United States District Court,
N.D. Illinois, Eastern Division.

Yoon Ja KIM,
Plaintiff.
v.
THE EARTHGRAINS COMPANY, n/k/a Sara Lee Baking Group, Inc,
Defendant.

Jan. 11, 2005.

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David H. Levitt, Mark C. Metzger, Daniel Alexander Trevino, Hinshaw & Culbertson, Chicago, IL, Bryan K. Wheelock, Harness, Dickey & Pierce, St. Louis, MO, for Defendant.

MEMORANDUM OPINION AND ORDER

MASON**, Magistrate J.**

Plaintiff Yoon Ja Kim ("Kim") charges defendant The Earthgrains Company-now known as Sara Lee Bakery Group, Inc. ("Sara Lee")-with infringing U.S. Patent No. Re. 36,355 (" '355 patent"), which covers an oxidizing agent for bread dough. Kim alleges that Sara Lee's sale of its Butter Top and D'Italiano brand breads infringes the '355 patent due to the amounts of ascorbic acid and food acid-such as vinegar-in the breads. The parties have submitted memoranda on the issue of construction of the patent's disputed claims. The court's construction of the claims at issue in this case is set forth below. FN1

FN1. After a review of the '355 patent and the parties' submissions in this matter, the court determined that a hearing was unnecessary to construe the patent claims at issue.

I. BACKGROUND

A. Breadmaking Chemistry

We begin with a brief and admittedly rudimentary discussion of some of the chemistry at work in the breadmaking process. FN2 There are two major proteins in wheat flour: gliadin and glutenin. Structurally, their molecules can be thought of as coiled or folded chains, stabilized by bonds between sulfur atoms, called disulfide bonds, on adjacent areas of the molecules. When the flour is kneaded or mixed with a liquid, the molecules are stretched, and these bonds, which are relatively weak, are broken. Then, while the dough is allowed to rest, the disulfide bonds can reform either within the gliadin and glutenin molecules, or between them. Bonding between the gliadin and glutenin molecules forms gluten. The gluten is the elastic

type substance that allows the dough to trap gas bubbles, whether during rising or baking.

FN2. This background information was culled from the following websites: www.foodproductdesign.com; www.bakingbusiness.com; and www.exploratorium.edu.

As yeast cells ferment, they produce carbon dioxide, the gas that acts as the leavening agent in the dough. The volume of the dough increases as more and more of the gas is generated, and the dough is converted to a foam. As the bubbles of gas expand, the gluten is stretched into a film surrounding the bubble. During the first several minutes of baking, the production of carbon dioxide gas by the yeast cells is temporarily accelerated. In addition, the increased heat causes the gases already within the dough to expand. By the time baking is completed, the size of the gluten bubble has increased several fold, due to the elasticity of the gluten and the pressure of the expanding gases. As the confined gases and steam expand, the gluten stretches and holds in those gases. The resulting increase in volume is maintained until the temperature becomes hot enough to coagulate the proteins, which gives the gluten bubble its final, set structure, and the bread its desirable texture.

B. Oxidizing Agents in Breadmaking

The patent-in-suit is for a slow-acting oxidizing agent to be used in breadmaking. Oxidizing agents are employed in breadmaking to strengthen the gluten, thereby improving bread volume, texture, and symmetry. They do this by "encouraging" the formation of disulfide bonds. In addition to the disulfide bonding that strengthens gluten, sulfur atoms may also bond with hydrogen atoms, forming sulfhydril links. When they do, no disulfide link is possible. Oxidizing agents "strip" the hydrogen atoms from the sulfhydril links, thereby making more sulfur atoms available to form the gluten-strengthening disulfide bond.

Oxidizing agents have varying rates of reaction and are spent at various stages of the breadmaking process: mixing, proofing, or baking. Fast acting agents, such as ascorbic acid, or vitamin C, are mainly functional during the mixing stage and somewhat functional during the proofing stage. By the baking stage, however, these agents are dissipated. Slow acting oxidizing agents continue to function throughout the proofing stage and into the early stages of baking.

One such slow acting agent, and the one most commonly used until recently, is potassium bromate. Used as a flour improver, potassium bromate strengthens the dough and promotes higher rising, thereby increasing the volume of bread, and produces bread with a fine crumb-the non-crust part of bread-structure. It acts principally during late proofing and early baking, and it prevents the dough from falling when the dough is handled. Because it is an oxidizing agent, under the right conditions, it will be completely spent in the baking process. If too much is used, or the bread is not baked long enough or at a high enough temperature, however, a residual amount may remain. While the amount might be negligible, it is nonetheless a cause for concern because potassium bromate has been banned in several countries as a carcinogen. In California, state law requires potassium bromate to be listed on the label with a cancer warning. Even though some in the baking industry might dispute the effects of residual potassium bromate, then, the tide has turned against its use.

C. Patent-in-Suit

Kim's invention is designed to replace potassium bromate as a slow acting oxidizing agent. It comprises ascorbic acid, an effective amount of food acid, FN3 and an optional phosphate. Kim claims to have

discovered that a food acid added in an effective amount to ascorbic acid slows down the oxidation rate of ascorbic acid. Apparently, the food acid acts to deny ascorbic acid certain catalysts for oxidation for an initial period. Thereafter, the catalysts are released, and work to accelerate oxidation.

FN3. Food acids are found in fruits, vegetables, their juices, and many other fermented products. Examples include acetic acid (or vinegar), citric acid, (as found in lemons or limes), and lactic acid (as found in sour milk).

