IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

OTERRA A/S and OTERRA, LLC, Plaintiffs, v. WILD FLAVORS, INC. and ARCHERDANIELS-MIDLAND CO., Defendants.	CIVIL ACTION NO. 23-1376

OPINION

Slomsky, J. **August 29, 2025**

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I. INTRODUCTION

On December 4, 2023, Plaintiffs Oterra A/S and Oterra, LLC (collectively "Oterra") filed a Complaint against Defendants Wild Flavors, Inc. ("Wild Flavors") and Archer-Daniels-Midland Company ("ADM") (collectively, "Defendants"), seeking a declaratory judgment of non-infringement and invalidity of United States Patent Number RE46,695 (the "RE'695 Patent"). (See Doc. No. 1.) The RE'695 Patent is assigned to Wild Flavors and "relates to natural stable color products that are generated by processing Genipa americana fruit juice . . . with other edible juices or extracts . . . ." (Id. at ¶ 21; Doc. No. 1-1 at 1:24-27.) On September 3, 2024, Defendants filed an Answer and Amended Counterclaim against Oterra, alleging in the counterclaim that Oterra is infringing the RE'695 Patent.[1] (See Doc. No. 26.)

Presently, the parties seek construction of nine (9) terms of art from the RE'695 Patent's claims pursuant to Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996).[2] On February 14, 2025, the parties filed a Joint Claim Construction Statement, outlining the disputed claim terms and the parties' proposed constructions. (Doc. No. 54.) On March 10, 2025, the parties filed opening claim construction briefs, along with expert reports supporting their respective positions. (See Doc. Nos. 58, 61.) On April 11, 2025, the parties filed answering briefs and, on May 29, 2025, the parties filed reply briefs. (See Doc. Nos. 66, 70, 85, 86.) On August 7, 2025, and August 27, 2025, the Court held a Markman hearing on the disputed terms, at which both parties presented

[1] Defendants' Answer and Amended Counterclaim is the operative responsive pleading in this case. (See Doc. No. 26.)

[2] In Markman v. Westview Instruments, Inc., the United States Supreme Court held that "the construction of a patent, including terms of art within its claim, is exclusively within the province of the court." 517 U.S. 370, 372 (1996).

expert testimony and oral argument in favor of their respective proposed constructions of the disputed terms. The nine (9) disputed terms are now ripe for construction.

II. BACKGROUND

A. The Parties

Oterra describes itself as "a global leader in the area of natural, plant-based colorants for the food and beverage industry." (Doc. No. 1 at ¶ 2.) In its quest for natural, renewable materials and colorant products, Oterra partners with companies around the world including, as relevant here, Ecoflora, SAS ("Ecoflora").[3] (Id. at ¶¶ 3-4.) Ecoflora is a Colombian company that produces a natural blue colorant derived from juice of the Genipa americana fruit, also known as the jagua or huito fruit. (Id. at ¶ 4.) Ecoflora refers to its blue colorant as "Jagua blue." (See id.)

ADM similarly characterizes itself as a "global food company that is dedicated to making advancements in the area of human and animal nutrition." (Doc. No. 26 at ¶ 9.) Wild Flavors, a wholly owned subsidiary of ADM, claims to be "one of the largest suppliers of colorants, including naturally derived colorants, for the food, beverage, and animal feed industries." (Id.) Among the natural colorants supplied by Wild Flavors is a food colorant also derived from the Genipa americana fruit. (See id. at ¶ 11.) Wild Flavors refers to its blue colorant as "Huito blue." (See id.) This Huito blue colorant is covered by the RE'695 Patent, which is assigned to Wild Flavors. (See id. at ¶ 22.)

B. United States Patent Number RE46,695

1. Covered Invention

As mentioned, the RE'695 Patent, titled "Stable Natural Color Process, Products and Use Thereof," covers Wild Flavor's Huito blue colorant. (Id.) As described in the RE'695 Patent's

[3] Ecoflora is not a party to the present lawsuit.

specification, "[t]oday, a decreasing number of people are willing to eat or drink foodstuffs and use cosmetic products which are colored synthetically, resulting in a steady growth of the market for natural colorants." (See Doc. No. 1-1 at 1:33-36.) To help satisfy the growing demand for natural colorants, the RE'695 Patent describes a blue colorant derived from the Genipa americana fruit that is "stable at low pH and to temperatures used in processing," meaning the colorant "can be used in a broad range of applications, such as foodstuffs, drugs, nutritional supplements, personal care stuffs, cosmetics, and animal feed." (Id. at 1:37-38, 2:27-29.)

The RE'695 Patent's specification summarizes the process utilized to produce the Huito blue colorant as follows:

> Genipa americana fruits are co-processed with other edible juices or extracts from fruit, vegetables, plant materials, grains, legumes, nuts, seeds, animal materials including milk and eggs, microbial, and algal materials that contain amino acids, polypeptides, and/or proteins . . . Natural stable blue color is believed to be obtained when genipin and possibly genipin gentiobioside, which naturally exist in Genipa americana fruit, react with amino acids, polypeptides, or proteins, and other compounds with primary amine groups, in the various edible materials.

(Id. at 2:34-39; 2:61-66.)

2. Prosecution History

The RE'695 Patent is a reissue of United States Patent Number 8,557,319 (the "'319 Patent"). (See Doc. No. 26 at ¶ 23.) The '319 Patent, also titled "Stable Natural Color Process, Products and Use Thereof," was issued by the United States Patent and Trademark Office ("USPTO") on October 15, 2013 after several years of litigation during which the patentee overcame a number of objections from the USPTO examiner to the '319 Patent. (Id.) The '319 Patent asserts a priority date of March 28, 2008. (Doc. No. 1 at ¶ 22.) Like the RE'695 Patent, the '319 Patent "is directed to a method of producing natural, stable blue color products from the Genipa americana (i.e., Huito) fruit, wherein juice from the Genipa americana fruit is mixed, or

co-processed, with other 'edible materials' . . . ." (Doc. No. 26 at ¶ 26.) The '319 Patent consists of 21 claims—Claim 1 is an independent method claim and Claims 2 through 21 are dependent claims. (Id. at ¶ 27.) As relevant below, Claim 1 of the '319 Patent recites the following:

> 1. Method of preparing stable, natural colors, the method resulting in a color having an increased -b value based on the CIE LAB scale when the mixture defined in step (a) is compared with the processed mixture defined in step (c), comprising
>
> a. forming a mixture comprising:
>
> (i) juice from fruit of a plant of the Rubiaceae Family, which contains sufficient genipin or derivatives of genipin, selected from genipin gentiobioside, geniposide, geniposidic acid, and gardenoside, capable of reacting with the juice or liquefied material defined in (a)(ii) to produce a product of the desired color;
>
> (ii) other juice or liquefied material made by the chemical or mechanical liquification of a solid material, from a suitable food-grade source selected from fruits, grains, seeds, beans, nuts, vegetables, plant materials, milk, dairy products, egg, meat, seafood, shellfish, microbial and algal material, and by-products from such sources, that contain components capable of providing the desired color when combined with the juice defined in (a)(i);
>
> b. processing said mixture using conventional juice processing methods selected from milling, pressing, extracting, and combinations of those processing methods, at a pH of from about 3.5 to about 7; and
>
> c. stabilizing the mixture against microbial growth, oxidation, organoleptic deterioration and to provide a stabilized color intensity, by applying a heat treatment.

(Doc. No. 70-1 at 300.)

On October 13, 2015, the patentee filed a timely reissue application for the '319 Patent, requesting the '319 Patent be reissued because the patentee "believe[d] the ['319 Patent] to be partly inoperative or invalid by reason of the patentee claiming less than [the] patentee had a right to claim in the patent." (Doc. No. 26 at ¶ 28; Doc. No. 70-1 at 302.) During prosecution of this reissue application, the patentee amended Claims 1 through 4 of the '319 Patent and added new

Claims 22 through 64. (Id. at ¶ 29.) On February 6, 2018, the '319 Patent reissued with the amended and newly added claims as the RE'695 Patent. (Id.)

3. Asserted Claims

In the Complaint, Oterra requests declaratory judgment that its Jagua blue colorant does not infringe Claims 45 through 62 of the RE'695 Patent. (Doc. No. 1 at ¶ 40.) Defendants, in turn, accuse Oterra's Jagua blue colorant of infringing at least Claims 45 and 53 of the RE'695 Patent. (Doc. No. 26 at ¶ 45.) Claim 45 is an independent claim, while Claims 46 through 62 depend on the method of Claim 45. (Id.) As relevant here, the nine (9) disputed claim terms, demarcated below in bold lettering, appear in Claims 45, 46, 47, 48, 49, 50, 53, and 54:

> 45. A method of preparing **stable, natural colors**, the method resulting in a **color having an increased -b value based on the CIE LAB scale** when the mixture defined in step (a) is compared with the **processed mixture defined in step (c)**, comprising
>
> a. forming a mixture comprising:
>
> (i) **Genipa americana fruit juice** which contains sufficient genipin or derivatives of genipin, selected from genipin gentiobioside, geniposide, geniposidic acid, and gardenoside, capable of reacting with the juice or liquefied material defined in (a)(ii) to produce a product of **the desired color**;
>
> (ii) **other juice or material** from **a suitable food-grade source that contains at least one component capable of providing the desired color when combined with the Genipa americana fruit juice defined in (a)(i), wherein the food-grade source comprises an amino acid**;
>
> b. processing said mixture using conventional juice processing methods selected from milling, blending, mixing, pressing, extracting, and combinations of those processing methods, at a pH of from about 3 to about 8;
>
> c. stabilizing the mixture against microbial growth, oxidation, organoleptic deterioration and to provide a stabilized color intensity, by applying a heat treatment; and
>
> d. drying the mixture, wherein the drying is selected from the group consisting of spray drying, freeze drying, and vacuum drying, and combinations thereof.

