IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

PACTIV, LLC,	
Plaintiff and Counter-Defendant,	**Case No. 10 C 461 Consolidated for All Purposes with Case No. 10 C 7609**
v.	
MULTISORB TECHNOLOGIES, INC.,	**Hon. Harry D. Leinenweber**
Defendant and Counter-Claimant.	

MEMORANDUM OPINION AND ORDER

Before the Court are the parties' proposed constructions of terms contained in Defendant Multisorb Technologies, Inc.'s ("Multisorb") patents. Multisorb, in its Counterclaims, alleges infringement by Plaintiff Pactiv LLC ("Pactiv") of these patents. The Court construes the terms as detailed below.

I. BACKGROUND

Plaintiff Pactiv, LLC originally brought a patent infringement action against Defendant Multisorb Technologies, Inc. for infringement of seven of its patents. Defendant counterclaimed, alleging infringement of two of its patents. Plaintiff and Defendant both manufacture "oxygen scavengers," which are packets of chemicals placed inside a food container to remove oxygen from the atmosphere inside the container. By removing the oxygen, the scavengers keep food (raw red meat in particular) fresh longer.

The patents at issue, United States Patent No. 5,332,590, issued July 26, 1994 ("the '590 Patent") and United States Patent No. 6,436,872, issued August 20, 2002 ("the '872 Patent"), are titled "Method of Absorbing Oxygen by Employing a Particulate Annealed Electrolytically Reduced Iron" and "Oxygen Absorber," respectively. Each patent descends from another Multisorb patent not asserted in this litigation, U.S. Patent Number 5,262,375 issued November 16, 1993 ("the '375 Patent"), which is also entitled "Oxygen Absorber."

The '375 parent patent describes "an improved oxygen-absorbing composition which includes particulate annealed electrolytically reduced iron," ("PAERI") with a salt and an optional water-attracting-and-supplying component. The '375 Patent, col. 1, ll. 24-26, ECF No. 286-3, PageID # 6653. The salt and moisture combine, producing an electrolyte for activating the iron to absorb oxygen from the atmosphere of the food container. By using electrolytically reduced iron that has also been annealed, Defendant's invention claims to absorb oxygen at a more efficient rate and at lower temperatures than other types of particulate iron.

The asserted '590 Patent is a method for employing the oxygen absorbing composition of the '375 Patent. The '872 patent utilizes the same basic building blocks as the '375 Patent, but also employs a water-supplying component of activated carbon. The '872 patent

also uses an envelope to contain the scavenger composition while allowing the passage of oxygen through the envelope but retaining water inside it.

II. LEGAL STANDARD

Determining the meaning of a patent claim is a matter of law for a judge to decide. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 391 (1996). The scope of the patent, delineated by the claims, defines what right the patentee has to exclude. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (citing *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)).

Claims are construed from the perspective of a person of ordinary skill in the art of the invention. *Id.* at 1315. The claim words are given their "ordinary and customary reading," which is the meaning understood at the time of invention by a person having ordinary skill in the art (a "PHOSITA"). *Id.* at 1312-13. Therefore, courts start claim construction with the intrinsic evidence of a patent, the same resources that a person of ordinary skill would also review. *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998). "The ordinary and customary meaning of a claim term is determined in light of the entire intrinsic evidence," which includes the claims, the patent specification, and the prosecution history. *McDavid Knee Guard, Inc. v. Nike USA, Inc.*, 809 F.Supp.2d 863, 868 (N.D. Ill. 2011)

(citing *Phillips*, 415 F.3d at 1313). Intrinsic evidence is the court's "primary focus in determining the ordinary and customary meaning of a claim limitation." *Phillips*, 415 F.3d at 1316.

Claim construction begins with context and usage in the claim language itself: "the most important indicator of the meaning" of a claim term. *Middleton, Inc. v. Minn. Mining & Mfg. Co.*, 311 F.3d 1384, 1387 (Fed. Cir. 2002). Courts also look at the language of non-asserted claims: the usage of a term in one claim can often illuminate the meaning of a term in other claims. *Phillips*, 415 F.3d at 1314 (citing *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). Claims also must be read in light of the specification, which includes a written description of the patent that must enable one skilled in the art to make and use the invention. *Markman*, 517 U.S. at 373. The prosecution history of a patent provides evidence of how the inventor and the Patent Office understood the patent. *Id.* at 980. During prosecution, the patentee may "limit the meaning of a claim term by making a clear and unmistakable disavowal of scope during prosecution." *Computer Docking Station Corp. v. Dell, Inc.*, 519 F.3d 1366, 1374 (Fed. Cir. 2008). The inventor could characterize the invention in a certain way in order to overcome a rejection based on prior art. *Id.*

The court may look at extrinsic evidence to demonstrate the state of the art at the time of invention. Extrinsic evidence includes expert and inventor testimony, dictionaries, and learned

treatises. *Phillips*, 415 F.3d at 1317. However, extrinsic evidence is less reliable and significant than the intrinsic evidence in claim construction because it is not part of the patent and was not created concurrently with the prosecution of the patent. *Id.* at 1317-19. Relying on extrinsic evidence is only proper if the claim term remains ambiguous after looking at the intrinsic evidence. *Interactive Gift Express, Inc. v. Compuserve, Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001).