Ascorbic acid acts as an oxidizing agent by reacting with atmospheric oxygen, thereby turning into dehydroascorbic acid and oxidizing the gluten of the dough. The rate of oxidation is accelerated by trace metal ions that are present in flour, such as iron or copper. Food acid acts as chelating agent. A chelate is a compound of a metal and a non-metal, usually a metal and something organic. When a food acid is added to a dough mix, it will form chelates with the iron or copper ions, rendering them inactive and unavailable to catalyze oxidation. Thus, the food acid acts to slow the oxidation rate of the ascorbic acid in the early stages of breadmaking by taking the iron and copper ions out of the equation. As the pH level in the dough decreases, the chelates break down, back into food acid and copper and iron ions. Once free, the copper and iron ions act as catalysts for the oxidation of the ascorbic acid into dehydroascorbic acid. In this way, the ascorbic acid is changed from a fast acting oxidant to a slow acting one that functions through out the breadmaking process.

Kim filed an application for a patent on a "potassium bromate replacer" on November 5, 1993. She filed a second application on September 9, 1994, which was a continuation-in-part of her initial application. That application issued as U.S. Patent 5,510,129 (" '129 patent") on April 23, 1996. The '129 patent was then reissued on October 26, 1999, as U.S. Patent Re. 36,355 (" '355 patent"). Kim contends Sara Lee's breads infringe claims 5 through 8 and 10 of the '355 patent. Claim 5 is directed to a slow acting ascorbic acid composition as a potassium bromate replacer and is referred to as "Replacer I." Claims 6 through 8 are dependent on claim 5. Claim 10 includes yeast food and is referred to as "Replacer II."

Claim 5 reads:

5. A potassium bromate replacer composition consisting essentially of, by weight:

(a) about 0.001 to 0.03 parts ascorbic acid as an oxidant per 100 parts flour,

(b) about 0.015 to 0.2 part food acid per 100 parts flour, said food acid selected from the group consisting of acetic acid, citric acid, fumaric acid, lactic acid, malic acid, oxalic acid, phosphoric acid, succinic acid, tartaric acid, fruit juice, fruit juice concentrate, vinegar, wine, and mixtures thereof, and

(c) flour.

Claim 10 reads:

10. A potassium bromate replacer composition consisting essentially of, by weight:

(a) about 0.001 to 0.03 parts ascorbic acid as an oxidant per 100 parts flour,

(b) about 0.015 to 0.2 part food acid per 100 parts flour, said food acid selected from the group consisting of acetic acid, citric acid, fumaric acid, lactic acid, malic acid, oxalic acid, phosphoric acid, succinic acid, tartaric acid, fruit juice, fruit juice concentrate, vinegar, wine, and mixtures thereof,

(c) about 0.5 parts yeast food per 100 parts flour, and

(d) flour.

The parties' dispute over the construction of the '355 patent is somewhat ill-defined, but seems to focus on three phrases from these claims: "potassium bromate replacer composition", "consisting essentially of", and "ascorbic acid." (*Sara Lee's Claim Construction Brief,* at 3). Notably, in *Kim v. ConAgra Foods, Inc.,* Judge William T. Hart had occasion to construe the claims at issue here. *See* Kim v. ConAgra Foods, Inc., No. 01 C 2467 (N.D.Ill. May 22, 2003) 2003 WL 21222266, *7-9. Judge Hart's construction of the claims presents an additional, and difficult, issue in this *Markman* proceeding, as the parties argue over the preclusive effect, if any, of his interpretation. As such, the court must discuss not only the law applicable to patent claim construction, but address the parties' contentions regarding the preclusive effect of Judge Hart's claim construction, before finally arriving at its *Markman* ruling.

II. CLAIM CONSTRUCTION STANDARDS

In Markman v. Westview Instruments, Inc., 52 F.3d 967 (Fed.Cir.1995), the Federal Circuit held, and the Supreme Court later affirmed, that it is the court's responsibility to construe the claims of patents as a matter of law for the jury. 52 F.3d at 979, *aff'd,* 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). Claim construction is "the process of giving proper meaning to the claim language," the fundamental process that "defines the scope of the protected invention." Abtox, Inc. v. Exitron Corp., 122 F.3d 1019, 1023 (Fed.Cir.1997). "[T]he language of the claim frames and ultimately resolves all issues of claim interpretation." *Id.*

Claim construction starts with a fundamental principle: there is a "heavy presumption" that a claim term carries its ordinary and customary meaning. Teleflex, Inc. v. Ficosa North America Corp., 299 F.3d 1313, 1325 (Fed.Cir.2002). The court's task of discerning this meaning involves perusal of the intrinsic evidence of record, including the claims, the drawings, the specification, and the prosecution history, if in evidence. Teleflex, 299 F.3d at 1324. The court may also consult dictionaries and treatises in its effort to establish the meaning those skilled in the relevant art assign to a term. Texas Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1202-03 (Fed.Cir.2002).

