comprises.") The claim language describes the structural relationship between the pores, the binder, and the inorganic particles: the binder forms the pores, and the pores contain at least a part of the inorganic particles.

Aside from requiring that "pores" be plural, there is no quantification of the percentage of pores in the porous film that must contain these features. The absence of quantification does not render the claims indefinite. Just as there is no defined minimum number of pores required to qualify the film as "porous," no specific percentage requirement is present for how many pores must contain inorganic particles. The claim requires the porous film to have pores (plural) and that the pores (plural) at least comprise a part of the inorganic particles. A person of skill in the art would understand this to mean that the claimed porous film must have multiple pores that partially contain portions of the inorganic particles.

Defendant's concern that one cannot ascertain how many of thousands of pores must contain inorganic particles does not establish indefiniteness. The claim language is: "the pores" must "at least comprise[] a part of the inorganic particles." This requirement is satisfied if the porous film features multiple pores containing inorganic particles. The claims do not require a measured percentage or minimum number beyond the plural requirement. There is simply no quantification requirement.

The specification adds context to the claim language. The problem the inventor identified was a gap between the separator and the electrode of a lithium-ion battery that reduced performance over time. ('148 Patent at 1:22-38.) The patented solution is to adhere a porous film

to the electrodes and/or the separator to close the gap while maintaining high ionic conductivity to improve the performance and lifetime of the battery. (*Id.* at 2:47-56.) The size, distribution, and integrity of the pore structure affects the performance of the battery. Inorganic particles are used in the porous film to enhance the stability of the pore structure so it does not soften and close during the manufacturing process. (*Id.* at 3:24-51.) If the inorganic particles are introduced for pore stability, it makes sense for them to be inside or be part of the structure forming the pores; otherwise, the pores would soften and close during manufacturing. This technical explanation provides context to the claim language. The "pores at least comprise[] a part of the inorganic particles" because the pore structure derives from the particles.

The disclosed manufacturing process further supports this understanding. ('148 Patent at 8:33-58.) The inorganic particles are mixed with the binder, which suggests largely uniform distribution. A solvent is added to dissolve the binder. The slurry of particles, binder, and solvent is coated onto a substrate, which is then immersed in a coagulation solution. This results in the binder forming a web-like film with pores whose boundaries are created by the binder as it precipitates from the solution. Dr. Horn explained that "because the solvent solution contained both binder and inorganic particles, as the binder film precipitates, some particles remain inside the binder (*i.e.*, the pore walls), and others become partly exposed within the empty spaces of the pores." (Dkt. No. 118-5 at ¶ 56.)

The practical implementation of the claimed invention, as disclosed in the specification, is that the pores in the binder are at least in part made up of (or contain) inorganic particles. This is consistent with the plain and ordinary meaning of the claim language. Moreover, as shown in Figure 2 of the '148 Patent, the inorganic particles inside the pore structure are visibly distributed

throughout the observable pores. The precise mathematical relationship that Defendant seeks to impose is not required.

Defendant has not met its burden of proving indefiniteness by clear and convincing evidence. The Court is persuaded that the claim language is clear and understandable. A person of skill reading the claim in light of the specification would understand that "the pores at least comprise[] a part of the inorganic particles" means that the porous film must have pores that contain inorganic particles. The specification's disclosure of the manufacturing process confirms that this is the natural result of mixing inorganic particles with the binder and precipitating the binder to form the porous film.

The fact that the claims do not specify an exact percentage or minimum number of pores that must contain inorganic particles does not render the claims indefinite. Claims are not required to provide absolute precision. *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370-71 (Fed. Cir. 2014). The question is whether the claims provide reasonable certainty to those skilled in the art. Here, the claims provide reasonable certainty. A skilled artisan would understand how to make and use such a porous film based on the patent disclosures.

Defendant's argument that the claim language is contradictory is unpersuasive. Defendant suggests that if inorganic particles are inside the pores, they cannot simultaneously be part of the binder that forms the pores. This contention misunderstands the claim language. The claim states that "the porous film comprises pores formed by the binder," meaning the binder formed the boundaries or geometry of the pores. The claim separately states that "the pores at least comprise[] a part of the inorganic particles," meaning that inorganic particles are a part of the pores. These two requirements are not contradictory; they describe complementary structural features of the porous film. The binder forms the structure (the pore walls), and inorganic particles are located

both within the binder structure and within the pore spaces themselves to lend structural support. The claim is not indefinite.