III. ANALYSIS

A. "Particulate Annealed Electrolytically Reduced Iron" ("PAERI")

Pactiv argues this term, "Particulate Annealed Electrolytically Reduced Iron" ("PAERI") should be construed as "particulate iron that is electrolytically reduced (not chemically hydrogen reduced) and subsequently annealed." Multisorb contends the term should be construed as "particles of iron that have been annealed and electrolytically reduced to enhance their purity."

The term PAERI or its close approximation is in Claims 1 and 2 of the '590 patent, and Claims 1, 2, and 3 of the '872 patent. *See generally* Joint Claim Construction Chart, ECF No. 298.

Much of the dispute over the term PAERI centers around certain representations Multisorb made during prosecution of the parent patent (the '375 Patent). Specifically, the Court must determine whether Multisorb (1) disclaimed certain characteristics and

methods of production of the '375 Patent oxygen absorber and (2) if it did, whether those disclaimers are also attributable to the patents-in-suit (the '590 Patent and the '872 Patent).

The Court will return to these questions, but first takes note of that which the parties seem to agree upon. After creating some initial confusion in its initial brief that electrolytically reduced iron might be the removal of oxygen from rust, Pactiv in its reply comes round to Multisorb's understanding of electrolytically reduced iron. That is, electrolytically reduced iron is the iron deposited on the cathode of an electrolytic bath containing iron ions (*i.e.*, electrolytic deposition – a common production method of particulate iron). *See* Pactiv Reply, 2 ("Multisorb's Iron is produced by an electrolytic deposition.") With the parties in agreement, the Court treats electrolytically reduced iron or electrolytic iron as that iron produced by the method of electrolytic deposition.

1. Multisorb's Prosecution of the Parent Patent (the '375 Patent) Specified, via Disclaimer, that Annealing Occurs Subsequent to Electrolytic Reduction

Following the rules of claim construction, the Court seeks to construe the term PAERI by first looking to the claims of the patents at issue, which in this case are not particularly helpful. The '590 patent claim merely claims "an oxygen-absorbing composition containing both [PAERI] and a salt. . . ." The '590 Patent, col. 8, ll. 2-4, ECF No. 287-1, PageID # 7069. The '872

patent is the largely the same, claiming "[PAERI and] salt for combining with water." The '872 Patent, col. 14, ll. 36-37, ECF No. 287-3, PageID # 7145.

The specifications, however, do shed some light on the term. The background section of each asserted patent notes:

> [P]articulate iron is known as an oxygen absorber because it readily combines with oxygen. In the past, various types of particulate iron have been used, including hydrogen reduced iron, electrolytically reduced iron, atomized iron, and milled pulverized iron. However, the hydrogen reduced iron, the atomized iron and the milled pulverized iron absorb oxygen relatively slowly. The electrolytically reduced iron absorbs oxygen faster but at lower temperatures at which food are normally refrigerated it absorbs oxygen at a slower rate than desired to remove the oxygen before the initial stages of food spoilage commence.

The '590 Patent, col. 1, ll. 10-25, ECF No. 287-1, PageID # 7066; the '872 Patent, col. 1, ll. 19-29, ECF No. 287-3, PageID # 7139; The '375 Patent, Col. 1, ll. 8-19, ECF No. 286-3, PageID # 6653.

This paragraph makes clear that "electrolytically reduced iron" is superior to three other methods of production of iron powders (hydrogen reduced iron, milled pulverized iron and atomized iron) while recognizing that electrolytically reduced iron still has shortcomings. The specifications of the '590 Patent and '375 Patent also note in the "Summary of the Invention" section how PAERI improves upon the shortcomings of electrolytically reduced iron:

> It is the primary object of the present invention to provide an improved oxygen-absorbing composition which includes particulate annealed electrolytically reduced

> iron which will provide a more rapid rate of oxygen absorption than plain electrolytically reduced iron.

The '590 Patent, col. 1, ll. 26-32, ECF No. 287-1, Page ID # 7066; the '375 Patent, col. 1, ll. 23-28, ECF No. 286-3, PageID # 6653. The '872 Patent uses slightly different language, but states essentially the same thing in its "Description of the Preferred Embodiments" section. The '872 Patent, col. 2, l. 65-col. 3, l. 3, ECF No. 287-3, PageIDs # 7139-7140.

All three patents state:

> [I]t is believed that the annealing changes the structure of the electrolytically reduced iron by increasing the surface area which, in turn, causes it to be more active in its oxygen-absorbing capacity.

The '590 Patent, col. 2, ll. 32-35, ECF No. 287-1, PageID # 7066; The '872 Patent, col. 3, ll. 3-6, ECF No. 287-3, PageID # 7140; The '375 Patent, col. 2, ll. 28-31, ECF No. 286-3, PageID # 6653. Pactiv argues that this sentence also necessarily means that the subject of the invention is electrolytically reduced iron that is subsequently annealed. That definition is certainly implicit from this sentence, but the canons of claim interpretation caution against importing into claim language the limitations posed in a specification. *Arlington Indus., Inc. v. Bridgeport Fittings, Inc.*, 632 F.3d 1246, 1255-1256 (Fed. Cir. 2011). Based on this specification sentence alone, it would be a close call to say that the claim calls *only* for iron produced by electrolytic reduction followed by annealing.

