

**UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION**

YOON JA KIM,)	
)	
Plaintiff,)	
)	No. 01 C 3895
v.)	
)	Magistrate Judge Susan E. Cox
THE EARTHGRAINS CO.,)	
k/n/a SARA LEE BAKERY GROUP,)	
INC.,)	
)	
Defendant.)	

MEMORANDUM OPINION AND ORDER

This patent infringement case comes before the court on two issues. The court has been asked by the parties to construe the language of the claims of the patent at issue in this case. In addition, defendant Sara Lee (“Sara Lee”) has moved for summary judgment on plaintiff Yoon Ja Kim’s (“Kim”) complaint against it for infringement of the patent [dkt. 285]. For the reasons set out below, we adopt Sara Lee’s proposed claim construction in its entirety and grant summary judgment in its favor on the issue of infringement.

I. Procedural History

A. The original patent and Kim’s attempts to enforce that patent

On October 26, 1999 the United States patent and trademark office (“US PTO”) issued U.S. Patent No. Re 36, 355 (the “355 patent”) to plaintiff Kim. That patent detailed the composition of a potassium bromate replacer that Kim asserted could be used as an effective substitute for potassium bromate in bread making. Potassium bromate traditionally had been used as an oxidizing agent to strengthen dough and increase the volume of the finished bread product. However, certain health concerns had been associated with the use of potassium bromate in bread. Kim asserted that

her '355 patent details the composition of a replacer to potassium bromate that is superior to that of other products available commercially. This is because, Kim asserts, it is able to produce greater loaf volume, finer crumb structure, and a longer shelf life. The '355 patent dictated ranges of ingredients that would produce the desired replacer when mixed in the correct proportion with flour.¹

After the patent was issued, Kim filed three separate lawsuits alleging patent infringement. In addition to the instant case, Kim also filed actions against Dawn Food Products, Inc. ("Dawn") and ConAgra Foods, Inc. ("ConAgra"). In Kim's suit against Dawn, the court granted summary judgment against Kim in 2004. Essentially, the court found that Dawn's bread products did not incorporate ingredients within the ranges protected by the '355 patent.²

In Kim's suit against ConAgra, the trial jury awarded Kim \$490,000 in damages. The jury also found Kim's patent to be valid. The jury found that certain breads manufactured by ConAgra contained amounts of ascorbic acid, food acid, and yeast that fell within the ranges dictated by the claims. After the verdict, the court vacated the finding of infringement, granting ConAgra judgment as a matter of law. The court determined that Kim had failed to produce evidence that ConAgra's use of ingredients, corresponding to the claims of the patents, acted as a bromate replacer, which was necessary for a finding of infringement. The court, however, upheld the jury determination that the '355 patent was valid.³

On August 17, 2005, following the judgment and pending Kim's appeal before the Federal Circuit, ConAgra requested an ex parte reexamination of Kim's patent by the United States Patent

¹The facts concerning the issuance of the original patent were made part of record during the course of briefing on Sara Lee's motion for partial summary judgment on the issue of the applicable damages period. Those same facts are cited in *Kim v. The Earthgrains Co.*, 2010 WL 655220 (N.D. Ill. 2010).

²*Kim v. Dawn Food Products, Inc.*, No. 01 C 1906, 2004 WL 2658068 (N.D. Ill. 2004).

³*Kim v. ConAgra Foods Inc.*, No. 01 C 2467, 2005 WL 1311597 (N.D. Ill. 2005).

and Trademark Office (“USPTO”). ConAgra sought to have the patent declared invalid. ConAgra pursued reexamination as an alternative means of invalidating the patent in case the appeals court upheld the lower court’s finding that the patent was valid and reversed the finding of non-infringement by ConAgra. In 2006, while the USPTO reexamination remained pending, the Federal Circuit affirmed the District Court’s decision.⁴

The district judge originally assigned to this case entered summary judgment against Kim, finding that the original patent was invalid because of prior art.⁵ That ruling was reversed in 2003.⁶ The case was remanded back to this court for further proceedings, which were stayed after 2005 while the parties waited for the USPTO to decide the reexamination proceedings.