46. The method according to claim 45 wherein the heat treatment comprises heating the mixture for a **predetermined period of time**.

47. The method according to claim 46 wherein the **predetermined period of time** is about 0.1 to 8 hours.

48. The method according to claim 46 wherein the **predetermined period of time** is about 0.1 to 4 hours.

49. The method according to claim 46 wherein the **predetermined period of time** is about 0.1 to 1 hours.

50. The method according to claim 45 wherein the heat treatment comprises heating the mixture at about 50-95 degrees Centigrade for a **predetermined period of time** of about 1 to 4 hours.

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53. A **stable natural juice-based colorant** made according to the method of claim 45.

54. A **stable natural juice-based colorant** made according to the method of claim 50.

(Doc. No. 1-1 at 14:50-15:25, 15:31-34.)

III. STANDARD OF REVIEW

A. Claim Construction

The first step in a patent infringement analysis is to define the meaning and scope of the claims of the patent. Markman v. Westview Instruments, Inc., 52 F.3d 967, 976 (Fed. Cir. 1995), aff'd, 517 U.S. 370 (1996). Claim construction, which serves this purpose, is a matter of law exclusively for the court. Id. at 979. "'[T]here is no magic formula or catechism for conducting claim construction.' Instead, the court is free to attach the appropriate weight to appropriate sources 'in light of the statutes and policies that inform patent law.'" SoftView LLC v. Apple Inc., No. 10-cv-389, 2013 WL 4758195, at *1 (D. Del. Sept. 4, 2013) (quoting Phillips v. AWH Corp., 415 F.3d 1303, 1324 (Fed. Cir. 2005)).

"It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." Phillips, 415 F.3d at 1312 (internal quotation marks omitted). The focus of a court's analysis must therefore begin and remain on the language of the claims, "for it is that language that the patentee chose to use to 'particularly point[ ] out and distinctly claim[ ] the subject matter which the patentee regards as his invention.'" Interactive Gift Express, Inc. v. Compuserve, Inc., 256 F.3d 1323, 1331 (Fed. Cir. 2001) (quoting 35 U.S.C. § 112, 5 ¶ 2). "Claim terms are generally accorded their ordinary meaning—that is, their meaning to a skilled artisan at the time of invention" i.e., as of the effective filing date of the patent application. Intel Corp. v. Qualcomm Inc., 21 F.4th 784, 791 (Fed. Cir. 2021) (citing Phillips, 415 F.3d at 1312-13).

Generally, a person of ordinary skill in the art ("POSITA") would not understand the ordinary and customary meaning of a claim term in isolation. Phillips, 415 F.3d at 1313. As such, the ordinary meaning may be derived from "the sources available to such artisans, including 'the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.'" Intel, 21 F.4th at 791 (quoting Phillips, 415 F.3d at 1313-14).

The "most significant source" of authority is "the intrinsic evidence of record, i.e., the patent itself, including the claims, the patent specification and, if in evidence, the prosecution history." Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996); see also Phillips, 415 F.3d at 1313 (holding that a person of ordinary skill in the art is deemed to have read the claim terms "in the context of the entire patent", including the specification). The specification is "that part of a patent application which precedes the claim and in which the inventor specifies, describes, and discloses the invention in detail." McCarthy's Desk Encyclopedia of Intellectual

Property 408 (2d ed. 1995). It "is the single best guide to the meaning of a disputed term" and is usually dispositive as to the meaning of words. Vitronics, 90 F.3d at 1582 ("In most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. In such circumstances, it is improper to rely on extrinsic evidence") (citations omitted). Although it is improper to import limitations from the specification into the claims, "one may look to the written description to define a term already in a claim limitation, for a claim must be read in view of the specification of which it is a part." Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1248 (Fed. Cir. 1998). On occasion, "the specification may reveal a special definition given to a claim term . . . that differs from the meaning it would otherwise possess. In such cases, the inventor's lexicography governs." Phillips, 415 F.3d at 1316. The specification may also "reveal an intentional disclaimer, or disavowal, of claim scope by the inventor . . . [which] is regarded as dispositive." Id. "The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." Renishaw, 158 F.3d at 1250.

The court "should also consider the patent's prosecution history, if it is in evidence." Markman, 52 F.3d at 980. This consists of "the complete record of proceedings before the Patent Office and includes the prior art cited during examination." Phillips, 415 F.3d at 1317. "Like the specification, the prosecution history provides evidence of how the [Patent and Trademark Office] and the inventor understood the patent." Id. at 1317. The prosecution history may "'demonstrat[e] how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution . . . ." SpeedTrack, Inc. v. Amazon.com, 998 F.3d 1373, 1377 (Fed. Cir. 2021) (quoting Phillips, 415 F.3d at 1317). Nonetheless, it is the least probative form of intrinsic

evidence because it "represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation." Id.

If ambiguity still exists after considering all the intrinsic evidence, the court may rely on extrinsic evidence, which is "all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." Markman, 52 F.3d at 980. "[D]ictionaries, and especially technical dictionaries, . . . have been properly recognized as among the many tools that can assist the court in determining the meaning of particular terminology." Phillips, 415 F.3d at 1318. Additionally, expert testimony can provide background on the technology at issue, explain how it works, speak to what a person of ordinary skill in the art would understand, and establish that a particular term has a particular meaning in the pertinent field. Id. Extrinsic evidence, however, is "generally of less significance than the intrinsic record." Wi-Lan, Inc. v. Apple, Inc., 811 F.3d 455, 462 (Fed. Cir. 2016) (citing Phillips, 415 F.3d at 1317).

Ultimately, during claim construction, "[t]he sequence of steps used by the judge in consulting various sources is not important; what matters is for the court to attach the appropriate weight to be assigned to those sources in light of the statutes and policies that inform patent law." Phillips, 415 F.3d at 303.

B. Indefiniteness Standard

"Under 35 U.S.C. § 112, patent claims must 'particularly point[] out and distinctly claim[] the subject matter' regarded as the invention." Berkheimer v. HP Inc., 881 F.3d 1360, 1363 (Fed. Cir. 2018). A lack of definiteness renders the claims invalid. Nautilus, Inc. v. Biosig Instruments, Inc., 572 U.S. 898, 902 (2014). A patent's claim is indefinite if "read in light of the specification . . . and the prosecution history, [it] fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention." Id. at 901. This standard "mandates clarity, while recognizing that absolute precision is unattainable." Id. at 910.

A party seeking to prove that a claimed term is indefinite must do so by clear and convincing evidence. See Sonix Tech. Co. v. Publ'ns Int'l, Ltd., 844 F.3d 1370, 1377 (Fed. Cir. 2017). Accordingly, to determine whether a claim is indefinite, a court must evaluate the "specification and the prosecution history" to see if it "provide[s] objective boundaries for those of skill in the art," but this does not require an express definition "if the meaning of the term is fairly inferable from the patent." IQASR LLC v. Wendt Corp., 825 F. App'x 900, 904 (Fed. Cir. 2020) (citations omitted); see also BASF Corp. v. Johnson Matthey Inc., 875 F.3d 1360, 1366 (Fed. Cir. 2017) ("The mere observation of information not 'recited' does not answer the question whether a person of ordinary skill in the art would need to be given the level and measurement information to understand, with reasonable certainty.") "Notably, a claim is indefinite if its language 'might mean several different things and no informed and confident choice is available among the contending definitions.'" Media Rights Tech., Inc. v. Capital One Fin. Corp., 800 F.3d 1366, 1371 (Fed. Cir. 2015) (quoting Nautilus, 572 U.S. at 911 n.8).

IV. ANALYSIS

A. Relevant Person of Ordinary Skill in the Art

"Claim construction seeks to ascribe the meaning to a claim term as understood by a person of ordinary skill in the art [("POSITA")] at the time of invention." Iridescent Networks, Inc. v. AT&T Mobility, LLC, 933 F.3d 1345, 1350 (Fed. Cir. 2019). Thus, as an initial matter, the Court must determine the relevant POSITA by which to judge the meaning of the RE'695 Patent's claim terms as of March 28, 2008, the date of priority for the '319 Patent, the patent from which the RE'695 Patent was reissued.