But the argument for this sequential arrangement becomes stronger when the prosecution history of the parent patent (the '375 Patent) is considered. The patent examiner on January 4, 1993 rejected the parent patent PAERI claims as obvious over Patent No. 4,192,773 by Yoshikawa in view of Patent No. 5,151,262 by Pemsler.

Yoshikawa teaches an oxygen absorber made from "electrolytic metal powders," including iron powder. Yoshikawa, Patent No. 4,192,773, col. 2, ll. 61-68. Pemsler teaches a method of making high-purity synthetic pyrite by reacting sulfur with hydrogen-annealed iron powder. Pemsler, Patent No. 5,151,262, col. 2, ll. 36-47. The hydrogen-annealing of the iron was attractive, Pemsler taught, because it deoxidized (reduced) the iron powder, a preferred characteristic in the production of Pemsler's pyrite. *Id.*

During prosecution of the Multisorb parent patent, the examiner concluded that Yoshikawa's iron was essentially the same as PAERI except that it had not been annealed. Since Pemsler taught that hydrogen annealing reduced iron, PAERI was obvious in light of the two patents, the examiner concluded. Supplemental Appendix, 46 ("SA-046"), ECF No. 286-4, PageID # 6694.

Multisorb's attorney filed a response to the examiner's objection that argued, "[t]here is absolutely no teaching in Pemsler that the hydrogen annealed iron has been electrolytically

reduced *before* it has been hydrogen annealed." *Id.* at SA-055, Page ID # 6703 (emphasis added).

The response continued: "[a]pplicant's iron is electrolytically reduced iron which has been *subsequently* annealed." *Id.* at 56, PageID # 6704 (emphasis added). The Multisorb attorney's discussion went on to extol the superiority of annealed electrolytically reduced iron over hydrogen annealed iron, and contended that nothing in the two references suggested annealed electrolytically reduced iron would be superior in oxygen absorption than mere electrolytically reduced iron or mere hydrogen annealed iron. *Id.* These contentions were substantially repeated in a declaration by the Multisorb inventor, George McKedy. *Id.* 59-61. This apparently satisfied the examiner, who allowed the application to issue as the '375 patent.

In light of the specificity with which the patentee, during prosecution, described the order of electrolytic reduction followed by annealing, it is impossible to accept Multisorb's proposed interpretation of the parent patent, which would allow electrolytic reduction and annealing in any order. As already noted, electrolytic reduction, followed by annealing is implicitly suggested by the '375 Patent specification. But that implicit interpretation became explicit in the '375 Patent prosecution history when Multisorb's attorney stated that "applicant's iron" is electrolytically reduced, then annealed. *Id.* at 56, PageID # 6704.

In light of such a clear disclaimer, it is fair to read such a limitation into the '375 Patent claim terms.

2. The Disclaimer in the Parent Patent is Imputed to the Patents-in-Suit

Multisorb argues that the prosecution history of the Parent Patent (the '375 Patent) cannot be imputed to construe the term PAERI the '590 Patent and the '872 Patent. The Court disagrees. As Pactiv points out, the Federal Circuit does allow a statement by the patentee during the prosecution of a familial patent to operate as a disclaimer in regards to the patent-in-suit. *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1306 (Fed. Cir. 2007) (citing *Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1350 (Fed. Cir. 2004)). In *Microsoft*, the Federal Circuit found that a statement made by a patentee in the course of prosecuting one patent was applicable to two sibling patents because the comment applied to a common communication system disclosed in all three patents, and because identical language was used in all three patents to describe the communications system. *Microsoft*, 357 F.3d at 1350.

Likewise, here, the PAERI component of the parent patent (the '375 Patent) is the same as the PAERI components in the patents-in-suit (the '590 Patent and the '872 Patent). Also, (as demonstrated by the quotations of all three patent specifications above) the

language used in the specifications to describe the PAERI component of all three patents is identical or nearly identical.

Therefore, the disclaimer made in the parent application (the '375 Patent) applies to the patents-in-suit (the '590 Patent and the '872 Patent) as well, and all three patents therefore envision annealing taking place subsequent to electrolytic reduction.

3. Multisorb Did Not Disclaim Hydrogen Annealing

However, Pactiv's proposed construction of PAERI is not entirely satisfactory either. It contends that the prosecution history disclaims hydrogen annealing. Multisorb disagrees.

At this point, some discussion of the term "annealed" is necessary. It is not defined in the claims. The specification of the '375 parent patent and the patents at issue offer sparse clues. They note that PAERI is superior to mere electrolytically reduced iron because "it is believed that the annealing changes the structure of the electrolytically reduced iron by increasing the surface area which, in turn, causes it to be more active in its oxygen-absorbing capacity." The '375 Patent, col. 2, ll. 28-31, ECF No. 286-3, PageID # 6653; The '590 Patent, col. 2, ll. 32-34, ECF No. 287-1, PageID # 7066; The '872 Patent, col. 3, ll. 3-6, ECF No. 287-3, PageID # 7140.

This explains what is believed annealing *results in*, but does not specify what annealing *is*. Nothing else in the specification

offers a definition of annealed, and therefore, it is appropriate to consult extrinsic sources.

Hawley's Condensed Chemical Dictionary of 2001 defines annealing as:

> Maintenance of glass or metal at a specified temperature for a specific length of time . . . and then gradual cooling at a predetermined rate. This treatment removes the internal strains resulting from previous operations and eliminates distortions and imperfections. A clearer, stronger, and more uniform material results.