Lastly, the Court concludes that no judicial correction is necessary. Changing the verb "comprises" to its plural form has no substantive effect on the meaning of the claim. The claim language is understandable as written, and no actual error visible on the face of the patent requires judicial correction. A person of ordinary skill in the art can understand the phrase "the pores at least comprises a part of the inorganic particles" irrespective of the grammatical adjustment. The claimed invention is not rendered indefinite or ambiguous either way. Moreover, the Court declines to adopt Defendant's alternative suggestion to insert "each of" into the claim as that would impose an improper one-to-one mathematical relationship and constitute substantive rewriting of the claims without sufficient support.

The Court therefore finds that no judicial correction is necessary and "the pores at least comprises a part of the inorganic particles" **should be given its plain and ordinary meaning.**

5. **"a first layer comprising a first material"/"a second layer comprising a second material"**

Claim term	Plaintiff's Construction	Defendant's Construction
"a first layer comprising a first material" "a second layer comprising a second material" ('118 Patent, claims 1-4, 6-7, 10, 12-13, 15, 16, 19, 20)	Plain and ordinary meaning	"a first layer comprising a first active material" "a second layer comprising a second active material"

The briefing and argument of the terms "a first layer comprising a first material" and "a second layer comprising a second material" are closely related and are addressed together herein.

The dispute as to these terms is whether "first material" and "second material" should be limited to "first ***active*** material" and "second ***active*** material" due to a clear and unmistakable disavowal of claim scope in the specification and prosecution history. The issue submitted to the Court centers on whether the inventor's consistent description of the invention as comprising active material layers, combined with the specification's disparagement of non-active materials, constitutes a clear disavowal that overcomes the heavy presumption that claim terms carry their plain and ordinary meaning.

Plaintiff seeks plain and ordinary meaning because the claim language intentionally omits the word "active." Plaintiff points to U.S. Pat. No. 11,322,774 ("the '774 Patent"), the parent to the '118 Patent, which claims the narrower "a first active material layer," as evidence that the inventor omitted words purposefully to broaden the claims of the '118 Patent beyond active material. Though the patent specification only describes the use of active material layers, Plaintiff argues that it is improper to limit claims to those preferred embodiments because the focus should be on the claim language. Plaintiff further contends that the specification describes use of non-active materials such as binders and conductive agents in the material layer, which would be improperly read out of the narrowing proposal.

Defendant responds that the inventor disclaimed the broader claim scope because using active materials is a key feature of the patent and the inventor repeatedly defined the invention ("the present application") as having active material layers. Defendant notes the 50 examples of "active material layers" in the specification and the inventor's disparagement of the use of other "non-conductive or poorly conductive coating" materials. Defendant also points to disavowal by

the Patent Owner's statements in the '118 Patent IPR, in which Patent Owner stated that "[t]he '118 Patent describes a two-layer electrode ... [with a] first layer ... [that] comprises active material particles having a small size to promote adhesion." (Dkt. No. 118-9 at 5.) Defendant argues that these IPR statements are part of the prosecution records and confirm that the first and second layers must comprise active materials.

The Court begins its analysis by examining the claims. Claim 1 is representative and is reproduced with the disputed term in bold:

> 1. An electrode, comprising:
>
> a current collector;
>
> **a first layer comprising a first material**; and
>
> **a second layer comprising a second material**;
>
> wherein the first layer is arranged between the current collector and the second layer, the first layer is formed on a surface of the current collector, and a particle size of 90% accumulative volume of the first material is less than 40 μm;
>
> wherein a total compaction density of the first layer and the second layer is greater than 3.2 g/cc.

The plain writing of the claim language does not limit the type of material that can comprise the first or second layer. Every independent claim in the '118 Patent (claims 1, 10, and 19) omits the descriptor "active" from "materials." In contrast, every independent claim in the parent '774 Patent contains the narrowing descriptor "active." The difference in phrasing evidences the inventor's awareness of how to claim active materials and the deliberate decision to deviate by choosing broader language in the '118 Patent. There is a heavy presumption that claim terms carry their ordinary and customary meaning. *Aventis Pharma*, 715 F.3d at 1373. The heavy presumption, however, is overcome in this instance. As explained in detail below, the specification and prosecution history exhibits numerous clear and unequivocal statements by the inventor that rebut

the presumption through explicit disavowals and disclaimers of claim scope that limit the claims to active materials.