In their opening claim construction briefs, the parties proffered similar definitions for the relevant POSITA. (See Doc. No. 58 at 9; Doc. No. 61 at 7.) Because Defendants acknowledged in their answering brief that the adoption of either parties' POSITA definition will not change the

outcome for claim construction, the Court will adopt Oterra's definition. (See Doc. No. 66 at 1 ("While the parties propose slightly different definitions of a [POSITA], the differences are not material to any claim construction issue . . . should the Court adopt either party's definition it will not change the outcome.")) As such, the relevant POSITA in this case is defined as follows:

> A [POSITA] in the relevant art as of March 28, 2008, would have been familiar with the chemistry of colors and colorants, with some knowledge of food chemistry. A [POSITA] would have at least a bachelor's degree in chemistry or related field, and 3-5 years of experience in color research, for example in a graduate program or industry experience.

(Doc. No. 61 at 7 (citations omitted).)

Each party presented an expert to support their respective constructions of the nine (9) disputed claim terms. Oterra presented the declaration and testimony of M. Monica Giusti, Ph.D., ("Dr. Giusti") and Defendants presented the declaration and testimony of Alireza Abbaspourrad, Ph.D., ("Dr. Abbaspourrad"). (See Doc. Nos. 60, 61-2, 109.) Both Dr. Giusti and Dr. Abbaspourrad fit the definition for the relevant POSITA in this case. In 2008, they each had Ph.D.s in the fields of Food Science and Technology and Organic Chemistry, respectively. (See Doc. Nos. 60, 61-21.) They also had at least 3-5 years of experience in color research by 2008. (See id.) Thus, because they each would have been familiar with the chemistry of colors and colorants, with some knowledge of food chemistry, as of March 28, 2008, they both qualify as relevant POSITAs in this case.

B. Construction of the Nine Disputed Claim Terms

As mentioned above, the parties dispute the construction of nine (9) claim terms from the RE'695 Patent: (1) "stable, natural colors"; (2) "color having an increased -b value based on the CIE LAB scale"; (3) "processed mixture defined in step (c)"; (4) "Genipa americana fruit juice"; (5) "other juice or material"; (6) "a suitable food-grade source that contains at least one component capable of providing the desired color when combined with the Genipa americana fruit juice

defined in (a)(i), wherein the food-grade source comprises an amino acid"; (7) "the desired color"; (8) "predetermined period of time"; and (9) "stable natural juice-based colorant." (See Doc. No. 54 at 3-9.) The Court will construct each term in turn.

1. "stable, natural colors" and "stable natural juice-based colorant"

Claim Term	Oterra's Proposed Constructions	Defendants' Proposed Constructions
"stable, natural colors"	Indefinite	No construction necessary; plain and ordinary meaning
"stable natural juice-based colorant"	Indefinite	No construction necessary; plain and ordinary meaning

a. Indefiniteness Challenge

Oterra has failed to prove with clear and convincing evidence that the claim terms "stable, natural colors" and "stable natural juice-based colorant" are indefinite. The term "stable, natural colors" appears in Claim 45 of the RE'695 Patent, which recites "[a] method of preparing stable, natural colors, the method resulting in a color having an increased -b value based on the CIE LAB scale when the mixture defined in step (a) is compared with the processed mixture defined in step (c) . . . ." (Doc. No. 1-1 at 14:50-54 (emphasis added).) And the term "stable natural juice-based colorant" appears in Claims 53 and 54, which depend on Claim 45 and recite:

> 53. A stable natural juice-based colorant made according to the method of claim 45.
>
> 54. A stable natural juice-based colorant made according to the method of claim 50.

(Id. at 15:31-34 (emphasis added).) In arguing that the claim terms are indefinite, Oterra contends that the meaning of "stable" in both terms would be unclear to a POSITA, the meaning of "colors" in "stable, natural colors" would be unclear to a POSITA, and the meaning of "juice-based" in "stable natural juice-based colorant" would be unclear to a POSITA.[4] (Doc. No. 61 at 11-18, 25.)

[4] Oterra does not argue that the word "natural" in "stable, natural colors" and "stable natural juice-based colorant" is indefinite. (See Doc. No. 61.)

i. Meaning of "Colors" is Reasonably Clear

First, Oterra contends that a POSITA would not know if the term "colors" as used in "stable, natural colors" is referring to colors or colorants. (Id. at 11-12.) As described by Oterra, the term "color" refers to a visual color. (See id. at 12.) "In contrast, the term 'colorant' would be understood by a [POSITA] to mean a substance that is added to a composition or product to impart color thereto, such as a dye or pigment." (Id.)

Oterra argues that because the RE'695 Patent uses the term "color" interchangeably, the meaning of "colors" as used in "stable, natural colors" would be unclear to a POSITA. (See id.) Specifically, in addition to using "color" to refer to a colorant, the RE'695 Patent also uses "color" to mean a visual color. In response, Defendants acknowledge that "colors" as used in "stable, natural colors" actually means colorants, but argues a POSITA would understand this in light of the term's context. (See Doc. No. 66 at 22.) The Court agrees. See Eli Lilly & Co. v. Teva Parenteral Meds., Inc., 845 F.3d 1357, 1371 (Fed. Cir. 2017) ("[B]ecause the specification uses [the disputed term] primarily in two ways, we do not face the problem that we did in Teva, in which the disputed term did 'not have a plain meaning to one of skill in the art' that could be determined from the context.") (citing Teva Pharm. USA, Inc. v. Sandoz, Inc., 789 F.3d 1335 (Fed. Cir. 2015)).

Beginning with the language of the claims, Claim 45 describes "a method of preparing stable, natural colors" by, in essence, (a) mixing substances, (b) processing the mixture, (c) stabilizing the mixture, and (d) drying the mixture. (See Doc. No. 1-1 at 14:50-15:12.) Thus, Claim 45 describes a process in which substances are combined, resulting in another substance that imparts color. In other words, despite its use of "colors" in the preamble, Claim 45 describes a method to prepare a colorant. This understanding of "colors" is supported by Claim 53, which

recites "[a] stable natural juice-based colorant made according to the method of claim 45." (See Doc. No. 1-1 at 15:31-32.)

In addition, the specification explains that the purpose of the invention is to prepare colorants, i.e., substances that are added to a product to impart color. (See id. at 1:19-29.) Specifically, the specification states that:

> This disclosure relates to natural stable color products which can be used in a broad range of applications including foodstuffs, drugs, nutritional supplements, personal care stuffs, cosmetics, and animal feeds, and a process for preparing these colored food and edible products. Specifically, the disclosure relates to the stable color products that are generated by processing Genipa americana fruit juice which contains genipin, genipin derivatives, or pre-genipin compounds, together with other edible juices or extracts which contain amino acids, polypeptides, proteins, and compounds with one or more primary amine groups.

(Id. (emphasis added).) It also describes the background necessitating such a stable, natural colorant as follows, using both "colorant" and "color" to refer to the natural colorant covered in the patent:

> Today, a decreasing number of people are willing to eat or drink foodstuffs and use cosmetic products which are colored synthetically, resulting in a steady growth of the market for natural colorants. Thus, a natural color, especially a natural blue colorant that is stable at low pH and to temperatures used in processing, would be of significant world-wide commercial interest.

(Id. at 1:33-39 (emphasis added).)

Oterra's expert, Dr. Giusti, confirmed that those skilled in the art sometimes use "color" and "colorant" interchangeably and would understand the intended meaning based on the context. For example, during her deposition, Dr. Giusti explained that "colloquially . . . sometimes the word 'colors' is used to refer to colorants[.]" (Doc. No. 67-2 at 42:5-9.) And Dr. Giusti demonstrated this understanding that "colors" can be used to mean either visual colors or colorants depending on the context throughout her expert declaration and in her testimony at the Markman hearing. (See Doc. No. 61-2 at 22-26; Doc. No. 109.) For instance, her declaration states the following:

> 62. . . . Consistent with the understanding of skilled artisans, in many instances RE'695 appears to use the term "color" to mean what the eye perceives visually. [Citing, for example, "Enzymes, such as beta-glucosidase or proteases, accelerate color development . . ." from the RE'695 Patent's specification at 5:59-61.]
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> ***
>
> 64. However, elsewhere the description in RE'695 ambiguously appears to use the term "color" and "colorant" interchangeably. [Citing an example from the RE'695 Patent's specification at 5:4-16.]
>
> 65. In the emphasized language from [the specification at 5:4-16], I understand the second and third instances of the term "color" . . . to mean "colorant," and the first instance to mean the color of the colorant. This is because a "color" cannot be dried by spray drying, freeze drying or vacuum drying, whereas a "colorant" can be, and the terms "hue" and "color strength" are properties associated with the visual color that is perceived by the eye.

(Id. at ¶ 65.)

Thus, while Dr. Giusti makes these observations to further her point that the meaning of "colors" as used in "stable, natural colors" would be unclear to a POSITA because the RE'695 Patent uses "color" interchangeably, she nevertheless demonstrates that a POSITA would understand whether "color" is referring to a visual color or a colorant based on the context. See Eli Lilly & Co., 845 F.3d at 1370-72 (concluding the disputed term was not indefinite where a POSITA would understand the term as having one of two potential meanings based on the context in which the term is used); but see Teva Pharm. USA, 789 F.3d at 1345 (finding the term "molecular weight" to be indefinite because it was not defined in the patent and there were three possible ways to measure molecular weight).