B. The reexamination and resulting reissued patent

The proceedings before the USPTO took almost four years to be resolved. These proceedings are summarized at length in this court’s opinion regarding Sara Lee’s motion for partial summary judgment limiting the applicable damages. We recite them again here because they are relevant to the conflicting positions taken by the parties on claim construction.⁷

As noted above, on August 17, 2005, while its appeal to the Federal Circuit was pending, ConAgra requested an *ex parte* reexamination of the original patent.⁸ In its formal request, ConAgra argued that prior art, including U.S. patent No. 2,149,682 (the “Jorgenson patent”) and U.S. patent No. 5,338,552 (the “Nasu patent”), rendered claim 5, its dependent claims, and claim 10

⁴ *Kim v. ConAgra Foods Inc.*, 465 F.3d 1312 (Fed. Cir. 2006).

⁵ *Kim v. Earthgrains Co.*, No. 01 C 3895, 2002 WL 1949235 (N.D. Ill. 2002).

⁶ *Kim v. Earthgrains Co.*, 60 Fed. Appx. 270 (Fed. Cir. 2003).

⁷ Unfortunately, although Sara Lee references this history in its supporting materials on claim construction and non-infringement, it has not made them part of the record on these motions. Therefore, the court will cite back to the Plaintiff’s Statement of Facts (“PSOF”) and to Defendant’s Exhibits (“Def. Ex.”) filed in conjunction with the motion for partial summary judgment and make these materials part of the record on this case.

⁸ Request for *ex parte* reexamination transmittal form, August 17, 2005, PSOF Ex. 1-2.

unpatentable.⁹ The Jorgenson patent is for a method of improving bread strength by adding 1 to 5 liters of lemon juice for every 100 kilograms of flour. ConAgra asserted that the resulting concentrations of ascorbic acid and citric acid overlapped with claims 5 and 10's specifications for ratios of ascorbic acid, another food acid, and flour.¹⁰ It also noted that the Nasu patent called for adding ascorbic acid and another food acid to bread dough in ratios similar to those listed in claims 5 and 10 of plaintiff's original patent.¹¹ Examiner Stephen J. Stein ("Examiner") agreed that the Jorgenson and Nasu patents rendered claim 5 unpatentable but rejected other patents ConAgra had suggested as prior art.¹²

Plaintiff filed several appeals with the USPTO to challenge Examiner's decision. To argue that the Jorgenson patent was not invalidating prior art, plaintiff recalculated the acid content of lemon juice and found that while the amounts of ascorbic acid and citric acid were within claim 5's range, the lemon juice also contained enough malic acid to raise the total non-ascorbic acid levels in Jorgenson's formula above those in plaintiff's patent.¹³ She also noted that the Nasu patent called for the ascorbic acid and other food acid to be put into the bread dough at different times, which did not make the ascorbic acid into a slow-acting oxidant and, thus, did not impose on her invention.¹⁴

On December 24, 2008, plaintiff and Examiner conducted a telephone interview during which plaintiff consented to changing the transitional phrase in claims 5 and 10 from "consisting essentially of" to "consisting of."¹⁵ Plaintiff also consented to incorporate claim 6 into both claims

⁹Request for reexamination, May 14, 1996, Def. Ex. D at 7.

¹⁰*Id.* at 8, 9.

¹¹*Id.* at 11.

¹²Office action in *ex parte* reexamination, July 5, 2006, Def. Ex. F 3-6.

¹³Appeal Brief, May 19, 2008, Def. Ex. P 15, 19.

¹⁴Def. Ex. P at 22.