While the claim language is presumed to carry its ordinary and customary meaning, a patentee may overcome this presumption by clearly using the words in the specification, prosecution history, or both "in a manner inconsistent with its ordinary meaning." Boehringer Ingelheim Vetmedica, Inc. v. Schering-Plough Corp., 320 F.3d 1339, 1347 (Fed.Cir.2003) (*citing* Telefex, 299 F.3d at 1325-26). By doing so, a patent applicant may expand or limit the scope of the term in the context of the patent claims. Genzyme Corp. v. Transkaryotic Therapies, Inc., 346 F.3d 1094, 1098 (Fed.Cir.2003). For example, in *Teleflex,* the court explained that "[o]ne purpose for examining the specification is to determine if the patentee has limited the scope of the claims." 299 F.3d at 1325. To illustrate such an instance, the court offered that "an inventor may choose to be his own lexicographer if he defines the specific terms used to describe the invention with reasonable clarity, deliberateness, and precision." Teleflex, 299 F.3d at 1325. In addition, the court also noted that the specification may be consulted to resolve ambiguity if the ordinary and customary meanings

of the words used in the claims are not sufficiently clear to allow the scope of the claim to be determined from the words alone. *Id*. "The patentee may demonstrate an 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." *Id*. Accordingly, of all the intrinsic evidence, courts have called the specification the "single best guide to the meaning of a disputed term," and have indicated that it is usually dispositive. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996).

This might seem a fairly straightforward process, but the law governing claim construction also holds that while the claims must be read in view of the specification, limitations from the specification are not to be read into the claims. Teleflex, 299 F.3d at 1326. "That claims are interpreted in light of the specification does not mean that everything expressed in the specification must be read into all the claims." Raytheon Co. v. Roper Corp., 724 F.2d 951, 957 (Fed.Cir.1983). The Federal Circuit addressed this issue in *Texas Digital Sys.,* where it held that:

the intrinsic record also must be examined *in every case* to determine whether the presumption of ordinary and customary meaning is rebutted. Indeed, the intrinsic record may show that the specification uses the words in a manner clearly inconsistent with the ordinary meaning reflected, for example, in a dictionary definition. In such a case, the inconsistent dictionary definition must be rejected. In short, the presumption in favor of a dictionary definition will be overcome where the patentee, acting as his or her own lexicographer, has clearly set forth an explicit definition of the term different from its ordinary meaning. Further, the presumption also will be rebutted if the inventor has disavowed or disclaimed scope of coverage, by using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.

308 F.3d at 1204 (emphasis added, citations omitted). This suggests that the intrinsic record, including the specification, would generally "trump" the claim language in construing the claim. The court, however, went on to caution:

Consulting the written description ... as a threshold step in the claim construction process, before any effort is made to discern the ordinary and customary meanings attributed to the words themselves, invites a violation of our precedent counseling against importing limitations into the claims. For example, if an invention is disclosed in the written description in only one exemplary form or in only one embodiment, the risk of starting with the intrinsic record is that the single form or embodiment so disclosed will be read to require that the claim terms be limited to that single form or embodiment. *Indeed, one can easily be misled to believe that this is precisely what our precedent requires when it informs that disputed claim terms should be construed in light of the intrinsic record*. But if the meaning of the words themselves would not have been understood to persons of skill in the art to be limited only to the examples or embodiments described in the specification, reading the words in such a confined way would mandate the wrong result and would violate our proscription of not reading limitations from the specification into the claims.

308 F.3d at 1204-05 (emphasis added, citations omitted).

Consideration of the final element of intrinsic evidence-prosecution history-has also produced case law along these somewhat confusing lines. As with the law regarding consideration of the specification, cases seem inconsistent in their assessment of when the prosecution history plays a role in claim construction. Some cases seem to suggest the prosecution history must always be considered:

we must also examine the prosecution history to determine whether the patentee has relinquished a potential claim construction in an amendment to the claim or in an argument to overcome or distinguish a reference. This history contains the complete record of all the proceedings before the Patent and Trademark Office, including any express representations made by the applicant regarding the scope of the claims. The prosecution history is considered to determine whether or not there were any express representations made in obtaining the patent regarding the scope and meaning of the claims.

Bell Atlantic Network Services, Inc. v. Covad Communications Group, Inc., 262 F.3d 1258, 1268 (Fed.Cir.2001). Other cases suggest that it need only be considered where the claim term has no ordinary and customary meaning. Goldenberg v. Cytogen, Inc., 373 F.3d 1158, 1164 (Fed.Cir.2004). Still others find an apparent middle ground:

If the claim language is clear on its face, then our consideration of the rest of the intrinsic evidence is restricted to determining if a deviation from the clear language of the claims is specified ... A deviation may ... be necessary if a patentee has "relinquished [a] potential claim construction in an amendment to the claim or in an argument to overcome or distinguish a reference." If however the claim language is not clear on its face, then our consideration of the rest of the intrinsic evidence is directed to resolving, if possible, the lack of clarity.

Interactive Gift Express, Inc. v. CompuServe Inc., 231 F.3d 859, 865 (Fed.Cir.2000). The court must bring these concepts to bear on the terms at issue here, but not before considering the parties' arguments regarding Judge Hart's previous application of these claim construction standards to the claims at issue in *Kim v. ConAgra Foods*.

III. PREVIOUS CLAIM CONSTRUCTION

A. *Kim v. ConAgra Foods*

In *Kim v. ConAgra Foods,* Kim-the plaintiff here-sued ConAgra Foods for infringement of the '355 patent by using her invention in producing certain types of Healthy Choice brand breads. ConAgra brought a motion for summary judgment on the issues of patent validity and infringement. In the course of denying ConAgra's motion, Judge Hart interpreted the terms "composition" and "consisting essentially of" as they are used in claims 5 through 8 and 10 of the '355 patent. Judge Hart's claim constructions not only formed a substantial basis for his denial of ConAgra's motion for summary judgment, they were also employed in the jury instructions in the trial that followed. The jury returned a verdict in favor of Kim on October 13, 2004. ConAgra is presently pursuing a motion for a judgment as a matter of law under Fed.R.Civ.P. 50 in the case.