Therefore, because a POSITA would reasonably understand the meaning of "colors" to mean either visual colors or colorants based on the context, the meaning of "colors" is not unclear.

ii. Meaning of "Stable" is Reasonably Clear

Next, building on its previous argument, Oterra argues that because it would be unclear to a POSITA whether "colors" in "stable, natural colors" refers to a visual color or a colorant, the term "stable" is also unclear because a POSITA would not know whether the method in Claim 45 aims at stabilizing a visual color or stabilizing a colorant. (See Doc. No. 61 at 14; Doc. No. 86 at 13.) In addition, Oterra asserts that the intrinsic record is not clear on what is meant by "stable" in both "stable, natural colors" and "stable natural juice-based colorant." (Doc. No. 61 at 14, 25.)

But first, as found above, a POSITA would understand "colors" in "stable, natural colors" to mean colorant based on the term's context, meaning a POSITA would also understand that the method in Claim 45 aims at stabilizing a colorant. And second, Claim 45 states in step (c) that the mixture produced in steps (a) and (b) will be stabilized "against microbial growth, oxidation, organoleptic deterioration, and to provide a stabilized color intensity, by applying a heat treatment." (Doc. No. 1-1 at 15:6-8.) Thus, based on this language, a POSITA would reasonably understand the term "stable" in both "stable, natural colors" and "stable natural juice-based colorant" to refer to the result of the application of the heat treatment in step (c).

Oterra, however, takes issue with this understanding of "stable," arguing that step (c) leaves a POSITA "without any confidence as to which of heat stability, pH stability, light stability, microbial stability, stabilized color intensity/strength, stability against oxidation, and stability against organoleptic deterioration is correct.'" (Doc. No. 61 at 15.) But in making this argument, Oterra is essentially asserting that the meaning of "stable" is indefinite because the meaning ascribed to it in step (c) is broad. Yet "a claim is not indefinite just because it is broad." Niazi Licensing Corp. v. St. Jude Med. S.C., Inc., 30 F.4th 1339, 1347 (Fed. Cir. 2022); see also Nautilus,

572 U.S. at 910 (noting that the definiteness standard "mandates clarity, while recognizing that absolute precision is unattainable").

Oterra additionally argues that "stable" is unclear because, even in light of step (c), a POSITA would not know how to evaluate or measure stability. This argument is akin to a lack of enablement argument on step (c)'s stabilizing process. But critically, Oterra does not argue that step (c) is indefinite or requires construction. As such, step (c) is given its plain and ordinary meaning. See Intel Corp, 21 F.4th at 791 ("Claim terms are generally accorded their ordinary meaning[.]") And "[e]nablement concerns do not justify departing from the plain and ordinary meaning." Hill-Rom Servs., Inc. v. Stryker Corp., 755 F.3d 1367, 1374 (Fed. Cir. 2014).

Thus, because step (c) in Claim 45 specifies what is meant by "stable" in both "stable, natural colors" and "stable natural juice-based colorant," a POSITA would understand the meaning of "stable" with reasonable certainty.

iii. Meaning of "Juice-Based" is Reasonably Clear

Finally, Oterra argues that "juice-based" would be unclear to a POSITA because "it would be impossible to determine whether all components must be juice, or whether only some part must be juice (and how much), in order to be considered 'juice-based' according to the claim." (Doc. No. 61 at 25.) But as above, the meaning of "juice-based" would be reasonably clear to a POSITA upon a reading of the claims. Specifically, step (a) in Claim 45, on which Claims 53 and 54 depend, states that the mixture ultimately comprising the "stable natural juice-based colorant" is comprised of "Genipa americana fruit juice" and "other juice or material from a suitable food-grade source." (Doc. No. 1-1 at 14:50-67.) And the specification provides further clarity as to how a POSITA would understand "juice-based," stating:

> Specifically, the disclosure relates to the stable color products that are generated by processing Genipa americana fruit juice which contains genipin, genipin

> derivatives, or pre-genipin compounds, together with other edible juices or extracts which contain amino acids, polypeptides, proteins, and compounds with one or more primary amine groups.

(Id. at 1:23-29 (emphasis added).) Therefore, because the meaning of "juice-based" would be reasonably clear to a POSITA given the context, the term is not unclear.

b. Claim Construction

The Court construes "stable, natural colors" and "stable natural juice-based colorant" to have their plain and ordinary meanings. First, looking to the language of the claims, step (c) in Claim 45 provides that the "stabilization" is achieved by applying "a heat treatment," and that the mixture is stabilized "against microbial growth, oxidation, organoleptic deterioration, and to provide a stabilized color intensity." (Doc. No. 1-1 at 15:6-8.) Further details on the length and temperature of the heat treatment are provided in the dependent claims. For example, Claim 50 recites that "the heat treatment comprises heating the mixture at about 50-95 degrees Centigrade for a predetermined period of time of about 1 to 4 hours." (Id. at 15:22-25.) In addition, as noted above, steps (a) through (d) in Claim 45 make clear to a POSITA that the method recited in the claim is aimed at preparing a colorant. (See id. at 14:50-15:12.) And step (a) reveals that the "stable, natural colors" are natural and juice-based because they are derived from a mixture of Genipa americana fruit juice and "other juice or material from a food-grade source." (Id. at 14:55-67.)

Next, the specification also reveals that "stable, natural colors" and "stable natural juice-based colorant" have their plain and ordinary meaning. As summarized by Defendants, "the specification teaches, for example, how: (1) the '[n]atural stable blue color is believed to be obtained when genipin . . . which naturally exist in Genipa americana fruit, react with amino acids, polypeptides, or proteins, and other compounds with primary amine groups,' ([Doc. No. 1-1 at]

2:61-66); (2) the heating step 'relates to enzyme reactions, color development, and color stability' and 'contributes to a reproducible, stable and desired resultant color' by 'control[ling] unwanted reactions,' ([id. at] 5:26-33; 5:50-58); (3) the heat treatment results in 'microbial stability,' ([id. at] 5:2-4); and (4) the '[g]enipa-based natural colorants, especially blue color, have excellent thermal and acidic pH stability,' ([id. at] 6:52-56)." (Doc. No. 58 at 20.)

The extrinsic evidence further supports this construction of "stable, natural colors" and "stable natural juice-based colorant." For example, regarding the RE'695 Patent's use of "stable," Dr. Abbaspourrad explained in his expert declaration that "a POSITA would have understood that heat treatment stabilizes a natural color by optimizing the reaction between the genipin and primary amines; deactivating certain enzymes, which would prevent color loss due to enzymatic oxidation; and degrading bacteria or other microbes." (Id. at 20-21 (citing Doc. No. 60 at ¶¶ 161-65, 171-75).) Moreover, in her testimony at the Markman hearing, Dr. Giusti's testimony made clear that she understands the RE'695 Patent's use of "colors" based on the context. Specifically, she testified that:

> So, sometimes, colorants are referred to as "natural colors." Colorants from natural sources can be referred to as "natural colors." But we just discussed that color is one thing; colorant is another thing . . . When I read "preparing stable natural colors," to me, it seems a colorant. Because how do you prepare a natural color, right? You prepare a colorant. That would seem more reasonable.

(Doc. No. 109 at 42:6-15.)

Therefore, because the meanings of "stable, natural colors" and "stable natural juice-based colorant" would be apparent to a POSITA in the context of the intrinsic evidence, a POSITA would understand the terms to have their plain and ordinary meaning. See Intel, 21 F.4th at 791 (noting that a claim term's ordinary meaning may be derived from "the sources available to [POSITAs], including 'the words of the claims themselves, the remainder of the specification, the prosecution

history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art'") (quoting Phillips, 415 F.3d at 1313-14).

2. "color having an increased -b value based on the CIE LAB scale" and "the desired color"

Claim Term	Oterra's Proposed Construction	Defendants' Proposed Construction
"color having an increased -b value based on the CIE LAB scale"	Indefinite; alternatively, "any color that has a decreased b/b* value at the specified time"	"bluer color"
"the desired color"	Indefinite	"the bluer color"

a. Indefiniteness Challenge

Oterra has also failed to prove with clear and convincing evidence that the claim terms "color having an increased -b value based on the CIE LAB scale" and "the desired color" are indefinite. Both terms appear in Claim 45, which recites in pertinent part as follows:

> 45. A method of preparing stable, natural colors, the method resulting in a color having an increased -b value based on the CIE LAB scale when the mixture defined in step (a) is compared with the processed mixture defined in step (c), comprising
>
> a. forming a mixture comprising:
>
> (i) Genipa americana fruit juice which contains sufficient genipin or derivatives of genipin, selected from genipin gentiobioside, geniposide, geniposidic acid, and gardenoside, capable of reacting with the juice or liquefied material defined in (a)(ii) to produce a product of the desired color;
>
> ***

(Doc. No. 1-1 at 14:50-61 (emphasis added).)