Pactiv Br., Ex. 8, 3, ECF No. 286-12, PageID # 7050.

Pactiv maintains that annealing cannot encompass hydrogen annealing (annealing of materials in a hydrogen atmosphere). It argues that in the '375 Patent prosecution history, Multisorb called Pemsler's hydrogen-annealed iron a different product than PAERI.

That is true. However, although Multisorb during prosecution limited PAERI to a product that had been electrolytically reduced and *then* annealed, it never said the annealing could not be hydrogen annealing, and thus did not specifically disclaim it.

Multisorb was simply differentiating its product from Pemsler's by stressing that the combination of electrolytic reduction followed by annealing made Multisorb's product more oxygen-absorbent than Pemsler's hydrogen-annealed iron alone was, and that nothing in Pemsler suggested that combining the two processes would make the iron more oxygen-absorbent. *See* SA-056, ECF No. 286-5, PageID # 7603 ("There is absolutely no teaching in

Pemsler that the hydrogen annealed iron has been electrolytically reduced before it has been hydrogen annealed.").

Indeed, that prosecution language just cited seems to acknowledge implicitly that annealing can include hydrogen annealing. This was implied again in the prosecution history when Multisorb's attorney wrote of "hydrogen-annealed iron" as "iron which has been annealed in a hydrogen atmosphere," implying hydrogen-annealing was just one type of possible annealing. SA-055, ECF No. 286-4, PageID # 6703. Additionally, although Pemsler referred to his iron as "hydrogen-annealed iron," Multisorb referred to Pemsler's iron as simply "annealed" iron when it wrote "[t]hus, Pemsler's annealed iron and applicant's electrolytically reduced iron which has been subsequently annealed are two entirely different products." SA-056, ECF No. 286-4, PageID # 6704.

That annealing can encompass several kinds of procedures is reinforced by the following extrinsic texts.

> **Annealing (metals).** A *generic* term denoting a treatment consisting of heating to and holding at a suitable temperature followed by cooling at a suitable rate.

Arthur C. Reardon, *Metallurgy for the Non-Metallurgist*, 429-430 (Second Edition, 2011) (emphasis added).

An earlier edition of the same work specifically contemplates that the term can encompass 16 types of iron annealing, including "subcritical annealing." Harry Chandler, *Metallurgy for the Non-Metallurgist*, 222 (1998).

Multisorb curiously argues to narrow the scope of its own patent with a definition of annealed that involves a recrystalization or phase change that occurs at temperatures significantly higher than the 300-400° Fahrenheit outlined by Pemsler. However, in its briefing, Multisorb never specifies exactly how high that minimum temperature must be, (Pactiv suggests it would be at least 1000° Fahrenheit) just as it did not specify such a minimum temperature for annealing in its claim language or specification. Multisorb also failed to differentiate its annealing from Pemsler's when it replied to the patent office's rejection.

The Court finds that Multisorb's definition of annealing, despite its expert's affidavit, is not merited. First, Multisorb never quibbled with Pemsler's definition of anneal when it fought the initial obviousness rejection of the '375 Patent and, in fact, seemed to accept that Pemsler's process was annealing as commonly understood by a PHOSITA.

Second, Multisorb admits that annealing at 300-400°F may reduce internal strains in the structure of iron. ("'Annealing' at temperatures this low for this short a time might at most reduce stresses in metallic iron." Multisorb Br. 7.) That admitted reduction of internal strains puts it within the aforementioned much more general definition of annealing in *Hawley's Condensed Chemical Dictionary*.

> **annealing**. Maintenance of glass or metal at a specified temperature for a specific length of time . . . and then gradual cooling at a predetermined rate. This treatment *removes the internal strains* resulting from previous operations and eliminates distortions and imperfections.

Hawley's Condensed Chemical Dictionary (14th ed. 2001) (emphasis added).

Third, other intrinsic and extrinsic evidence points to a much more generic definition of annealing than Multisorb suggests. The intrinsic specification suggests that annealing need only be a procedure that changes a material's structure and "causes it to be more active in its oxygen-absorbing capacity." JA, Ex.1, at 5, col. 2, ll. 32-35. Nowhere is a recrystalization demanded.

Pactiv argues that annealing can include a sub-critical annealing at relatively low temperatures. This comports with the broad understanding of annealing as mentioned in the 1998 *Metallurgy for the Non-Metallurgist*. *See supra.* It also comports with the understanding of annealing in PRACTICAL METALLURGY AND MATERIALS OF INDUSTRY. That work notes "[t]he heat treatment for iron and steel that is generally called annealing can be divided into several different processes: full anneal, normalizing, spheroidize anneal, stress relief (anneal), and process anneal." JOHN E. NEELY, PRACTICAL METALLURGY AND MATERIALS OF INDUSTRY 151 (Ed Francis *et al.* Eds. 4th Ed.1994). Neely notes a process called recovery does not entail recrystalization but does relieve stresses in the material "and is called stress relief anneal." *Id.* at 155. Neely's

language supports a reading of "anneal" that encompasses mere stress-relief within the iron without recrystalization or a phase change.

Thus, the requirement of a relatively high-temperature, recrystalization or phase-change anneal that Multisorb urges is rejected.