Addressing the term "composition," Judge Hart acknowledged that it was "a term of art in both chemistry and patent law" that generally referred to "mixtures of substances." 2003 WL 21222266, *7. According to Judge Hart, however, "nothing in the written description limits the mixture to occurring at a specific time in the bread mix or dough preparation process." *Id*. As a result, the judge found that the '355 patent applied to "yeast-leavened products that contain the claimed proportions of ingredients at any time during the mixing or dough preparation process." Id. Explaining his departure from the common understanding of the term "composition," Judge Hart stated that the term "must be construed within the context of the patent in which it appears" and noted that "the written description is clear that it is referring to including the stated proportion of ingredients in a bread or dough mix and having them mixed together with the other

ingredients." Id.

Judge Hart then turned his attention to the phrase "consisting essentially of." He reviewed case law indicating that when the drafter employs " 'consisting essentially of' prior to a list of ingredients in a composition claim," he or she is signaling "that the invention necessarily includes the listed ingredients and is open to unlisted ingredients that do not materially affect the basic and novel properties of the invention." 2003 WL 21222266, *8, (*citing* PPG Industries v. Guardian Industries Corp., 156 F.3d 1351, 1354 (Fed.Cir.1998). The judge rejected ConAgra's contention that the claims could not apply to bread mixes or dough because they contain additional ingredients that affect the bromate replacer. 2003 WL 21222266, *8. While acknowledging that "physical and chemical changes occur during the dough and baking processes," Judge Hart concluded that there was no evidence that any unnamed ingredients might materially affect the "the novel property of the claimed invention ... particularly its slowing of the oxidizing properties of ascorbic acid so that it may effectively function throughout the breadmaking process." *Id*. He held that the "use of the 'consisting essentially of' language does not limit the claims at issue to a stand-alone potassium bromate replacer composition instead of ingredients included in a bread mix." *Id*.

B. Effect of Prior Claim Construction

Kim argues that Judge Hart's claim construction is *res judicata,* thereby obviating the need for any claim construction in this case. (*Plaintiff Yoon Ja Kim's Claim Construction Memorandum,* at 2-4). Unable to cite a *Markman* case to support her position, Kim instead relies on cases applying *res judicata* to claims of patent invalidity and patent infringement. (*Plaintiff Yoon Ja Kim's Claim Construction Memorandum,* at 3). Sara Lee argues that *res judicata* and collateral estoppel do not apply because Sara Lee was neither a party to, nor in privity with a party to, *Kim v. ConAgra,* and because there has been no final judgment in that case. (*Sara Lee's Response to Plaintiff Yoon Ja Kim's Claim Construction Brief,* at 1-4). Beyond that, Sara Lee argues that Judge Hart erred in his interpretations of the claim terms "composition" and "consisting essentially of" and, *res judicata* or not, the court should decline to follow them. (*Sara Lee's Claim Construction Brief,* at 11; *Sara Lee's Response to Plaintiff Yoon Ja Kim's Claim Construction Brief,* at 4-6). Unfortunately, the parties fail to fully develop their arguments regarding the effect of Judge Hart's claim construction on this *Markman* proceeding, and struggle with the concepts of *res judicata,* collateral estoppel, claims preclusion, and issue preclusion. While these deficiencies would be frustrating in any case, their effect is magnified here, because these concepts are all the more elusive in the context of a *Markman* proceeding-a fact the parties choose to ignore.

At the outset, it is unclear whether the parties are arguing over *res judicata* or collateral estoppel, which they seem to use interchangeably. The two concepts-now more commonly referred to as claim preclusion and issue preclusion, respectively-are related but distinct, as the Supreme Court explained in Migra v. Warren City Sch. Dist. Bd. of Educ., 465 U.S. 75, 104 S.Ct. 892, 79 L.Ed.2d 56 (1984):

Issue preclusion refers to the effect of a judgment in foreclosing the relitigation of a matter that has been litigated and decided. This effect is also referred to as direct or collateral estoppel. Claim preclusion refers to the effect of a judgment in foreclosing litigation of a matter that never has been litigated, because of a determination that it should have been advanced in an earlier suit. Claim preclusion therefore encompasses the law of merger and bar.

465 U.S. at 77 n. 1, 104 S.Ct. at 894 n. 1. In this context, "merger" means that when a plaintiff prevails in a lawsuit arising from a particular transaction, all of the claims that the plaintiff did raise or could have raised

"merge" into that judgment. Waid v. Merrill Area Public Schools, 91 F.3d 857, 863 (7th Cir.1996). If the plaintiff attempts to litigate any of those claims again, the judgment itself will actually serve as a defense. *Id*. "Bar" is a companion concept that a judgment for a defendant in a lawsuit bars the plaintiff from litigating any of the claims that she did bring or could have brought in that suit. *Id*. Claim preclusion, then, is "tantamount to a rule requiring parties to consolidate all closely related matters into one suit ... and therefore serves the interest of judicial economy by preventing piecemeal litigation." Walsh Const. Co. of Illinois v. National Union Fire Ins. Co. of Pittsburgh, Pennsylvania, 153 F.3d 830, 832 (7 th Cir.1998).FN4 Here, it is the plaintiff who is seeking to prevent the defendant from litigating, not a claim, but an issue-claim construction-that was addressed in a previous case to which the defendant was not a party. As such, it would seem that although Kim couches her argument in terms of claim preclusion or *res judicata,* the theory she ought to be advancing is issue preclusion or collateral estoppel.