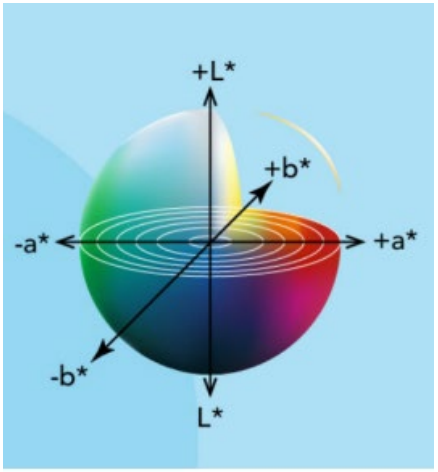
i. Meaning of "color having an increased -b value based on the CIE LAB scale" is Reasonably Clear

Oterra argues the meaning of "color having an increased -b value based on the CIE LAB scale" is indefinite because the meaning of "a color having a[] . . . -b value on the CIE LAB scale" and "increased -b value" would be unclear to a POSITA. (See Doc. No. 61 at 18.) First, Oterra

contends that the meaning of "a color having a[] . . . -b value on the CIE LAB scale" would be unclear to a POSITA because the description "a color having a[] . . . -b value" conflicts with the instruction that this value is "on the CIE LAB scale." (Id.) And while the term's use of "-b value" is at odds with its instruction that this value is "on the CIE LAB scale," this is not so conflicting as to make the meaning unclear to a POSITA.

The CIE LAB scale "is a well-known international standard color space that measures changes in color coordinates that correspond to the range of human color perception." (Doc. No. 60 at ¶ 49.) The precursor to the CIE LAB scale was the Hunter Lab scale, which is similarly a "color measurement system that represent[s] color in a perceptually uniform way." (Id. at ¶ 51.) The difference between the two scales is the way they calculate color values: "Hunter Lab values are calculated using square roots, whereas [CIE LAB] values are calculated using cube roots." (Doc. No. 61-2 at ¶ 33.) By calculating color values using cube roots instead of square roots, the CIE LAB scale is considered to be more accurate. (See Doc. No. 60 at ¶ 51.)

Both scales calculate color values on "a three-coordinate system," namely "L", "a", and "b", where "the location of a color is defined by its location in a three-dimensional coordinate system," depicted below:



(Id. at ¶ 49.) Because both scales use this three-dimensional coordinate system, they "share similar axes ([the] L, a, [and] b [axes] representing lightness, red-green, and blue-yellow respectively)." (Id. at ¶ 51.)

Based on these axes, the CIE LAB scale denotes color values as "L*", "a*", and "b*", while the Hunter Lab scale denotes color values as "L", "a", and "b". (Doc. No. 61-2 at ¶ 32.) The CIE LAB scale uses the "star" to denote its color values "to clarify that the CIE[]LAB scale is being used." (Id.) On both scales, however, L*/L "determines whether a sample is bright (high [L*/L]) or dark (low [L*/L])" while a*/a and b*/b "indicate the sample's chromaticity (hue and chroma)," with a*/a denoting red to green (+a*/+a = redder, -a*/-a = greener) and b*/b denoting yellow to blue (+b*/+b = yellower, -b*/-b = bluer). (Doc. No. 60 at ¶ 39; Doc. No. 61-2 at ¶ 29.)

Importantly, on both scales, the -b value, whether demarcated as -b* or -b, means a bluer color because an increase in the -b value on the three-dimensional coordinate system used by both scales indicates a shift in the color toward the blue axis. (See id.) Therefore, while "a color having a[] . . . -b value on the CIE LAB scale" uses "-b value" from the Hunter Lab scale but then conflictingly specifies that the value is on the CIE LAB scale, the meaning of the term would be reasonably clear to a POSITA because a -b/-b* value means the same thing on both scales. As phrased by Defendants, "[b]ecause both scales move in the same direction along the blue-yellow axis, an 'increased -b value' on one scale necessarily corresponds to an increased blue shift on the other. Thus, any distinction between the two scales has no practical effect on claim scope or clarity." (Doc. No. 85 at 7.)

This conclusion would be even more apparent to a POSITA based on the intrinsic evidence. Specifically, the language of the claims makes clear that the color referred to in this term is blue. For example, Claim 45's preamble specifies that it recites a "method of preparing stable, natural

colors, the method resulting in a color having an increased -b value based on the CIE LAB scale when the mixture defined in step (a) is compared with the processed mixture defined in step (c)." (Doc. No. 1-1 at 14:50-54.) And Claim 52, which depends on Claim 45, recites "[t]he method according to claim 45, wherein the color is blue." (Id. at 15:29-30.)

The specification further clarifies the meaning of "a color having a[] . . . -b value based on the CIE LAB scale." As noted above, Claim 45 recites a "method resulting in a color having an increased -b value based on the CIE LAB scale when the mixture defined in step (a) is compared with the processed mixture defined in step (c)," which provides for the mixture to be heated. (Id. at 14:50-54, 15:6-8 (emphasis added).) Table 1 in the specification, reproduced below, contains an example of the difference in color of this mixture before and after heat is applied:

TABLE 1

	Before Reaction			Heating	After Reaction			
Co-Process Materials	L	a	b	hours	L	a	b	Visual Color
Watermelon concentrate, 65 Brix	26.83	7.13	2.92	2.0	24.67	0.11	−1.38	Dark Blue
Pineapple juice	34.46	5.41	10.16	2.5	25.96	−0.35	−1.14	Forest green
Lychee juice concentrate, 29 Brix	59.94	0.53	8.29	2.0	24.70	0.04	−1.40	Vibrant blue
Passion fruit clarified, 50 Brix	25.90	6.15	1.61	2.0	24.65	0.19	−0.95	Dark brown
Peach juice concentrate, 68 Brix	23.55	0.62	−0.60	2.0	24.54	0.13	−1.04	Black
Cantaloupe juice	33.66	5.24	6.48	0.5	24.58	0.03	−1.09	Dark blue/puiple
Banana puree				2.5	31.39	−0.35	−1.51	Grayish blue
Green bean sprout solution	44.53	0.64	7.79	0.5	24.59	0.06	−1.22	Dark blue/purple
Celery juice	29.69	9.22	5.30	1.0	24.62	0.04	−1.24	Dark blue
Green cabbage powder				2.0	24.56	0.04	−1.14	Purplish blue
Sweet yellow onion solution	40.00	−1.46	7.17	1.0	25.33	0.18	−1.38	Grayish purple
Milk, 2%	87.80	−2.13	7.37	2.0	29.00	−1.12	−6.96	Creamy bright blue
Soy milk	79.17	0.13	8.33	2.0	27.92	−0.97	−4.44	Creamy teal blue
Chicken meat slurry	74.96	0.62	9.22	2.0	24.59	0.09	−1.03	Bright purplish blue

(See id. at 7:5-58.) There, as depicted above, the table reports the b values of various mixtures, measured by the Hunter Lab scale, both before and after the mixtures are heated. Critically, the b value of each mixture decreases after heat is applied, resulting in the visual color of most mixtures being some shade of blue. For example, the b value of the "watermelon concentrate" mixture was

2.92 before it was heated, and -1.38 after heat was applied. And Table 1 notes that the visual color of this mixture after heat was "Dark Blue."

This understanding is also reflected throughout the prosecution history. For example, during prosecution of the '319 Patent, the patentee explained that the claimed invention was different than prior art because "the claims of the present application have been amended herein to define that the process described forms a generally blue color material (the fact that the process results in an increased -b value means that the follow includes more 'blue' tones . . .)." (Doc. No. 54-1 at 40.) And upon review of this argument, the examiner noted that the patentee was using "increased -b values" to mean "more blue tones." (See id. at 56.) Thus, through reference to the intrinsic evidence, the meaning of "a color having a[] . . . -b value on the CIE LAB scale" would be reasonably clear to the POSITA.

Second, Oterra argues that the meaning of "increased -b value" would be unclear to a POSITA because "mathematically, an increased negative number is more positive," so this could be "interpreted as either a more negative value or less negative value." (Doc. No. 61 at 18.) Oterra also argues that this meaning would be unclear because a POSITA would not know whether this requires the starting b value to be negative. (Id. at 19.) But this meaning would again be reasonably clear to a POSITA based on the intrinsic evidence.

For example, Table 1 in the specification, reproduced above, reports the b values of various mixtures both before and after the mixtures are heated. (See Doc. No. 1-1 at 7:5-48.) In each example, the b value gets more negative regardless of whether the starting b value was negative. For instance, the "peach juice concentrate" mixture begins with a b value of -0.60 before heat and ends with a b value of -1.04 after the mixture is heated. In contrast, however, the "watermelon concentrate mixture" begins with a b value of 2.92 before heat and ends with a b value of -1.38

after the mixture is heated. Thus, based on Table 1 in the specification, a POSITA would understand that the starting b value of the mixture could be positive or negative, but when compared to the b value after the mixture is heated as described in step (c), the b values will be negative.