But the Court also cannot accept that Multisorb disclaimed all hydrogen annealing. While Multisorb distinguished PAERI from iron that is solely hydrogen-annealed as iron that is electrolytically reduced and subsequently annealed, the Court cannot say that Multisorb definitively foreclosed the possibility that such subsequent annealing could be a hydrogen anneal. That "annealed" could encompass a hydrogen annealing is consistent with the breadth of the term annealed that Pactiv advocates and that the extrinsic sources support.

For all these reasons, the Court construes PAERI in the parent patent to mean "electrolytically reduced particulate iron that has been subsequently annealed," with "annealed" including hydrogen annealing.

B. "Salt"

In the patents, Multisorb claimed an oxygen absorbing composition containing both "[PAERI] and a salt . . . said [PAERI] and said salt of said composition being present in said container in sufficient proportions for said salt to combine with moisture in

said container to form an electrolyte which in turn activates said iron to absorb oxygen. . . .” The ‘590 Patent, col. 8, ll. 2-11. The ‘872 Patent is very similar, claiming “an oxygen absorbing composition including . . . [PAERI], salt for combining with water to produce an electrolyte which combines with said iron to cause it to absorb oxygen. . . .” The ‘872 patent, col. 14 ll. 34-38, ECF No. 287-3, PageID # 7145.

Multisorb argues for the following broad definition of salt: “a substance that dissolves in moisture to form an electrolyte.” It argues that it acted as its own lexiconographer by “consistently defin[ing salt] as a substance which combines with moisture to produce an electrolyte.” The Court does not deny that “[w]hen a patentee explicitly defines a claim term in the patent specification, the patentee’s definition controls.” *Martek Biosciences Corp. v. Nutrinova, Inc.*, 579 F.3d 1363, 1380 (Fed. Cir. 2009). The Court does have trouble with is the contention that Multisorb explicitly defined the term salt as it now argues it did. Instead, it appears to the Court that the specification merely recited what salt, a commonly understood term to a PHOSITA, does when mixed with water; it did not assign an expanded meaning to salt. In the ‘590 Patent, Multisorb notes:

> Another component of the oxygen-absorbing composition is a salt which, when combining with water, will form an electrolyte to activate the particulate iron. The salt is preferably sodium chloride which may be present by weight in an amount of between about 0.4% to 3.5% . . .

The '590 Patent, col. 3, ll. 9-13, ECF No. 287-1, PageID # 7067.

Nothing in the use of "salt" here indicates that the patentee is attempting to imbue the term "salt" with anything beyond its ordinary meaning. *See Laryngeal Mask Co. Ltd. v. Ambu A/S*, 618 F.3d 1367, 1372 (Fed. Cir. 2010)(applying ordinary and customary meaning to even an inventor-created, obscure term ("backplate") when "the specification . . . [did] not clearly indicate the patentee's intent to give backplate a unique meaning.")

Multisorb asks the Court to accept that "salt" is synonymous with almost any "substance." To do so would defy the term's plain and ordinary meaning in the chemical world.

Multisorb quibbles that Pactiv's definition of salt as "the compound formed as the result of the reaction of acids and alkalis" is deficient because it relies on a plastics dictionary when plastics are not the art at issue. This could be a meritorious argument if the plastics dictionary definition were substantially different from the definition found in the reference book Multisorb's expert prefers: the *CRC Handbook of Chemistry and Physics*. Tom H. Powers, Multisorb's expert, cited that work as the one he would refer to for finding common and ordinary meanings. Powers Dep., 11-12, ECF No. 295-2, PageID # 7362-7363. That work defines salt as "an ionic compound formed by the reaction of an acid and a base." *CRC Handbook of Chemistry and Physics*, 2-55 (1999-2000 80th ed. 1999). (This is not substantially different

from Pactiv's definition because, as Powers acknowledges, a compound formed by the reaction of an acid and a "base" is the same as a compound formed by the reaction of an acid and an "alkali." Powers Dep. 47, ECF No. 295-2, PageID # 7398.) Powers also acknowledged that this definition covered each and every specific example listed as a preferred salt in the specification. While that list was given "without limitation," indicating it was not exclusive, it also does nothing to imbue "salt" with anything beyond the plain and ordinary meaning of salt, further discounting Multisorb's construction.

The Court, therefore, construes salt to mean "the compound formed as the result of the reaction of acids and alkalis."

C. "Moisture in Said Container"

The '590 patent claims a method involving an oxygen-absorbing composition (PAERI and salt) being placed in an envelope and that envelope being placed in a sealed container with the product that is being preserved. The salt is described as being present in sufficient proportions to "combine with moisture in said container to form an electrolyte." The '590 Patent, col. 8, ll. 7-11, ECF No. 287-1, PageID # 7069. Pactiv argues that, at least as far as claim 1, this necessarily means that the moisture must originate from the product in the container or the atmosphere within the container, but it cannot originate from within the envelope. Multisorb argues the term "moisture in the container" has a plain

and ordinary meaning that encompasses moisture originating in the envelope. Further, it argues that the patent explicitly notes the water-attracting and supplying component can have water added to it before being placed inside the envelope.