FN4. If either party could be accused of conducting piecemeal litigation, it is Kim, rather than Sara Lee. In *Kim v. ConAgra,* Kim sued ConAgra for infringement based, not on ConAgra's making of bread, but on ConAgra's licensing of other companies to produce breads based on a formula under the ConAgra and Healthy Choice trademarks. Here, Kim sues Sara Lee as a manufacturer of two allegedly infringing breads, Butter Top and D'Italiano.

Issue preclusion generally "shields a defendant from having to litigate issues that have been fully and fairly tried in a previous action and decided adversely to a party." Pharmacia & Upjohn Co. v. Mylan Pharm., Inc., 170 F.3d 1373, 1379 (Fed.Cir.1999). The party asserting issue preclusion has the burden of establishing four elements: (1) the issue sought to be precluded must be the same as that involved in the prior action; (2) the issue must have been actually litigated; (3) the determination of the issue must have been essential to the final judgment; and (4) the party against whom estoppel is invoked must have been fully represented in the prior action. Washington Group Intern., Inc. v. Bell, Boyd & Lloyd LLC, 383 F.3d 633, 636 (7th Cir.2004). While Sara Lee challenges Kim on just the first and fourth elements, (*Sara Lee's Response to Plaintiff Yoon Ja Kim's Claim Construction Brief,* at 2), the court need only address the fourth element at length because Kim has failed to meet her burden of establishing it in this case.

This fourth element-that the party against whom estoppel is invoked must have been fully represented in the prior action-is problematic because Sara Lee was not a party to *Kim v. ConAgra*. Kim pays scant attention to this element, hoping to carry her burden simply by pointing out that Sara Lee was a licensee of ConAgra. (*Plaintiff Yoon Ja Kim's Claim Construction Memorandum,* at 3-4; *Plaintiff's Reply to Defendant's Response,* at 3). She relies exclusively on Butterfield v. Oculus Contact Lens Co., 332 F.Supp. 750, 762 (N.D.Ill.1971), which merely stated that there *can be* situations were a licensor and licensee may be in privity. In this instance, and especially in light of the disagreement among cases that have wrestled with the application of issue preclusion in a *Markman* proceeding context, the court finds that far more would be needed for Kim to establish that Sara Lee was fully represented in the prior action.

Courts have discussed the element of full representation in the prior action in terms of privity. It would seem the most concrete pronouncement a court can make regarding privity is that it is "an elusive concept." People Who Care v. Rockford Bd. of Educ., 68 F.3d 172, 177 (7th Cir.1995). It has been equated with the concept of virtual representation, where a person may be bound by a judgment even though not a party if one of the parties to the suit is so closely aligned with his interests as to be his virtual representative. *Id*. In Tice v. American Airlines, Inc., 162 F.3d 966 (7th Cir.1998), however, the Seventh Circuit questioned the

utility of "virtual representation" and elaborated on the type of "privity" required for issue preclusion:

At a minimum, the issue on which preclusion is sought must be common to both cases, and the claims or defenses of the two allegedly equivalent parties (earlier litigant, present litigant) must be the same. In addition, unless a formal kind of successor interest is involved (e.g., subsequent landowner, successor corporation), there should be some indication not only that the second party was aware that the first litigation was going on and that the earlier litigation would resolve its claims, but also that the second party either had participated or had a legal duty to participate.

162 F.3d at 973. Here, Sara Lee has no "formal kind of successor interest" with regard to ConAgra. Furthermore, Kim does not even suggest that Sara Lee had a duty to participate in *Kim v. ConAgra,* and fails to argue that Sara Lee was aware of the first litigation or should have been. (*Plaintiff Yoon Ja Kim's Claim Construction Memorandum,* at 3-4; *Plaintiff's Reply to Defendant's Response,* at 3). Issue preclusion should never be used as a sword against a party who has not previously had his day in court. Whitley v. Seibel, 676 F.2d 245, 248 (7th Cir.1982), *cert. denied,* 459 U.S. 942, 103 S.Ct. 254, 74 L.Ed.2d 198 (1982). In this instance, based on what little Kim has offered in the way of support for her assertion of issue preclusion, the court is unprepared to hold that Sara Lee was "fully represented" in *Kim v. ConAgra* and has already had its day in court.

Kim's somewhat inattentive treatment of the preclusive effect of Judge Hart's previous claim construction certainly provides the court with no incentive to apply issue preclusion in this case. Beyond that, however, the confused state of law regarding issue preclusion in *Markman* proceedings gives the court even further pause. With little guidance from the Federal Circuit, courts are split on this question, both here, Abbott Laboratories v. Dey, L.P., 110 F.Supp.2d 667 (N.D.Ill.2000) (applying issue preclusion, but engaging in its own claim construction to determine if previous construction was plainly wrong); Nilssen v. Motorola, Inc., 80 F.Supp.2d 921, 924 n. 4 (N.D.Ill.2000) (respect accorded prior construction but no preclusive effect), and elsewhere. Texas Instruments, Inc. v. Linear Technologies Corp., 182 F.Supp.2d 580 (E.D.Texas 2002) (finding a court may defer to a prior construction, but is not bound by it); Graco Children's Products, Inc. v. Regalo International, LLC, 77 F.Supp.2d 660 (E.D.Pa.1999) (no preclusive effect); TM Patents, L.P. v. International Business Machines Corp., 72 F.Supp.2d 370 (S.D.N.Y.1999) (issue preclusion applies). Surprisingly, the parties ignored these cases, all of which specifically address the effect of a prior claim construction on a subsequent *Markman* proceeding. The court, however, finds them instructive, although they fail to resoundingly decide the issue at hand one way or another.