This understanding is reflected in the claim language. Specifically, Claim 45 provides for a "method resulting in a color having an increased -b value based on the CIE LAB scale when the mixture defined in step (a) is compared with the processed mixture defined in step (c) . . . ." (Doc. No. 1-1 at 14:51-54 (emphasis added).) As such, the plain language of the claim makes clear that the -b value of the mixture in step (a) should increase by the time it is processed according to step (c). Put differently, "the claim simply requires a -b value of the step (c) mixture to be more negative than the b/-b value at step (a)." (Doc. No. 66 at 10.)

Further, the prosecution history makes this meaning clear. For example, during prosecution of the '319 Patent, the examiner noted that "[t]he phrase '. . . the method resulting in a color having an increased -b value based on the CIE lab scale . . .' includes the relative term 'increased' which renders the claim indefinite. It would be unclear to a POSITA what the color recited in the claim is compared to so as to determine it has an increased CIELAB -b value." (Doc. No. 54-1 at 48.) In response, the patentee clarified the meaning of "increased," stating it "refers to the difference between the -b value of the mixture of step (a) and the processed mixture of step (c)." (Id. at 65.) Thus, through reference to the intrinsic evidence, the meaning of "increased -b value" would be reasonably clear to a POSITA.

Accordingly, because the meaning of "a color having an increased -b value on the CIE LAB scale" would be reasonably clear to a POSITA, Oterra has failed to prove by clear and convincing evidence that the term is indefinite.

ii. Meaning of "the desired color" is Reasonably Clear

Oterra also contends that the meaning of "the desired color" would be unclear to a POSITA because the language is "purely subjective and depends on one's state of mind or intent."[5] (Doc. No. 61 at 23.) But, as above, the meaning of this term would be reasonably clear to a POSITA through reference to the intrinsic evidence. For example, the specification describes the need for "a natural color, especially a natural blue colorant . . ." and further describes the claimed invention as a "[n]atural stable blue color." (Doc. No. 1-1 at 1:36-37, 2:61-62.) And, as noted below, the only color described in the claims as resulting from the claimed methods is either blue or a shade of blue. (See Doc. No. 1-1 at 13:4-5, 13:28-29, 14:19-21, 14:38-39, 14:48-49, 15:28-29.) In addition, Claim 45, the claim in which the term "the desired color" appears, specifies that the claimed method results in "a color having an increased -b value based on the CIE LAB scale" which, as discussed above, a POSITA would understand to mean a blue color. (Id. at 14:51-52.)

The prosecution history also clarifies which color the claimed method is aimed at producing. For example, during prosecution of the '319 Patent, the patentee explained that the claimed invention was different from prior art because "the claims of the present application have been amended to clearly define that the color material prepared is a blue color material." (Doc. No. 54-1 at 67.)

Accordingly, Oterra has failed to prove with clear and convincing evidence that the meaning of "the desired color" would be unclear to a POSITA.

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[5] In addition, Oterra reiterates its argument from above concerning whether the meaning of "color" would be unclear to a POSITA. (Doc. No. 61 at 24.) But for the same reasons discussed supra, the meaning of "color" would be reasonably clear to a POSITA based on its context.

b. Claim Construction

The Court construes "a color having an increased -b value on the CIE LAB scale" and "the desired color" to mean "bluer color" and "the bluer color," respectively. First, looking to the language of the claims, the only color the claims describe as resulting from the claimed method is blue:

> 7. Method according to claim 6, wherein food grade source (a)(ii) is watermelon, and the resulting color is blue.
>
> ***
>
> 19. The method according to claim 1 wherein the color prepared is blue.
>
> ***
>
> 28. The method according to claim 27, wherein food grade source (a)(ii) is watermelon, and the resulting color is blue.
>
> ***
>
> 39. The method according to claim 22 wherein the color prepared is blue.
>
> ***
>
> 44. The method according to claim 22 wherein the color prepared is teal blue or purple blue.
>
> ***
>
> 52. The method according to claim 45, wherein the color is blue.

(Doc. No. 1-1 at 13:4-5, 13:28-29, 14:19-21, 14:38-39, 14:48-49, 15:28-29 (emphasis added).)

Oterra argues, however, that because dependent Claim 52 specifies that "the color is blue," construing the meaning of "a color having an increased -b value on the CIE LAB scale" and "the desired color" to mean "bluer color" and "the bluer color," respectively, disregards the doctrine of claim differentiation. (Doc. No. 70 at 11.) The doctrine of claim differentiation presumes that "the presence of a dependent claim that adds a particular limitation gives rise to the presumption

that the limitation in question is not present in the independent claim." Phillips, 415 F.3d at 1315. Thus, because dependent Claim 52 recites that "the color is blue," Oterra argues this gives rise to the presumption that the color in independent Claim 45 encompasses more colors than just blue, because interpreting it as only blue would make dependent Claim 52 redundant, violating the doctrine of claim differentiation.

But because the Court is construing "a color having an increased -b value on the CIE LAB scale" and "the desired color" to mean "blue**r** color" and "the blue**r** color," respectively, rather than just "blue color," this construction does not render Claim 52 redundant in violation of the doctrine of claim differentiation. Critically, the meaning of "bluer" and "blue" would not be synonymous to a POSITA. As explained by Defendants, "[a] color can be 'bluer' than another without being categorically 'blue'—it simply means [the color] has shifted further in the negative b direction" on either the Hunter Lab or CIE LAB scales. (Doc. No. 85 at 7.) In other words, by construing "a color having an increased -b value on the CIE LAB scale" and "the desired color" to mean "blue**r** color" and "the blue**r** color," respectively, this simply means the color will be more blue, i.e., bluer, without requiring the color to be categorically blue.

The specification similarly makes clear that the claimed method results in a bluer color. In its description of the invention, it describes that a "[n]atural stable blue color is believed to be obtained . . . ." (Id. at 2:61-66 (emphasis added).) In addition, Table 1 in the specification, reproduced above, reports the b values of various mixtures both before and after the mixtures are heated according to step (c) in Claim 45, as well as the visual color of the mixtures after they are heated. (See id. at 7:5-48.) As shown in Table 1, after the mixtures were heated, their b values became more negative, resulting in the following visual colors: dark blue, forest green, vibrant

blue, dark brown, black, dark blue/purple, "grayish" blue, dark blue/purple, dark blue, "purplish" blue, "grayish" purple, creamy bright blue, creamy teal blue, and bright "purplish" blue. (See id.)

Oterra, however, argues that a POSITA "would understand that the 'blueness' of a color depends on the L/L* value, the a/a* value, and the b/b* value," and that even if the b/b* value decreases, that does not necessarily result in the visual color becoming bluer. (Doc. No. 70 at 9-10 (emphasis in original).) Oterra contends this argument is reflected by Table 1, where the b values of some mixtures became more negative yet the resulting visual colors were forest green, dark brown, or black. (Id. at 10.) But a POSITA would understand that just because the color did not become visually bluer, an increased -b value means the color became bluer on the CIE LAB and Hunter Lab scales because, as phrased by Defendants, this increase "indicates a shift in the color toward the blue axis—i.e., an increase in the blue component of the color." (Doc. No. 85 at 6.)

Moreover, the prosecution history clarifies that a POSITA would understand "a color having an increased -b value on the CIE LAB scale" and "the desired color" to mean a bluer color. For example, and as noted above, during prosecution of the '319 Patent, the patentee explained that the claimed invention was different than prior art because "the claims of the present application have been amended herein to define that the process described forms a generally blue color material (the fact that the process results in an increased -b value means that the follow includes more 'blue' tones . . .)." (Doc. No. 54-1 at 40 (emphasis added).) The patentee further explained that "Claim 1, as presently amended, indicates that the reactions defined in steps (b) and (c) of the defined process results in increasing the -b value of the mixture from step (a), meaning that the color of the mixture gets bluer." (Id. at 65 (emphasis added).) And the examiner noted that the patentee was using "increased -b values" to mean "more blue tones" and initially rejected

the patentee's argument that the claimed invention was different from prior art based on this meaning, noting that "[i]n view of the fact that an increase in negative b CIELAB value means an increase in blue, and since purple is 'bluer' than red, [the prior art] reads on the increase in -b value on the CIELAB scale recited in claim 1." (See id. at 56, 88 (emphasis added).)

The extrinsic evidence also supports the conclusion that a POSITA would understand "a color having an increased -b value on the CIE LAB scale" and "the desired color" to mean a bluer color. A POSITA would also understand that, all other values held equal, an "increased -b value on the CIE LAB scale" would result in a bluer color. As Dr. Abbaspourrad pointed out at the Markman hearing, "[i]n this patent, [it] clearly says, if you follow Step A, B, and C [in Claim 45], you only need one value, just B." (Doc. No. 109 at 84:16-18.) And in her testimony at the hearing, Dr. Giusti explained that on both the Hunter Lab scale and the CIE LAB scale, as the b axis gets more negative, the color becomes "more and more blue." (Doc. No. 109 at 19:3-4.) Similarly, as explained by Dr. Abbaspourrad in his expert declaration:

> [A] POSITA would have understood that the CIE LAB color scale is a standard color scale that allows colors to be measured based on what is visually perceived. The CIE LAB assigns three values to a color: (1) L for lightness; (2) a* for red-green color (where -a values represent green and +a values represent red); and (3) b* for blue-yellow color (where -b values represent blue and +b values represent yellow). Thus, in my opinion, in view of this commonly used color scale, it is well known in the art that a "color having an increased -b value based on the CIE LAB scale" indicates a bluer color.