¹⁵*Ex parte* reexamination interview summary, December 24, 2008, Def. Ex. Q at 3.

by adding the language “wherein said food acid is present in an effective amount that slows down oxidation of ascorbic acid to dehydroascorbic acid during a manufacturing process of yeast-leavened products” to both claims, and she agreed to delete the separate claim 6.¹⁶ Examiner’s notes show he believed that these amendments were necessary to exclude the additional food acids found in the Jorgenson patent and the additional components of bread dough found in the Nasu patent.¹⁷ Examiner then issued an *ex parte* Reexamination Certificate on March 31, 2009.¹⁸

C. This Court’s Order on the Limitation of the Damages Period

On February 18, 2010, this Court ruled that the change in the transitional phrase from “consisting essentially of” to “consisting of” to claims 5 and 10 of the patent, as discussed above, was a material limitation of the scope of the patent.¹⁹ The court held that the class of additional elements, which may be added to the inventions in claim 5 or claim 10, has been changed from “elements which do not materially affect the basic and novel properties of the invention” to “elements which are unrelated to the invention or are unavoidable impurities.”²⁰ The change in transitional phrase closed the ingredients of the patent to those specifically named and in the quantities specified. Accordingly, we held that the reissued patent was not substantially identical to the original patent. This limited the period of damages that Sara Lee could be held liable for to after March 31, 2009, if Sara Lee was found to infringe the patent.²¹

¹⁶*Ex parte* reexamination interview summary, December 24, 2008, Def. Ex. Q at 3.

¹⁷Notice of intent to issue *ex parte* reexamination certificate, December 30, 2008, Def. Ex. R at 7.

¹⁸*Ex parte* reexamination certificate, March 31, 2009, Def. Ex. S at 3.

¹⁹*Kim v. Earthgrains Co.*, No. 01 C 3895, 2010 WL 625220 (N.D. Ill. February 28, 2010)

²⁰*Id.* at *4, citing *Ecolab, Inc. v. FMC Corp.*, 569 F.3d 1335, 1343-44 (Fed. Cir. 2009).

²¹After this ruling, the parties proceeded to discovery on the merits of the case. During the course of that discovery, Sara Lee learned that Dr. Kim had made several misstatements concerning her net worth on her petition for appointment of counsel and to proceed *in forma pauperis*, which the court previously had granted. Sara Lee moved to dismiss the case on this basis and the Court held an evidentiary hearing on the allegations made in their motion. Ultimately, the court found that Dr. Kim had misrepresented her financial status in her application and petition, but declined to dismiss the case. See *Kim v. Earthgrains Co.*, 01 C 3895, 2010 WL 2610460 (N.D. Ill. June 24, 2010). The court did, however, relieve Dr. Kim’s appointed counsel from his appointment and Dr. Kim has

II. Claim Construction

A. Legal Standard

The parties have submitted the issue of claim construction to the court for resolution, but have not requested an evidentiary hearing pursuant to *Markman*.²² Much of the language of the patent already was construed in this case by Judge Michael T. Mason prior to the reexamination proceedings and reissuance of Kim's patent.²³ However, the reissued patent contains different language and, therefore, an updated claim construction is necessary.

We begin as we must with the legal standard applicable to this issue. The language of the claims is the starting point for our analysis because it frames and ultimately resolves all issues of claim interpretation.²⁴ Unless there is an express intent by the patentee to impart a novel meaning to a claim term, the words are presumed to take on the ordinary and customary meaning attributed to them by those of ordinary skill in the art.²⁵ The court determines the ordinary and customary meaning of the claim term by reviewing a variety of sources, beginning with the intrinsic evidence consisting of the claim terms themselves, the written specifications, drawings, and prosecution history.²⁶ The court may also consult dictionaries, encyclopedias and treatises to determine the ordinary meaning of a word.²⁷

Kim has accused Sara Lee of manufacturing products that violate independent claim 5 of the patent, as well as dependent claims 7 and 8. The parties agree that there are five claim terms which require claim construction in claim 5. These terms are highlighted below:

proceeded pro se since that time.