An important underpinning of the Supreme Court's ruling in Markman v. Westview Instruments, Inc., 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996), which tasked trial court judges-as opposed to juries-with claim construction, was uniformity in the treatment of a given patent. 517 U.S. at 390, 116 S.Ct. at 1396. This concern would seem to provide ample reason to accord a preclusive effect to prior claim construction in all cases. The milieu of claim construction, however, does not make things so easy. Part of the problem underlying these courts'-and this court's-struggles with this issue is that fact that some concepts underlying the law regarding patent construction simply have little in common with the rest of the law. Begin with the fact that, in construing many patents, judges are treading on alien ground. The determination of the meaning of the claims necessitates a ready familiarity with scientific and technological concepts that, by definition, are within the realm of experts in whatever field is involved. Teleflex, 299 F.3d at 1325 (patent to be construed as it would by one skilled in the relevant art). Add to that the fact that responsibilities that are generally rested with attorneys elsewhere in law-making or waiving an argument, for example-are not a part of a *Markman* proceeding: the court must simply arrive at the correct interpretation of the claims. *See*

Exxon Chemical Patents, Inc. v. Lubrizol Corp., 64 F.3d 1553, 1555 (Fed.Cir.1995) (the trial judge has an independent obligation to determine the meaning of the claims, notwithstanding the adequacy of the arguments asserted by the parties). After all that, a district court judge's claim interpretation is then reversed on appeal to the Federal Circuit about half the time, Cybor Corp. v. FAS Technologies, Inc., 138 F.3d 1448, 1476 (Fed.Cir.1998)(Rader, J. concurring), which certainly calls into question the utility of applying issue preclusion in the context of a *Markman* proceeding.

The course the court follows here is that followed in *Nilssen v. Motorola, Inc.,* approached in *Abbott Laboratories v. Dey, L.P.,* and suggested in *Texas Instruments, Inc. v. Linear Technologies Corp.* While stopping short of according a preclusive effect to Judge Hart's claim construction, the court will bear his interpretations in mind as instructive while rendering its own construction of the claims at issue here.

IV. CONSTRUCTION OF DISPUTED CLAIMS

A. "potassium bromate replacer composition"

Sara Lee contends that the phrase "potassium bromate replacer composition" must be construed to refer to a premixed composition of ingredients for addition to a dough. (*Sara Lee's Claim Construction Brief,* at 3).FN5 Kim argues that "potassium bromate replacer composition" must be interpreted as applying "to a bread that contains the claimed proportions of ingredients at any time during the mixing, fermentation, or forming stages of the breadmaking process." (*Plaintiff Yoon Ja Kim's Claim Construction Brief,* at 7-8).

FN5. Sara Lee also contends that the phrase must be construed as a combination of ascorbic acid and food acid-and optionally, a phosphate-that has a proven effect of prolonging oxidation. (*Sara Lee's Claim Construction Brief,* at 3). According to Sara Lee, "without proof that the action of ascorbic acid has been slowed down by the food acid and is 'effective and functional during mixing, proofing, and baking' the claims cannot be infringed." (*Sara Lee's Claim Construction Brief,* at 14). As noted earlier, however, the court must construe the claims independent of the accused product. *Embrex, Inc.,* 216 F.3d at 1347. Only after claim construction does the fact finder compare the properly construed claims to the accused device or process to resolve the issue of infringement. Catalina Marketing International, Inc. v. Coolsavings.com, Inc., 289 F.3d 801, 812 (Fed.Cir.2002). As such, Sara Lee's contentions on what might be necessary to prove infringement have no import in this *Markman* proceeding.

We begin claim construction with the ordinary and customary meaning of the term. Teleflex, Inc., 299 F.3d at 1325. Here, in this context, "composition" has the ordinary and customary meaning of "an aggregate, mixture, mass, or body formed by combining two or more elements or ingredients." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY, at 466(4a) (1986). The Federal Circuit has discussed "composition" as a term of art in patent law, which must be interpreted as "contain[ing] the specified ingredients at any time from the moment the ingredients are mixed together." Mars, Inc. v. H.J. Heinz Co., L.P., 377 F.3d 1369, 1374 (Fed.Cir.2004); PIN/NIP, Inc. v. Platte Chemical Co., 304 F.3d 1235, 1243-44 (Fed.Cir.2002); Exxon Chemical, 64 F.3d at 1557-1558 (Fed.Cir.1995). Before the creation of the mixture, according to the Federal Circuit, the ingredients exist independently. Mars, Inc., 377 F.3d at 1374; PIN/NIP, Inc., 304 F.3d at 1244; Exxon Chemical, 64 F.3d at 1558. Accordingly, the composition claimed in the '355 patent must refer to the specific ingredients-here, ascorbic acid, food acid, an optional phosphate, and flour-at any time from the moment they are mixed together.

This construction of the claim term leaves open the question of whether the "composition" requires that the

ingredients be premixed before introduction to the dough. In *Exxon Chemical,* the court rejected an interpretation of a claimed composition that was limited to a final, stand-alone product made and ready for use. The court found that the specification contained no such temporal limitation to the term "composition" that would support an interpretation dependent upon the time at which one views the composition. 64 F.3d at 1558. Here, the court finds nothing in the ordinary and customary meaning of the term to require that the "composition" occur at a given time or location, as would a limitation requiring the ingredients to be premixed apart from the bread mix or dough. Furthermore, the patent specification refers to the addition of a food acid to a bread mix or dough already containing ascorbic acid. ('355 patent, 5: 15-19; 6: 3-5; 6: 66-7: 25). Accordingly, the "composition" may occur within the dough, with the result meeting the requirement that it "contain[ ] the specified ingredients at any time from the moment the ingredients are mixed together."