This is a close call, but Pactiv has the better argument. It points out that the claims do not introduce the water-attracting and supplying component limitation until claim 3, which is ultimately dependant on claim 1. The doctrine of claim differentiation, Pactiv argues, means such a component is not in claim 1. *See Arlington Industries, Inc. v. Bridgeport Fittings, Inc.*, 632 F.3d 1246, 1254 (Fed. Cir. 2011). Pactiv then argues that specification language makes it clear that the water-attracting and supplying component is added when, otherwise, there would not be enough water in the envelope to create an electrolyte solution to activate the iron. As the specification notes:

> The composition of [PAERI] and salt provides effective oxygen absorption in atmospheres or containers wherein there is sufficient moisture to combine with the salt to produce an electrolyte. However, in environments wherein the amount of moisture is relatively low, a water-attracting and supplying component can be added to the [PAERI] and salt.

The '590 Patent, col. 3, ll. 40-48, ECF No. 287-1, PageID # 7067.

There would be no need to add a water-attracting and supplying component to the envelope if sufficient moisture originally existed in the envelope to produce sufficient electrolytes. While the Court must give claim terms their broadest reasonable construction

that rule does not give the Court "an unfettered license to interpret claims to embrace anything remotely related to the claimed invention." *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010). Claim construction must be consistent with the specification and claim language and should be read in light of the specification as it would be interpreted by one of ordinary skill in the art. *Id.*

The Court accepts Pactiv's construction with one adjustment. There is nothing in the '590 patent that limits the container's contents to food. To the contrary, the specification anticipates the invention may be used with "any other type of product which is packaged and which must be protected from the deleterious affect [*sic*] of oxygen." The '590 Patent, col. 4, ll. 67-68; ECF No. 287-1, PageID # 7067.

Therefore, the Court construes "moisture in said container," (in claim 1 only), to mean "moisture released from the product in the container and its environment (air)."

D. "Water-Attracting and Supplying Component"

The above discussion of "moisture in said container" significantly informs the construction of the term "water-attracting and supplying component." Pactiv proposes the construction "a material that attracts moisture from the food product and its environment and supplies moisture to the oxygen-

absorbing composition" while Multisorb offers a construction of "a material that attracts moisture and supplies moisture."

Pactiv believes its wording eliminates the possibility that water can be originally supplied within the envelope but rather must be wholly attracted in from moisture outside the envelope. This construction flies in the face of explicit language of the specification, which, unlike specification language directed to claim 1, specifically contemplates that the water content of the water-attracting and supplying component (which is within the envelope) of claims 3, 4 and 5 "by weight can vary from 0% to 32% and more preferably between about 18% to 26%." The '590 patent col. 3, ll. 52-54. Even more explicitly, it contemplates adding water directly to the water-attracting and supplying agent when it notes "the salt can be added to the [water-attracting and supplying component] by dissolving it in water before being added to the [water-attracting and supplying component]. *Id.* col. 3, ll. 57-59.

The Court therefore adopts Multisorb's construction of the term "water-attracting and supplying component," which is: "a material that attracts moisture and supplies moisture."

E. "In Sufficient Proportions" ('590 Patent, Claim 1) and "Including in Relatively Sufficient Proportions" ('872 Patent, Claims 1-3)

Claim 1 of the '590 Patent claims:

> A method of absorbing oxygen in a container containing a product which can be deleteriously affected by oxygen and which is subjected to temperatures below about 50° F. for storage comprising the steps of placing said product into

> a container which is to be subjected to temperatures below 50° F., adding an oxygen permeable envelope containing an oxygen-absorbing composition containing both particulate annealed electrolytically reduced iron and a salt to said container, and sealing said container containing said product and said oxygen-absorbing composition, said particulate annealed electrolytically reduced iron and said salt of said composition being present in said container *in sufficient proportions* for said salt to combine with moisture in said container to form an electrolyte which in turn activates said iron to absorb oxygen in said container.

The '590 Patent, col. 7 l.23-col.8 l.11, ECF No. 287-1, PageID # 7069 (emphasis added).

Claim 1 of the '872 Patent claims:

> A packet for absorbing oxygen comprising an oxygen absorbing composition *including in relatively sufficient proportions* particulate annealed electrolytically reduced iron, salt for combining with water to produce an electrolyte which combines with said iron to cause it to absorb oxygen, and an envelope enclosing said composition which inhibits migration of water from said envelope.

The '872 Patent, col. 14 ll. 34-40, ECF No. 287-3, PageID # 7145 (emphasis added).

Claims 2 and 3 of the '872 Patent contain almost identical language as Claim 1, differing only in the properties of the envelope.

As a preliminary matter, Pactiv argues that "in relatively sufficient proportions" phrase in the '872 Patent claims applies to three terms: PAERI, salt and the envelope. The Court concedes that, due to less-than-desirable wording and punctuation in the claim, it is at least a colorable argument that "an envelope" is the third in a series of three items that, together, make up the

"oxygen absorbing composition." However, a closer look shows that the envelope and the oxygen absorbing composition make up the "packet," while the PAERI and salt make up the oxygen absorbing composition.

Pactiv's interpretation is belied by the clear language of the claim that the envelope "enclose[es] said composition." This indicates the envelope is not part of the composition. There is also no intrinsic evidence in the specification and prosecution history to indicate that the envelope is part of the oxygen-absorbing composition.

Pactiv argues that "sufficient proportions" and "including in relatively sufficient proportions" must be construed to mean "a predetermined amount of iron, salt, and water." Pactiv appears to be arguing, at least in regards to the '872 patent, that the "sufficient proportions" must also describe the amount of water because the specification only describes inserting blotter paper with water into packages as the source of the water.