The written description reveals that the '118 Patent repeatedly and consistently characterizes the material layers as "active" materials throughout its disclosure. The Abstract introduces an electrode that includes first and second "active material layer[s] including a [first/second] active material." The Summary describes "examples of the present application [as] a double layer design used for the active material layer in the electrode . . . ." ('118 Patent at 1:45-46.) "FIG. 2 shows a double-layered active material layer structure of the present application, *i.e.*, an additional active material layer 3 is formed between the active material layer 2 and the positive electrode collector 1." (*Id.* at 3:66-4:3.) Figure 2 is the only drawing depicting the claimed invention; Figure 1 depicts prior art. The detailed description goes on to explain that "[t]he second active material layer 2 and the first active material layer 3 of the present application each contain positive active material . . . ." (*Id.* at 4:18-20.)

Narrow descriptions of embodiments, without more, do not act to narrow claims. But here, the specification sets forth features of "the present application" at each junction, which defines the scope of the invention. Although Plaintiff argues that "the present application" is not the exact same phrasing as "the present invention," the difference as appears here is not meaningfully distinct. Moreover, a patent application, once granted, becomes the patent and is the legal document disclosing the invention to the public and constitutes what the inventor wishes to present as the invention. Accordingly, repeated and consistent characterization of the material layers as "active" throughout the Abstract, Summary, and Detailed Description shows that active materials are a defining feature of the claimed invention.

To underscore the importance of active material, the specification criticizes prior art lithium-ion batteries that do not use active materials. The patentee distinguishes "the present application," which avoids a short circuit, from prior art ceramic layer coatings that purport to have the same benefit. Ceramic (a non-active material) is undesirable because the ceramic layers result in a loss of energy density, deteriorated performance, and are likely to break when penetrated with a nail, which affects the stability of the battery. ('118 Patent at 3:21-49.)

Another prior art solution described and discarded in the '118 Patent is adhering a material with higher resistivity to the electrode using a "common practice to reduce the particle size of the positive electrode active material and increase binder content." (*Id.* at 3:50-57.) This approach is labeled undesirable because the smaller particles reduce cycle performance, and the high binder content can become brittle and lower the energy density of the battery. (*Id.* at 3:58-63.) Thus, the single-layer with smaller particles is also problematic. Figure 1 illustrates this prior art solution. It is depicted to compare against the inventor's solution in Figure 2: A "double-layered active material layer structure of the present application." (*Id.* at 3:66-4:3.)

The invention is further distinguished from prior art. The two "active material" layers have desired benefits compared to a "non-conductive or poorly-conductive material layer" that suffers from problems in the marketplace. (*Id.* at 4:18-24.) The solution of using two active material layers allows both to provide energy, which results in high energy density. In addition, "[t]he design of the present application has no effect on the conductive properties of the active material layer . . . ." (*Id.* at 4:25-31.) In other words, using two active material layers does not reduce electrical conductivity, that is problematic in other solutions. In particular, a non-conductive or poorly conductive coating reduces electronic conductance capability and affects the normal charge and discharge of lithium-ion batteries. (*Id.*) Put another way, the inventor specifically distinguished

non-conductive or poorly conductive coatings from active material layers as negatively affecting **both** electrical conductance capability and electrochemical efficacy.

It is significant to emphasize that although the specification contrasts active material layers from non-conductive/poorly-conductive material layers, the patent is clearly grouping the latter with non-active materials because the described benefits relate to both electrical conductivity (conductive versus non-conductive materials) and electrochemical reactions that store and release energy (active versus non-active materials that affect lithium-ion movement or the ability to charge and discharge efficiently). The resulting conclusion is: The ’118 Patent disparages prior art use of non-active material layers in favor of its inventive use of double-layers of active material. This claimed solution resolves the “urgent need to provide a technology that can significantly improve the safety performance of lithium-ion batteries under conditions of higher energy density.” (*Id.* at 1:38-41.)

“[A]n inventor may disavow claims lacking a particular feature when the specification distinguishes or disparages prior art based on the absence of that feature.” *Poly-Am.*, 839 F.3d at 1136. Here, the disparagement of non-active material layers underscores the purpose of the invention, which is to improve safety and preserve high energy density in a specific way. Active material layers accomplish this result, whereas non-active material layers (such as ceramics) do not. The strong disparagement, combined with the consistent definition of the present invention as comprising active material layers, requires a finding of clear and unequivocal disavowal.

Patent Owner’s statements in the ’118 Patent IPR confirm the Court’s conclusion. The IPR statements are part of the prosecution history record. Patent Owner unequivocally stated that “[t]he ’118 Patent describes a two-layer electrode . . . [with a] first layer . . . [that] comprises active material particles having a small size to promote adhesion.” (Dkt. No. 118-9 at 5.) The use of

active materials is further emphasized by Plaintiff's IPR expert testimony: "As described in the '118 Patent, a first layer, which is positioned closest to the current collector of the electrode, comprises active material particles." (Dkt. No. 130-5 at ¶ 48.) Indeed, there are no instances where "material layer" was labeled as anything other than "active" in relation to the '118 Patent in the IPR proceedings.