Sara Lee's argument that the claim can only be interpreted as a stand-alone, pre-mixed composition, relies almost entirely on the prosecution history. According to Sara Lee, the prosecution history indicates that Kim can claim only that the potassium bromate replacer is a separate composition. Because Kim originally filed a patent application for a dough product and a method of making that dough product that was rejected, Sara Lee submits that the present "composition" cannot be read to cover a dough product. (*Sara Lee's Claim Construction Brief,* at 8-10; *Sara Lee's Response to Plaintiff Yoon Ja Kim's Claim Construction Brief,* at 5). In this manner, Sara Lee supports its construction requiring that the composition be a pre-mixed, stand-alone product. The court's review of the prosecution history, however, does not suggest that such a construction is demanded.

The Examiner did, indeed, reject Kim's application, explaining that prior art showed:

bread doughs containing the combination of ascorbic acid with organic acids ... As far as the claim is understood, the reference shows the same combination claimed. In any event the selection of a functioning amount of additive for the functionality of the reference would have been a routine matter and well within the ordinary skill of one in the art.

(*Sara Lee's Claim Construction Brief,* Ex. 6, at 91). After a few fits and starts, (*Sara Lee's Claim Construction Brief,* at 9), Kim then drew claims toward a method of preparing potassium bromate replacer. (*Sara Lee's Claim Construction Brief,* Ex. 7, at 74-5). The Examiner then allowed the claims, providing these reasons for allowance:

None of the prior art of record teaches or suggests either an ascorbic acid consisting of the specific components, ascorbic acid, a food acid and a phosphate in the specific amount or that such ascorbic acid composition would be effective as a slow-acting oxidizing agent so that it would effectively replace a slow-acting oxidizing agent such as potassium bromate, because ascorbic acid had been known as a fast-acting oxidizing agent.

(*Sara Lee's Claim Construction Brief,* Ex. 7, at 89). Similarly, the Examiner's reasons for allowing the reissue patent were:

a composition, which has use as a potassium bromate replacer when combined with flour, consisting essentially of 0.001 to 0.03 parts ascorbic acid per 100 parts by weight flour and 0.015 to 0.2 parts food acid per 100 parts flour.

(*Sara Lee's Claim Construction Brief,* Ex. 8, at 177). The Examiner's allowance, then, was in both instances

dependent on two departures from prior art: (1) the specific components in the specific amounts; and (2) efficacy as a slow-acting oxidizing agent. There is nothing to suggest it must be a pre-mixed, stand-alone product, as long as it is used as a slow-acting oxidizing agent, and is made up of the specific ingredients in the specific amounts. The prosecution history does not disavow the addition of those ingredients to a bread mix or dough in sequence, nor does it disavow the use of the invention in dough or dough products.

B. "consisting essentially of"

According to Sara Lee, the phrase "consisting essentially of" must be construed to limit the list of components that follows the phrase-be it ascorbic acid, food acid, and flour or ascorbic acid, food acid, yeast food, and flour-to exclude any other dough oxidizers. (*Sara Lee's Claim Construction Brief,* at 11-13; *Sara Lee's Response to Plaintiff Yoon Ja Kim's Claim Construction Brief,* at 6; *Sara Lee's Claim Construction Reply Brief,* at 5-7). Kim submits that the phrase allows for additional minor ingredients. (*Plaintiff's Reply to Defendant's Claim Construction Brief,* at 7-8).

A "consisting essentially of" claim occupies a middle ground between closed claims that are written in a "consisting of" format and fully open claims that are drafted in a "comprising" format. AK Steel Corp. v. Sollac and Ugine, 344 F.3d 1234, 1239 (Fed.Cir.2003) (*citing* PPG Industries, 156 F.3d at 1354). The phrase is commonly used to signal that the invention necessarily includes the listed ingredients, but is open to unlisted ingredients that do not materially affect the basic and novel properties of the invention. PPG Industries, 156 F.3d at 1354. Thus, in this instance, Kim's invention has the ingredients that are specifically listed in the claims at issue. However, that does not mean that additional unspecified ingredients might also be present, provided they do not materially affect the basic and novel properties of Kim's invention. That constitutes an adequate construction of the phrase, but Sara Lee asks that the court go further and identify those ingredients that could not be present because they would have a material affect on the invention's basic and novel properties. Specifically, Sara Lee requests the court to construe the claims at issue to "exclude other oxidizers and particularly chemical oxidizers."

To render a determination that the claims at issue exclude any other oxidizers would be to cross the line from claim construction to resolution of the issue of infringement. "In claim construction the words of the claims are construed independent of the accused product." *Embrex, Inc.,* 216 F.3d at 1347. Only after claim construction does the fact finder compare the properly construed claims to the accused device or process. Catalina Marketing International, Inc., 289 F.3d at 812. The transition term "consisting essentially of" permits infringement by products with immaterial elements in addition to the elements already required by the claim. W.E. Hall Co., Inc. v. Atlanta Corrugating, LLC, 370 F.3d 1343, 1353 (Fed.Cir.2004). The question of whether the effect of a particular unlisted ingredient-such as a chemical oxidizers-is material or immaterial is one of fact for the jury. PPG Industries, 156 F.3d at 1354. It is not a determination the court may make in a *Markman* proceeding.