The Court rejects that the amount of water is described by the phrase "sufficient proportions" in light of the Court's above discussion of "moisture in said container" and in light of the plain language of Claim 1 indicating the components of the oxygen-absorbing composition consists only of PAERI and salt. Additionally, contrary to Pactiv's claims that blotter paper is the only referenced way of providing water, the background of the

invention makes clear that ambient moisture of a "moist environment" can provide the water. The '872 Patent, col. 2, ll. 59-62; col. 3, ll. 21-25, ECF No. 287-3, PageIDs # 7139-7140.

Pactiv's stronger argument is that, in the case of both patents, Multisorb disclaimed salt levels above 3.5 percent and below 0.4 percent after the examiner initially rejected substantially similarly worded claims in the parent patent application (the '375 Patent). The examiner initially rejected as indefinite the '375 Patent's Claim 1 detailing "[a]n oxygen-absorbing composition comprising in relatively sufficient proportions [PAERI], and salt means for producing an electrolyte." SA-031, ECF No. 286-4, PageID # 6679. He also initially rejected a number of dependent claims, noting "[a]bsent the specific proportion of each component the claims encompass embodiments outside the purview of the invention and are indefinite." *Id.* at SA-044, PageID # 6692. He also objected that the phrase "salt means" was indefinite, as was the phrase "a water-attracting and supplying component." *Id.* Lastly, the examiner objected that it was not clear whether the percentages of salt and water-attracting and supplying components in the dependent claims referred to the iron content or the total weight of the oxygen-reducing composition.

Multisorb amended the claims to note the percentages referred to the total weight of the composition; it eventually changed "salt means" to "salt"; and it argued that claim 1 was definite

> . . . considering that various ranges of proportions have been set forth and further considering that the specification specifically states that the amount of salt is not critical and that the amount of water-attracting and supplying component is optional. The main thrust of all of the claims is the use of '[PAERI]' which provides superior oxygen-absorption capabilities."

SA-053, ECF No. 286-4, PageID # 6701. *See also* SA-049, 062 (clarifying the percentages were of the total weight of the composition and deleting "means" from "salt means"). Pactiv argues these actions tied Claim 1 to the specific percentages of .4 to 3.5 percent salt.

The Court does not agree. While it is clear Multisorb's attorney walked a very fine line in trying to give the examiner just enough to get past an indefiniteness rejection without disclaiming the Claim 1 term of approximation "relatively sufficient proportions," the Court thinks he succeeded. Multisorb never clearly disclaimed the latitude granted by the Claim 1 term "relatively sufficient proportions." It was certainly artful of Multisorb's attorney to note that Claim 1 was definite in light of the other claim percentages, but that is not the same as making Claim 1 equivalent to them, particularly when he emphasized in the response to the examiner that, in regards to Claim 1, exact salt amounts were not critical.

The Federal Circuit has noted:

> Ordinarily a claim element that is claimed in general descriptive words, when a numerical range appears in the specification and in other claims, is not limited to the numbers in the specification or the other claims. *See Specialty Composites v. Cabot Corp.*, 845 F.2d 981, 987, 6 U.S.P.Q.2D (BNA) 1601, 1604 (Fed. Cir. 1988) ("Particular embodiments appearing in the specification will not generally be read into the claims. . . . What is patented is not restricted to the examples, but is defined by the words in the claims.") It is usually incorrect to read numerical precision into a claim from which it is absent, *particularly when other claims contain the numerical limitation*.

Modine Mfg. Co. v. United States Int'l Trade Comm'n, 75 F.3d 1545 (Fed Cir. 1996) (emphasis added).

Multisorb also certainly came close to setting absolute limits by noting in the specification that "[t]he salt should be present in an amount of between 0.4% to 3.5% and preferably between about 2% and 2.5%." SA-007, col. 3, ll. 9-14, ECF No. 286-3, PageID # 6654. This could imply that about 0.4% and 3.5% are the absolute lower and upper limits of salt, respectively, while 2-2.5% are the preferred embodiment limits. However, this statement is immediately qualified by noting that the salt level is not critical and oxygen will still be absorbed above 3.5% and below 0.4%. The specification explains that above 3.5, no increase in the reaction *rate* will occur (not that the *reaction* won't occur), and below 0.4%, the system will be inefficient, but oxygen absorption will still take place. *Id.* at ll. 14-21. The only absolute limitation in Claim 1, however, is that (1) salt must be present in enough

concentration to mix with water to produce an electrolyte and (2) the resulting electrolyte must combine with some iron to absorb at least some oxygen.

The Court does not agree with Pactiv that Multisorb's expert Powers argued "all of the iron has . . . [to be] oxidized" to achieve the result noted in Claim 1. Pactiv Reply, 14. That quote is taken out of context by Pactiv and was spoken in regards to a series of questions that revolved around how a PHOSITA knows how all iron present is in contact with the electrolyte. SA-457, ll.8-9, ECF No. 295-2, PageID # 7405. That total contact is a preferred embodiment noted in the specification of all three patents and not the limitation of any claim. The fact that 3.5% is not an absolute upper limit on the salt is further reflected in the '375 parent patent specification which states that the optional water-absorbing and supplying component can itself be salt and can be present in percentages of up to 80 percent. '375 Patent, col. 3, ll. 47, 60, ECF No. 286-3, PageID # 6654.