Plaintiff's argument that these IPR statements are not disclaimers because they appear in the "Background" section of the briefing is unpersuasive. Patent Owner's characterizations of the invention in IPR proceedings are part of the prosecution history and are relevant to claim construction. The consistent characterization of the first and second layers as active material layers in both the specification and the IPR proceedings reinforces the conclusion that the patentee disavowed broader claim scope. Indeed, Plaintiff has not persuasively identified anything in the intrinsic record that suggests the contrary.

Each of Plaintiff's arguments have been considered and found unavailing. First, Plaintiff's argument that the specification discloses use of non-active materials such as binders and conductive agents is off the mark. All discussions of these materials in the specification address their use together with active material layers to achieve better adhesion and increase electrical conductivity. ('118 Patent at 6:28-52.) They are not separate embodiments comprising non-active material layers; rather, they are components used within active material layers. The Court's construction does not read out these embodiments.

Second, Plaintiff's argument that the specification defines the invention broadly as "a coating with a higher resistivity" is also unpersuasive. This description introduces a general category of coatings that prevents a short circuit, including identifying the disclaimed prior art ceramic layer as one such coating. (*See* '118 Patent at 3:21-32.) The specification then

distinguishes the invention from prior art ceramic coatings before describing the invention as comprising active material layers. The "coating with higher resistivity" language does not define the invention.

Third, Plaintiff's claim differentiation arguments do not overcome the clear statements of claim scope. While the '774 Patent claims contain the word "active" where it is omitted in the '118 Patent claims, "claim differentiation does not serve to broaden claims beyond their meaning in light of the patent as a whole, and it cannot override clear statements of claim scope found in the specification and prosecution history." *Poly-Am.*, 839 F.3d at 1137. The specification and prosecution history contain clear and unequivocal statements that the invention must comprise active material layers.

Similarly, Plaintiff's argument that dependent claim 7 lists specific active materials, which suggests that claim 1 can include other unlisted materials, is unpersuasive. Claim 7's listing of specific active materials means that claim 1 can include other unlisted active materials, not that it can include non-active materials. Notably, there is no dependent claim containing non-active materials, which further supports the conclusion that the invention is limited to active materials.[3]

Lastly, Plaintiff's reliance on *E-Pass Technologies, Inc. v. 3Com Corp.*, 343 F.3d 1364, 1369 (Fed. Cir. 2003), is misplaced. In *E-Pass*, the court declined to limit the claimed "card" to the size of a credit card even though the word "card" was used 280 times in the specification as a "single purpose card" and described as normally the size of a credit card. However, the *E-Pass* court relied on broadening statements in the specification that suggested credit cards may deviate

[3] During oral argument, Plaintiff pointed to dependent claims 9 and 18 as listing ceramic and non-active materials for the proposition that non-active materials are within the scope of claims 1 and 10. However, it argument is not supported by expert opinion and each of the enumerated materials is expressly identified in the specification as a "first active material." ('118 Patent at 2:21-24.)

from their usual dimensions, and there was no disparagement of other sizes. The facts are different here. The '118 Patent contains no broadening statements suggesting that the first and second layers may comprise non-active materials and the specification consistently describes the invention as comprising active material layers and disparages non-active materials. Every embodiment uses active materials (including 50 comparative examples), and the specification explains that non-active materials suffer from deficiencies that the invention avoids. This case is readily distinguishable from *E-Pass*.

For the foregoing reasons, the clear takeaway from reviewing the '118 Patent and intrinsic record alongside the parties' arguments is that the claimed double-layered electrode must make use of active materials in the first and second layers. As in *Rembrandt Patent Innovations, LLC v. Apple, Inc.*, 716 Fed. Appx. 965, 972 (Fed. Cir. 2017), the clear, repetitive, and uniform nature of the '118 Patent's description of active material layers, in combination with its rejection of prior art non-active materials, makes the inventor's intent unmistakable. There is a clear and unequivocal limitation of the scope of the invention.

The Court therefore finds "a first layer comprising a first material" **means "a first layer comprising a first active material"** and "a second layer comprising a second material" **means "a second layer comprising a second active material."**

V. CONCLUSION

The Court adopts the constructions as set forth in this opinion for the disputed terms of the Patents-at-Issue.

The parties are ordered that they may not refer, directly or indirectly, to each other's claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in

the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

So Ordered this

Feb 14, 2026

RODNEY GILSTRAP
UNITED STATES DISTRICT JUDGE