²²*Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995).

²³Dkt. 70; *Kim v. Earthgrains Co.*, 2005 WL 66071 (Jan. 11, 2005).

²⁴*Robotics Vision Systems, Inc. v. View Engineering Inc.*, 189 F.3d 1370, 1375 (Fed. Cir. 1999); *Abtox, Inc. v. Exitron Corp.*, 122 F.3d 1019, 1023 (Fed. Cir. 1997).

²⁵*Teleflex Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002).

²⁶*Vitronics v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

²⁷*Texas Digital Systems, Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1202-03 (Fed. Cir. 2002)

5. **A potassium bromate replacer composition consisting 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 parts 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**,
wherein **said food acid is present in an effective amount** that slows down oxidation of ascorbic acid to dehydroascorbic acid during a manufacturing process of yeast-leavened products.

B. “A potassium bromate replacer composition, consisting of”

Sara Lee has proposed that we construe the preamble and transitional phrase “A potassium bromate replacer composition, consisting of” as:

a mixture of ingredients that acts to perform essentially the same function when used in the production of bread as would potassium bromate, namely, acting as a slow acting oxidant in the bread making process to strengthen the dough, increase loaf volume, and contribute to fine crumb grain.

The mixture of ingredients is limited to the claimed ingredients (ascorbic acid, food acid, and flour) in the claimed amounts based on the weights of the ingredients. The mixture cannot contain additional chemical ingredients beyond those listed.

Kim disagrees with this construction of this claim. Kim agrees that the ordinary meaning of the term “composition” means a mixture of ingredients. She also agrees that the mixture, which acts as a potassium bromate replacer, must contain the three claimed ingredients set forth in the patent. Her disagreement with Sara Lee’s proposed construction centers on the meaning of the transitional phrase “consisting of” and the effect of that phrase on her patent. Kim contends that there is no real difference between the phrase “consisting essentially of” and “consisting of” for purposes of claim construction. But the court has already ruled that these terms have very different meanings. The transitional phrase “consisting of” excludes any element or ingredient not specified in the claim, except for impurities that cannot be filtered out and elements that would be unrelated

to the invention. But the transitional phrase “consisting essentially of” excludes only elements that “materially affect the basic and novel characteristics” of the invention.²⁸ Thus, as the Court already has found, this significantly limits Kim’s patent.

As we discussed in the decision to limit the damage period from the date of the reissuance of the patent (March 31, 2009), the change in this transitional phrase was required by the PTO Examiner to overcome prior art, which threatened to invalidate Kim’s patent. The examiner stated that the composition in the prior art (Jorgensen) had other ingredients, such as water, and that those “additional ingredients make the bread dough composition of the Jorgenson patent outside the scope of claims 5 and 10.”²⁹ The Nasu prior art also included water and, therefore, Kim was required to close her patent to only those claimed ingredients, combined in the claimed proportions, to function as a potassium bromate replacer.³⁰

Sara Lee takes this argument one step further, contending that the reexamination process now requires the potassium bromate replacer to be a stand-alone mixture. This interpretation, which was specifically rejected by Judge Mason, does not necessarily follow from the re-examiner’s findings. It is clear that the only process that may violate Kim’s patent must replicate the claimed ingredients, and only those ingredients, in the claimed proportions, and only those proportions, for the claimed purpose of the invention; that is, to function in the same way as potassium bromate in the bread making process. Thus, if a process included additional ingredients which, when combined with Kim’s claimed ingredients, functioned as a replacer for the potassium bromate, that process would

²⁸U.S. Patent and Trademark Office, *Manual of Patent Examining Procedure* § 2111.03 (8th ed. Rev. 7 2008).

²⁹Citations to the record filed in support and in opposition to the parties’ claim construction briefs are as follows: Exhibits to Defendant’s Memorandum on Claim Construction will be referred to as “DCC, Ex.” Plaintiff’s Memorandum on Claim Construction will be referred to as “PCC.” *See* DCC, Ex. C at 4.