(Doc. No. 60 at ¶ 107 (citation omitted).)

While Dr. Giusti also opined at the Markman hearing that a color with a negative b value might not visually appear blue due to its a value and L value, this is beyond the scope of what is required by the term "a color having an increased -b value on the CIE LAB scale." Based on the plain language of the term, a POSITA would understand the claim as requiring only that the b value

become more negative which, as noted above would be understood to mean the color becomes more blue, rather than requiring that the visual color actually be blue.

Therefore, based on the intrinsic and extrinsic evidence, a POSITA would understand "a color having an increased -b value on the CIE LAB scale" and "the desired color" to mean "bluer color" and "a bluer color," respectively.

3. "processed mixture defined in step (c)"

Oterra's Proposed Construction	Defendants' Proposed Construction
Indefinite	"the mixture that exists after steps (a), (b), and (c) have occurred"

a. Indefiniteness Challenge

Next, Oterra has failed to prove with clear and convincing evidence that the claim term "processed mixture defined in step (c)" is indefinite. This term also appears in Claim 45:

> 45. A method of preparing stable, natural colors, the method resulting in a color having an increased -b value based on the CIE LAB scale when the mixture defined in step (a) is compared with the processed mixture defined in step (c), comprising
>
> a. forming a mixture comprising:
>
> (i) Genipa americana fruit juice which contains sufficient genipin or derivatives of genipin, selected from genipin gentiobioside, geniposide, geniposidic acid, and gardenoside, capable of reacting with the juice or liquefied material defined in (a)(ii) to produce a product of the desired color;
>
> (ii) other juice or material from a suitable food-grade source that contains at least one component capable of providing the desired color when combined with the Genipa americana fruit juice defined in (a)(i), wherein the food-grade source comprises an amino acid;
>
> b. processing said mixture using conventional juice processing methods selected from milling, blending, mixing, pressing, extracting, and combinations of those processing methods, at a pH of from about 3 to about 8;
>
> c. stabilizing the mixture against microbial growth, oxidation, organoleptic deterioration and to provide a stabilized color intensity, by applying a heat treatment; and

> d. drying the mixture, wherein the drying is selected from the group consisting of spray drying, freeze drying, and vacuum drying, and combinations thereof.

(Doc. No. 1-1 at 14:50-15:12 (emphasis added).) Read in context, the parties agree this term is a limitation relating to the timing of the second color measurement to determine whether there has been an increase in the -b value. (See Doc. No. 66 at 11; Doc. No. 12 at 12-13.)

Oterra argues that the meaning of "processed mixture defined in step (c)" would be unclear to a POSITA because "step (c) recites a step of stabilizing the already processed mixture of step (b). Thus, there is no 'processed mixture' that is 'defined in step (c)." (Doc. No. 61 at 19-20.) Put differently, because step (b) describes "processing" the mixture and step (c) describes "stabilizing" the mixture, a POSITA would understand "the processed mixture" to mean the mixture after step (b) rather than after step (c). Thus, Oterra argues that a POSITA would not understand when to measure the color values to determine whether the -b value had increased.

But based on the specification and prosecution history, the meaning of this term would be reasonably clear to a POSITA. As discussed supra, Table 1 of the specification reports the b values of various mixtures both before and after the mixtures are heated as required by step (c). (See Doc. No. 1-1 at 7:5-48.) Specifically, the table reports the b values of the mixtures "before reaction," then reflects the amount of time the mixtures are heated, and finally reports the mixtures' b values "after reaction." (See id.) For example, the table reflects that the "peach juice concentrate" mixture begins with a b value of -0.60 before it is heated for 2 hours, ending with a b value of -1.04. Similarly, the table reports that the "watermelon concentrate mixture" begins with a b value of 2.92 before it is heated for 2 hours, ending with a b value of -1.38. Thus, because Table 1 reports the b values of the mixtures both before and after heat is applied, a POSITA would

reasonably understand that the claimed method contemplates measuring the color value after the mixture is heated in order to determine whether the mixture's -b value had increased.

This understanding is further reflected in the prosecution history. During prosecution of the '319 Patent, in distinguishing the claimed process from prior art, the patentee stated that "the reactions defined in steps (b) and (c) of the defined process results in increasing the -b value of the mixture from step (a)." (Doc. No. 54-1 at 76.) In addition, when responding to the USPTO examiner's contention that "increase" as used in "the method resulting in a color having an increased -b value based on the CIE LAB scale when the mixture defined in step (a) is compared with the processed mixture defined in step (c)" is indefinite, the patentee clarified that "'increased' refers to the difference between the -b value of the mixture of step (a) and the processed mixture of step (c)." (Id. at 65.)

Accordingly, through reference to the specification and prosecution history, the meaning of "processed mixture defined in step (c)" would be reasonably clear to a POSITA.

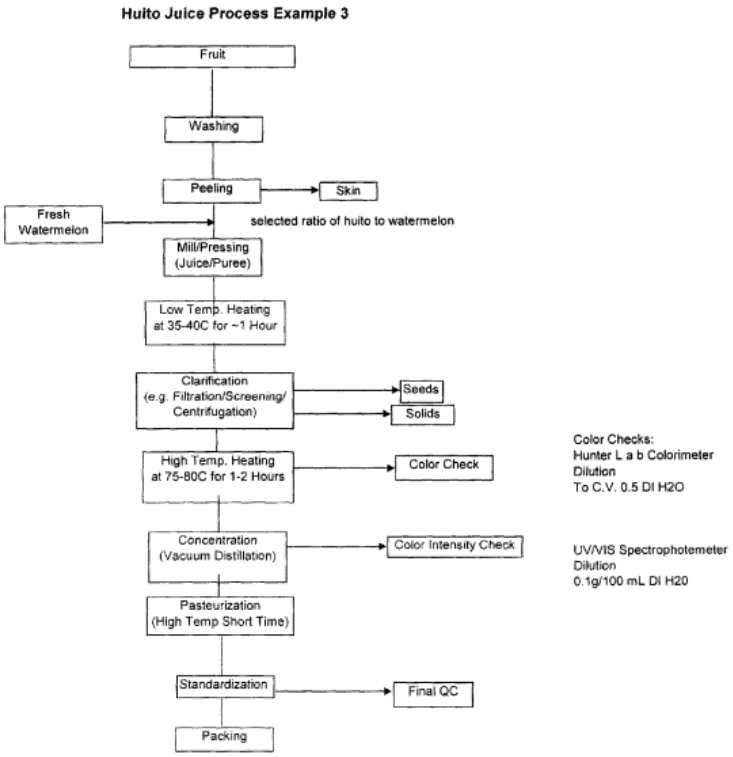
b. Claim Construction

The Court construes "processed mixture defined in step (c)" to mean "the mixture that exists after steps (a), (b), and (c) have occurred." As noted above, the parties agree that this term is read in context as a limitation relating to the timing of the second color measurement to determine whether there has been an increase in the -b value. (See Doc. No. 66 at 11; Doc. No. 12 at 12-13.)

A POSITA would understand "processed mixture defined in step (c)" to mean "the mixture that exists after steps (a), (b), and (c) have occurred" based on the intrinsic evidence. Beginning with the language of the claims, Claim 45 uses of the past-tense "processed" in reference to the mixture, revealing that it is referring to the mixture after step (c). In Defendants' words, "the

'processed mixture defined in step (c)' is the mixture that results from carrying out step (a)—forming a mixture of the Genipa americana fruit juice and coprocessing material; step (b)—processing the mixture (e.g., milling, blending, mixing, pressing, extracting, etc.); and step (c)—applying a heat treatment to the mixture of step (b)." (Doc. No. 58 at 10 (emphasis in original).)

This understanding is also supported by Table 1 in the specification, which reports the b values of the mixtures both before and after heat is applied as required in step (c). Specifically, Table 1 details the mixtures' b values "before reaction," then describes a "Heating" period, before finally reporting the mixtures' b values "after reaction." (See Doc. No. 1-1 at 7:5-58.) As such, based on Table 1, a POSITA would know to take the mixtures' second b value measurement after the heat treatment described in step (c) is applied. Further, Figure 1 in the RE'695 Patent, reproduced below, supports this interpretation:



(Doc. No. 1-1 at 2:53-54.) As reflected in Figure 1, a "Color Check" occurs after "High Temp. Heating," which would further signal to a POSITA that the second color measurement to determine whether there has been an increase in the -b value should be taken after step (c) is complete. (See id.)