The proportions required by the claim language (either when framed in terms of "sufficient proportions" in the '590 patent or "relatively sufficient proportions" in the '872 patent) are simply that there be enough salt to combine with water to create an electrolyte that causes the iron to absorb at least some oxygen. While the Court agrees with Pactiv that "relatively sufficient proportions" is needlessly more equivocal than "sufficient

proportions," the different phrasings appear in different patents and are ultimately defined identically by the claim and specification language.

Pactiv also argues that the disputed terms are indefinite. Claims are "held indefinite only where a person of ordinary skill in the art could not determine the bounds of the claims, *i.e.*, the claims were insolubly ambiguous." *Halliburton Energy Services, Inc. v. M-I LLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008).

The Court finds Multisorb's cited case, *Abbott Laboratories v. Baxter Pharmaceutical Products, Inc.*, 334 F.3d 1274 (Fed. Cir. 2003) persuasive. In that case, the court ruled that an "effective amount" and an "amount sufficient" of Lewis acid were not indefinite terms because the specification taught that the terms could vary depending upon conditions and because it described the term in the functional framework of what it accomplished by being present in that amount: ("prevent[ing] the degradation of the fluoroether compound by a Lewis acid."). *Id.* at 1278.

Here, too, the specifications describe what the "relatively sufficient proportions" of salt and iron will functionally accomplish: "produce an electrolyte which combines with said iron to cause it to absorb oxygen." The '872 Patent, col. 14, ll. 37-38, ECF No. 287-3, PageID # 7145. The '590 Patent similarly describes what functional accomplishment will result from the

"sufficient proportions." The '590 Patent, col. 8, ll. 8-11, ECF No. 287-1, PageID # 7069.

"An accused infringer must . . . demonstrate by clear and convincing evidence that one of ordinary skill in the relevant art could not discern the boundaries of the claim based on the claim language, the specification, the prosecution history, and the knowledge in the relevant art." *Haemonetics Corp. v. Baxter Healthcare Corp.*, 607 F.3d 776, 781 (Fed. Cir. 2010).

Multisorb's expert affidavit offers that a PHOSITA would recognize how much salt needs to be present to mix with water to activate iron to absorb oxygen. Pactiv is correct that this aspect of the affidavit is unconvincing as conclusory. But it does not matter, because the specification provides that at least some oxygen be absorbed, and the multiple examples within the specification that measure oxygen absorption (*e.g.*, '872 Patent, cols. 8-13, ECF No. 287-3, PageIDs # 7142-7145) show that discerning whether a measurable amount of oxygen has been absorbed is well within the grasp of a PHOSITA.

Pactiv does have a legitimate objection that Multisorb's proposed definition "in an amount required to produce a desired outcome" is vague in that the "desired outcome" is unclear because that phrase is nowhere in any of the patents. However, Multisorb readily provides a more explicit alternative: "iron and salt . . . in an amount . . . that allows the salt to mix with moisture to

activate the iron to absorb oxygen." Multisorb Br. 23. The Court adopts that construction.

F. "Tending to Retain Water"

Multisorb has agreed to the construction of "impeding the migration of water out of the packet."

G. "Electrolyte"

For the term "electrolyte," Pactiv offers the construction "a chemical compound that ionizes when dissolved or molten to produce an electrically conductive medium." Multisorb offers the construction of "a conductive solution of ions in moisture."

The '590 specification recites "a salt which combines with moisture to produce an electrolyte" while the '872 patent recites "a salt which combines with moisture obtained from moisture impregnated activated carbon to produce an electrolyte." The '590 patent, col. 2, ll. 38-39, ECF No. 287-1, PageID # 7066; the '872 patent, col. 3, ll. 9-11, ECF No. 287-3, PageID # 7140. In its Reply, Pactiv offers the alternative definition of "an electrically conductive medium formed when a chemical compound dissolves or becomes molten to ionize."

Pactiv offers an ordinary dictionary as the authority for its construction. Multisorb points to the '872 patent and the phrase "the salt, when combining with water, will form an electrolyte" for evidence of its interpretation. The '872 patent, col. 3, ll. 56-58, ECF No. 287-3, PageID # 7140. The parties agree they are not

far apart in their definitions, and the Court struggles to define exactly what their differences are. The difference appears to be whether moisture or water must be part of the electrolyte. The proposed Pactiv definition would leave the door open to the salt, without addition of moisture, being an electrolyte. This is contrary to the plain language of both specifications, which consistently refer to the electrolyte as the mixture of salt and moisture (or water). Therefore, the Court adopts Multisorb's proposed construction of "a conductive solution of ions in moisture."

H. "Salt for Combining with Water to Produce an Electrolyte"

Blessedly, the parties have realized and agree that with the construction of "salt" and "electrolyte" this phrase need not be separately construed.

I. "Activated Carbon"

The parties have withdrawn this term from consideration by the Court.

IV. CONCLUSION

For the reasons stated herein, the Court finds that a person having ordinary skill in the art of oxygen absorbers would construe the terms at issue as stated in this Memorandum Opinion and Order.

IT IS SO ORDERED.

Harry D. Leinenweber, Judge
United States District Court

DATE: 1/9/2013