³⁰*Id.*

clearly be outside the scope of the patent. It does not mean, however, that the ingredients claimed by Kim must be combined separately from the rest of the manufacturing process. Rather, the issue is whether the relevant ingredients appear in the process - in the claimed amounts set forth in claim 5 - for the claimed purpose of serving as a potassium bromate replacer.

Sara Lee's proposed construction, as stated, does not require the Court to also find that these ingredients must be mixed together as a stand-alone mixture and the Court declines to require that they do so. However, the proposed construction clearly states that no other ingredients can be present in the mixture for purposes of serving as a potassium bromate replacer. This construction is clearly consistent with the findings of the patent examiner in the reexamination proceedings and the Court adopts it.

C. "Ascorbic acid"

The parties do not dispute the meaning of this term. Sara Lee originally proposed that the Court adopt Judge Mason's construction. Kim objected to his inclusion of the phrase "strong reducing agent" to describe ascorbic acid. Sara Lee has agreed to eliminate that phrase. Therefore, the construction we adopt is the following:

ascorbic acid – also known as vitamin C or L-ascorbic acid – is a water soluble vitamin that is found in fruits and vegetables and is reversibly oxidized to dehydroascorbic acid. Its chemical notation is $C_6H_8O_6$.

D. "said food acid is present in an effective amount"

This claim limitation has not been previously construed. Sara Lee proposes the following construction:

"Food acid" must be present in an amount that slows down the rate of oxidation of ascorbic acid to dehydroascorbic acid during a manufacturing process of bread.

Kim does not really offer a different construction so much as an argument as to why this limitation

was added to the patents.³¹ Her proposed construction is:

food acid present in “an effective amount” was used due to differences in chelating power and structural changes in gluten proteins achieved with individual food acids and a source of food acids – that is, the amounts of food acids added to bread mix have to be properly adjusted to produce properly oxidized (developed) dough and bread products of high quality.

This language would seem to only require that the end product, the bread, be properly oxidized to meet this claim. But the plain language of the patent requires that the food acid must act to effectively slow down oxidation of ascorbic acid to dehydroascorbic acid during the manufacturing process. Accordingly, we adopt Sara Lee’s construction of this language.

E. “Said food acid selected from the group consisting of acetic acid...vinegar...”

Sara Lee proposes the following language:

the food acid can either be vinegar or acetic acid. “Vinegar” is a sour liquid used as a condiment or preservative that is obtained by acetic fermentation of dilute alcoholic liquids or of dilute distilled alcohol. “Acetic acid” is an organic acid represented by the chemical notation C₂H₄O₂.

We agree with Sara Lee that Kim’s claim construction brief on this point deals with infringement issues rather than a coherent claim construction proposal. The plain language of the claim recognizes that vinegar and acetic acid are two different food acids even though vinegar includes acetic acid. Therefore, the Court adopts this construction.

³¹ PCC at 8.

F. “flour”

The Court adopts Sara Lee’s construction, which is consistent with the ordinary meaning of the word “flour” as a “finely ground meal of wheat.” Kim does not contest this construction.

III. Infringement

A. Legal Standard

“As in other cases, the grant of summary judgment under Federal Rule of Civil Procedure 56 is appropriate in a patent case where no genuine issue of material fact exists and the movant is entitled to judgment as a matter of law.”³² Kim must prove that the accused product meets each element of the asserted claim.³³ The absence of even a single element from the accused product precludes a finding of infringement of a claim, and any claim that depends on that claim is also not infringed.³⁴ Kim has the burden of proof on the issue of infringement.³⁵ But to prevail on this motion and avoid trial, Sara Lee must show, through the evidence that it has presented in support of its infringement argument, that there is an absence of a genuine issue of material fact.³⁶

B. The Accused Products

Kim has filed a Fourth Supplemental Infringement Table in this case.³⁷ In that table, she has listed 83 allegedly infringing product formulas. However, only six of the listed formulas identified by Kim have been made, used, offered for sale or sold since March 31, 2009, the date the patent was reissued.³⁸ Therefore, pursuant to our earlier ruling on damages, these are the only products which

³² *Becton Dickinson & Co. v. C.R. Bard, Inc.*, 922 F.2d 792, 795 (Fed. Cir. 1990) (citations omitted).