Sara Lee submits that the court is free to conclude what might materially affect the basic and novel properties of Kim's invention, citing *AK Steel Corp*. (*Sara Lee's Claim Construction Brief,* at 12; *Sara Lee's Claim Construction Reply Brief,* at 5). In *AK Steel Corp.,* the patent covered hot-dip aluminum-coated stainless steel and the issue was whether an amount of silicon in excess of 0.5% in the aluminum coating materially affected the basic and novel properties of the invention. 344 F.3d at 1236, 1239. The court acknowledged that in *PPG Industries,* it had held that the court properly left it to the jury to determine whether the amounts of a particular unlisted ingredient in the accused product had a material effect, on the invention's characteristics, but explained that the patent in that case was silent about the particular unlisted

ingredient and about what constituted a material effect on the properties of the invention. 344 F.3d at 1239-40. The court then distinguished the patent before it, noting that it was "far from silent regarding silicon and its material effect on the properties of the aluminum coating bath and the resultant coated steel." 344 F.3d at 1240. Indeed, as the court detailed, the patent specifically indicated that the silicon content should not exceed 0.5% or it would not adhere well to steel. 344 F.3d at 1240. Accordingly, it was clear from the patent that a specific amount of silicon would have a material and adverse effect on the basic and novel properties of the invention.

That is not the case here. While the patent certainly suggests what the basic and novel characteristics of the invention would be-the use of a natural ingredient, ascorbic acid, as a slow acting oxidizer-it does not speak to the effect that other ingredients might have on the invention. Conversely, the patent in *AK Steel Corp.* specifically drew the line at a determinate amount of a particular ingredient. The patent here-like the patent in *PPG Industries*-is silent about other ingredients and what their effects might be on the characteristics of the invention. As such, that determination is not a matter of claim construction and must be addressed in an infringement analysis. The court, accordingly, construes the phrase "consisting essentially of" in the claims to necessarily include the listed ingredients but to allow for the inclusion of unlisted ingredients that do not materially affect the basic and novel properties of the invention.

C. "ascorbic acid"

The parties' dispute-or, more accurately, Sara Lee's argument-over the meaning of this term is somewhat obscure. Sara Lee argues that the term "ascorbic acid" must be read to require the simultaneous presence of both ascorbic acid *and* food acid in prescribed amounts. (*Sara Lee's Claim Construction Brief,* at 14-15; *Sara Lee's Response to Plaintiff Yoon Ja Kim's Claim Construction Brief,* at 7; *Sara Lee's Claim Construction Reply Brief,* at 9-10). Kim simply argues that the term should be assigned its common and ordinary meaning. (*Plaintiff's Reply to Defendant's Claim Construction Brief,* at 7-8).

We recall that there is a "heavy presumption" that a claim term carries its ordinary and customary meaning. Teleflex, Inc., 299 F.3d at 1325. Ascorbic acid-also known as vitamin C or L-ascorbic acid-is a water soluble vitamin that is found in fruits and vegetables, is a strong reducing agent, and is reversibly oxidized to dehydroascorbic acid. WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY, at 127 (1986). Its chemical notation is $C_6H_8O_6$. *Id.* As such, the claim term is rather easily, and definitively construed. It would seem that this would be sufficient to disclose the invention to one skilled in the relevant art of baking. Sara Lee, however, is dissatisfied with so obvious a conclusion, but has difficulty explaining why.

First, Sara Lee urges the court to construe "ascorbic acid" to mean "the simultaneous presence of ascorbic acid and food acid in the claimed amounts." (*Sara Lee's Claim Construction Reply Brief,* at 9). Then, Sara Lee explains that it is "simply asking that ascorbic acid be given its ordinary meaning, and not construed to be something other than ascorbic acid." *Id.* There is nothing "simply" about this: obviously, construing "ascorbic acid" to mean "ascorbic acid and food acid" is construing it as something other that "ascorbic acid." As best the court can decipher it, Sara Lee's argument would appear to be that, where the claims indicate that food acid is added to ascorbic acid, the ascorbic acid *must still be* ascorbic acid. This would seem to be clear from the language of the patent and would not appear to necessitate a novel definition of ascorbic acid, but the court will engage in a brief explanation.

As noted in the discussion of basic breadmaking chemistry and the above-quoted dictionary definition, ascorbic acid ($C_6H_8O_6$) oxidizes into dehydroascorbic acid ($C_6H_6O_6$). As the patent teaches, food acid is

added to ascorbic acid in order to slow down the oxidation of ascorbic acid into dehydroascorbic acid. ('355 patent, at 3: 13-18; 5: 26-34; 6: 3-7; 7: 26-32). The court finds no language in the patent-and Kim has not directed us to any-that teaches that food acid may be added to *dehydroascorbic acid*. At that point, ascorbic acid will have been oxidized, so the effect of the food acid described in the patent-the slowing of the oxidation rate-would be irrelevant. The patent does not discuss the effect-if any-of adding food acid to dehydroascorbic acid. The claims discuss only the addition of food acid to ascorbic acid. As such, the court is confident that the construction of ascorbic acid to have its ordinary and customary meaning, vitamin C or $C_6H_8O_6$, is sufficient. It is clear from the language of the patent that food acid is to be added to this substance.

V. CONCLUSION

For the foregoing reasons, the court has construed the disputed terms in claims 5 through 8 and 10 of the '355 patent as stated above.

N.D.Ill.,2005.
Kim v. The Earthgrains Co.

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