³³ *Lemelson v U.S.*, 752 F.2d 1538, 1551 (Fed. Cir. 1985) (citations omitted).

³⁴ *Kahn v. General Motors Corp.*, 135 F.3d 1472, 1477 – 78 (Fed. Cir. 1998).

³⁵ *Applied Medical Resources Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1333 (Fed. Cir. 2006).

³⁶ *Celotex Corp. v. Catrett*, 477 U.S. 317, 323 (1986).

³⁷ References to Sara Lee’s Statement of Undisputed Facts will be cited as “SOF.” References to the Affidavit of Craig Warner attached to the SOF shall be cited as “Warner Dec.” References to the Affidavit of Sara Lee’s Expert, Carl Hoseney, attached to the SOF, shall be cited as “Hoseney Dec.” Kim’s Infringement Table has been marked as an SOF 1, Exhibit A to Warner Declaration (“Dec.”) ¶ 3.

³⁸ SOF 2.

can be accused of infringement:

1. D-Italiano Regular (Grand Rapids)
2. D-Italiano Regular (Roseville)
3. French Bread (Sioux Falls)
4. Split Top Wheat Bread (Rock Island)
5. Wheat Split Top (Rock Island)
6. Butter Top Wheat (Salt Lake City)

Each of these products has a listing of the ingredients, which are combined together to manufacture the bread product. These are called “Formula Listings.”³⁹ However, these Formula Listings do not describe the processes used to make the bread. Craig Warner, the Director of Baking Technology and Commercialization at Sara Lee, submitted an affidavit in connection with Sara Lee’s motion that details the process for each of the accused products. The accused products fall into two basic manufacturing processes as detailed in the Warner Declaration. One process, encompassing Product Numbers 1,2, 3 and 6 detailed above, is called the “sponge and dough” process.⁴⁰ In this process, a sponge is made by combining a portion of the flour, water and yeast, as well as other ingredients, which vary depending on the product. After the sponge ingredients are mixed, the sponge is allowed to ferment or rise for a period of time.⁴¹ There is no food acid present during the making of the sponge mixture.⁴² After the sponge has risen, other ingredients are combined to form the dough.⁴³ The other process (Products 4 and 5) is known as the “flour brew.” In this process, a mixture of flour, yeast and various other ingredients are mixed in a liquid that is allowed to ferment.⁴⁴ During the brew process, food acid is not present.⁴⁵ After the fermentation has

³⁹SOF 13.

⁴⁰SOF 14.

⁴¹SOF 15.

⁴²SOF 20.

⁴³*Id.*

⁴⁴SOF 17.

⁴⁵SOF 32.

occurred, the remaining ingredients are added to the brew to form the dough.⁴⁶

C. Analysis

Sara Lee first argues that Kim cannot show that there is a potassium bromate replacer composition that includes the ingredients she has claimed in her patent, and only those ingredients, in the accused products. Sara Lee's argument is premised on the Court reading the claimed language "a potassium bromate replacer composition" to be defined only as a stand-alone mixture. But the Court does not read the claim that way. We agree that the narrowing of the transitional phrase from "consisting essentially of" to "consisting of" means that the claimed replacer cannot include any other ingredients (absent chemical impurities). But we do not agree that this limitation means that any time other ingredients are present - in combination with the potassium bromate replacement claimed by Kim - there can be no infringement. However, Sara Lee's first argument and the declarations of its witnesses depend on this flawed assumption.

For example, Sara Lee maintains that to infringe, a "product 'cannot contain additional chemical ingredients'" other than those set forth in the claims, quoting from this Court's decision on the reissued patent's effect on the damage period.⁴⁷ However, the limitation of the ingredients to those set out in claim 5 is not for the *product* manufactured, but to the *mixture in the product* that serves as a potassium bromate replacer. Sara Lee states that in the processes used to make the six accused products, there is never a composition consisting of the three claimed ingredients. In the sponge and dough process, food acid does not get added to the sponge.⁴⁸ In the second part of the process, all three claimed ingredients are present, but there are other ingredients present as well,

⁴⁶*Id.*

⁴⁷Sara Lee Memorandum in Support of Summary Judgment at 8-9.

⁴⁸SOF 20.

including salt, yeast and ADA.⁴⁹ Similarly, in the brew method, while the brew is being made, there is no ascorbic acid or food acid.⁵⁰ Essentially, when the dough is made, other ingredients are mixed together with the claimed ingredients.⁵¹

What Sara Lee does not do is explain the function of the other ingredients that it has added to the dough mixtures and this is fatal to its argument. Although Kim's *pro se* argument is difficult to follow, she essentially makes this point.⁵² It is not enough to simply state that because other ingredients are present along with the claimed ingredients, there is no infringement. Sara Lee's burden is to show that these other ingredients are present in the mixture for the purpose of functioning as a dough strengthener in the same way that Kim's claimed identified ingredients do. The record on this important point is strangely silent. Sara Lee's expert merely states: "I understand the unclaimed ingredients that are always present are intentionally added by Sara Lee and each and every one of them has a specific purpose in the bread making. Therefore, the products made according to the six remaining accused formulas do not infringe."⁵³ The Court cannot find as a matter of law that the accused products do not infringe simply because Sara Lee deliberately adds other ingredients to its formulas along with the claimed ingredients. The Court also must find that these additional ingredients work, along with the claimed ingredients, to serve as a potassium bromate replacer. We do not find sufficient support in the record submitted to us to conclude anything about these other ingredients, other than they are also in the dough mix. This is not enough

⁴⁹SOF 21.

⁵⁰SOF 32.

⁵¹SOF 33.

⁵² See Kim's Memorandum in Opposition to Summary Judgment at 6-7.

⁵³Hoseney Dec. ¶ 24.

to find, as a matter of law, that there is infringement.⁵⁴

Sara Lee's second argument concerns the claimed amount of ascorbic acid in Kim's invention. The potassium bromate replacer claimed must contain "about 0.001 to 0.03 of ascorbic acid." Both parties agree on this meaning of the claim term: "ascorbic acid – also known as vitamin C or L-ascorbic acid – is a water soluble vitamin that is found in fruits and vegetables and is reversibly oxidized to dehydroascorbic acid. Its chemical notation is C₆H₈O₆." As Judge Mason already found, and this finding has not been challenged by Kim, ascorbic acid does not include dehydroascorbic acid ("DHA") because the purpose of adding the claimed food acid to ascorbic acid is to slow down the oxidation process. If the ascorbic acid already has been oxidized, there would be no point in adding it to the mixture. Sara Lee's expert, Carl Hosoney, has stated that DHA also can be converted to diketogulonic acid ("DKA").⁵⁵

In all six of the accused products, the ascorbic acid is in a tablet form and is always dissolved in water before being added to the mixture.⁵⁶ This dissolution of the tablets in water results in an oxidation of that ascorbic acid into DHA and also may result in the creation of DKA.⁵⁷ Kim has recognized that this occurs.⁵⁸ Thus, although the amount of ascorbic acid, which is present prior to the dissolution of the tablets in the water, is known, it is not known how much ascorbic acid continues to be present once those tablets are dissolved and the conversion of the ascorbic acid

⁵⁴The Court believes that Sara Lee's expert and other witnesses may have been able to satisfactorily explain these purpose in such a way to demonstrate non-infringement at a trial or hearing. However, the materials submitted in connection with this motion do not and the Court is not permitted to draw inferences in Sara Lee's favor at the summary judgment stage; all inferences must be drawn in favor of the non-movant. *See Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986).

⁵⁵Hosoney Dec. ¶ 76, SOF 44.

⁵⁶SOF 40-41.

⁵⁷SOF 43.

⁵⁸SOF 44.

begins.

Kim's patent is specific about the amount of ascorbic acid that must be added to food acid and flour in the claimed potassium bromate replacer. This range of measurable ascorbic acid set forth in the patent was required to surmount prior art. As Sara Lee points out, Kim herself argued that her patented replacer was different from prior art because the lemon juice solution set forth in that patent did not contain ascorbic acid in the claimed amounts because the juice contained DHA and DKA as well as ascorbic acid.⁵⁹ Accordingly, Kim must show that Sara Lee's processes contain an amount of ascorbic acid within the claimed amounts. Because the ascorbic acid is dissolved in water first (thus causing the chemical reaction just described), that amount is now unknown and this is fatal to Kim's infringement claim.

In addition to this key difference between the claimed invention and Sara Lee's accused products, there is another important distinction. Kim's claim 5 requires a specific amount of food acid, about 0.015 to 0.02 parts per 100 parts flour. The claim then recites a Markush⁶⁰ group of ingredients that are identified as "food acid," including vinegar. Sara Lee uses vinegar in all of the accused products.⁶¹ In five of the six formulas, the amount of vinegar used exceeds the amount specified in the claim.⁶² Accordingly, these products cannot infringe Kim's patent. With respect to the sixth formula, Split Top White Bread (Rock Island), the vinegar amount was within the claimed amount from March 31, 2009 until October 31, 2010, when the formula changed. However, as the Court has already found, none of the formulas replicate the claimed amount of ascorbic acid.

⁵⁹ *Id.*

⁶⁰ A Markush-type claim recited alternatives in a format such as "selected from the group consisting of A, B and C." The Manual of Patent Examining Procedure § 2173.05 (h) (Eighth Edition, Revision 8, July 2010).

⁶¹ SOF 50.

⁶² SOF 53.

Kim's response to this contention is to argue that the claim is met by referring not to the quantity of vinegar present in the process, but the quantity of acetic acid within the vinegar that Sara Lee uses in its processes. But this argument won't wash. The claim sets forth that the food acid that must be added to the mixture be either 0.015 to 0.2 parts vinegar per 100 parts flour, as we have defined that term, or 0.015 to 0.2 parts acetic acid per 100 parts flour. These are distinct ingredients even though vinegar contains acetic acid. Because Sara Lee's accused products do not meet this limitation, they do not infringe Kim's patent.⁶³

⁶³Sara Lee makes an additional argument regarding non-infringement that the Court does not need to resolve for purposes of this motion. This argument concerns whether it is possible to measure the effective oxidation rate of ascorbic acid to dehydroascorbic acid in Kim's patented process versus Sara Lee's processes to determine whether the food acid is present in "an effective amount." Sara Lee's brief and supporting materials are remarkably conclusory on this point and Kim does not really address the argument. The Court is unable to opine whether this point is factually in dispute between the parties based on the record before it and, accordingly, declines to rule on this issue.

IV. Conclusion

For the reasons stated above, the Court finds that Products 1-77 in Kim's Infringement Table were not made, used, sold or offered for sale after March 31, 2009. We further find that Product Numbers 78-83 do not infringe Kim's patent because these products do not meet one or more limitations of the asserted claims. Kim has not demonstrated that a genuine issue of material fact exists with respect to these limitations. Accordingly, the Court grants Sara Lee's Motion for Summary Judgment on Non-Infringement [dkt. 285].

IT IS SO ORDERED.

ENTERED: February 4, 2011



UNITED STATES MAGISTRATE JUDGE
Susan E. Cox