The prosecution history of the '319 Patent additionally clarifies this meaning. As noted above, when responding to the USPTO examiner's contention that "increase" as used in "the method resulting in a color having an increased -b value based on the CIE LAB scale when the mixture defined in step (a) is compared with the processed mixture defined in step (c)" is indefinite, the patentee clarified that "'increased' refers to the difference between the -b value of the mixture of step (a) and the processed mixture of step (c)." (Doc. No. 54-1 at 65.) Also during prosecution of the '319 Patent, the patentee amended Claim 1 to overcome a prior art rejection, noting that "Claim 1, as presently amended, indicates that the reactions defined in steps (b) and (c) of the defined process results in increasing the -b value of the mixture from step (a)." (Id. at 76.) Through this explanation, the patentee made clear that the second color measurement to determine whether the -b value has increased should be taken after steps (b) and (c).

In addition, the extrinsic evidence supports this construction. For example, at the Markman hearing, Dr. Abbaspourrad testified that a POSITA would know to measure the mixture's b value for the second time after the heat treatment described in step (c) is applied. Specifically, he stated that:

> [W]e know, once we apply terminal treatment or heat, we create more of that color. The reaction happens more. So we have genipin from the fruit juice that we get and the amino acid co-processing material. We heat it up. The color forms more. We create of the same molecule reacting together and creating more of that molecule [sic]. Now, when that happens, of course, POSITA hundred percent, with crystal-clarity, knows you have to heat it then do the measurements, right? There is no point to do the measurements before.

(Doc. No. 109 at 87:17-88:2.)

Therefore, based on both the intrinsic and extrinsic evidence, a POSITA would understand "processed mixture defined in step (c)" to mean "the mixture that exists after steps (a), (b), and (c) have occurred."

4. "Genipa americana fruit juice"

Oterra's Proposed Construction	**Defendants' Proposed Construction**
"juice from Genipa americana fruit, but not as an extract"	"juice from Genipa americana fruit"

The Court construes "Genipa americana fruit juice" to mean "juice from Genipia americana fruit, but not as an extract." This term appears in step (a)(i) to Claim 45:

> a. forming a mixture comprising:
>
> (i) Genipa americana fruit juice which contains sufficient genipin or derivatives of genipin, selected from genipin gentiobioside, geniposide, geniposidic acid, and gardenoside, capable of reacting with the juice or liquefied material defined in (a)(ii) to produce a product of the desired color;
>
> ***

(Doc. No. 1-1 at 14:50-61 (emphasis added).) As noted by Oterra, the parties' dispute over this term centers on whether it includes extract. (Doc. No. 61 at 21.) But the intrinsic evidence, specifically the prosecution history of the '319 Patent, makes clear that this term does not include extract.

Step (a) in Claim 1 of the '319 Patent originally stated the following:

> a. forming a mixture comprising:
>
> (i) juice or extract from fruit of a plant of the Rubiaceae Family, which contains sufficient genipin or derivatives of genipin, selected from genipin gentiobioside, geniposide, geniposidic acid, and gardenoside, capable of reacting with the juice or extract defined in (a)(ii) to produce a product of the desired color;

(Doc. No. 54-1 at 62 (emphasis added).) The USPTO examiner rejected this claim, finding it was covered by prior art in part due to the prior art's similar use of Genipa americana fruit extract. (See id. at 66.) To overcome this rejection, the patentee deleted references to "extract" from the claim, explaining that the claimed method in the '319 Patent did not involve the use of extract:

> In [the prior art], an extract of genipa americana fruit . . . was the reactant. Claim 1 has been amended to delete the phrase "or extract" from the claims and, with regard to (a)(ii), replace it with "liquified material." This should not really affect the scope of the claims since, in the context utilized, the term "extract" meant the product of a squeezing action to pull juice out of the defined material or of liquifying the defined material. Thus, as used in the present claims, the words juice and extract were meant to encompass similar things and, in both cases, are clearly distinguished from the "extract" utilized in the [prior art's] application (i.e., the extraction of a specific component or components from the juice). This difference is emphasized by the use of the word "juice" or "liquified material" in claim 1.

(Id. at 67.) The patentee further specified that:

> Again, to summarize one of the critical differences with [the prior art], [the prior art] utilizes as a key reactant an extract which is very specifically purified and is then reacted with the genipa derivative. Clearly, such a purified material is not a simple "juice" or a "liquefied material", as defined in the claims of the present application. This is a critical and very clear difference between the reaction described in [the prior art] and that claimed in the present application.

(Id. at 101.) Moreover, the patentee stated that "the claims of the present application do not use extract/purified materials, but rather utilize fruit juices or fruit/water extracts." (Id. at 40-41; see also id. at 100 ("[T]he claims of the present application do not use such purified materials, but rather utilize fruit juices or liquified versions of the defined solid food grade sources.")) Thus, the patentee made clear during prosecution of the '319 Patent that the claimed method used only juice from the Genipa americana fruit, and not extract, meaning purified materials, from the fruit.

Defendants, however, argue that the term "Genipa americana fruit juice" does not include the "but not as an extract" limitation due to the specification's references to "extract." For example, the specification states that "[a]ll known and practiced juice extraction techniques and

operations . . . are considered suitable to prepare the color juices of this invention and are incorporated by reference herein." (Doc. No. 1-1 at 2:66-3:4 (emphasis added).) It additionally explains that "[i]n order to produce the colorants of the present disclosure, the mature Genipa americana are co-processed with other fruits . . . by conventional methods well known in the art in order to extract juice from fruit." (Id. at 4:54-57 (emphasis added).)

But these references to "extract" are using the term in a way different than the limitation "but not as an extract" intends. Specifically, the specification's use of "extract" is referring to a way to obtain juice from the Genipa americana fruit. In contrast, the limitation "but not as an extract" means to exclude "extract/purified materials" from the construed term, as explained by the patentee during prosecution of the '319 Patent. Stated differently, the limitation does not prevent the term from including juice extracted from Genipa americana fruit, but rather excludes "'extract' [as] utilized in the [prior art's] application (i.e., the extraction of a specific component or components from the juice." (See Doc. No. 54-1 at 67.)

Accordingly, based on the prosecution history, a POSITA would understand "Genipa americana fruit juice" to mean "juice from Genipia americana fruit, but not as an extract."

5. "other juice or material" and "a suitable food-grade source that contains at least one component capable of providing the desired color when combined with the Genipa americana fruit juice defined in (a)(i), wherein the food-grade source comprises an amino acid"

Claim Term	Oterra's Proposed Construction	Defendants' Proposed Construction
"other juice or material"	"juice or liquified material obtained by any means from fruits, vegetables, grains, legumes, nuts, seeds, plant materials, animal materials, microbial materials, algal materials, or byproducts thereof, but not synthetic, pure chemicals"	No construction necessary; plain and ordinary meaning

"a suitable food-grade source that contains at least one component capable of providing the desired color when combined with the Genipa americana fruit juice defined in (a)(i), wherein the food-grade source comprises an amino acid"	"fruits, vegetables, grains, legumes, nuts, seeds, plant materials, animal materials, microbial materials, algal materials, and byproducts that contains an amino acid, but not isolated amino acids"	No construction necessary; plain and ordinary meaning

The Court construes both "other juice or material" and "a suitable food-grade source that contains at least one component capable of providing the desired color when combined with the Genipa americana fruit juice defined in (a)(i), wherein the food-grade source comprises an amino acid" to have their plain and ordinary meaning. Both terms are found in step (a)(ii) to Claim 45:

> a. forming a mixture comprising:
>
> ***
>
> (ii) other juice or material from a suitable food-grade source that contains at least one component capable of providing the desired color when combined with the Genipa americana fruit juice defined in (a)(i), wherein the food-grade source comprises an amino acid;

(Doc. No. 1-1 at 14:55, 14:62-67.) In the context of Claim 45, step (a)(ii) recites the co-processing material with which the "Genipa americana fruit juice" required in step (a)(i) is mixed, forming the "mixture" that is then processed, stabilized, and dried as described in steps (b), (c), and (d), respectively.

The intrinsic evidence reveals that a POSITA would understand these terms as having their plain and ordinary meaning. First, the language of other, non-asserted claims in the RE'695 Patent, such as Claim 1 and Claim 22, contain similar language but "specify additional requirements on how the co-processing material is made and the specific source of the co-processing material." (Doc. No. 58 at 14.) For example, step (a)(ii) in Claim 1 states:

> (ii) other **[**juice or liquefied**]** material **[**made by the chemical or mechanical liquification of a solid material,**]** from a suitable food-grade source selected from fruits, grains, seeds, beans, nuts, vegetables, plant materials, milk, dairy products, egg, meat, seafood, shellfish, microbial and algal material, and by-products from such sources, *the other material comprising juice or liquefied material made by chemical or mechanical liquification of a solid material* that contain components capable of providing the desired color when combined with the juice defined in (a)(i);[6]

(Doc. No. 1-1 at 12:16, 12:24-34 (emphasis added).) Similarly, step (a)(ii) in Claim 22 states:

> (ii) other material from a suitable food-grade source selected from fruits, grains, seeds, beans, nuts, vegetables, plant materials, milk, dairy products, egg, meat, seafood, shellfish, microbial and algal material, and by-products from such sources, the other material comprising juice or liquefied material made by chemical or mechanical liquification of a solid material that contain components capable of providing the desired color when combined with the juice defined in (a)(i), wherein the food-grade source comprises an amino acid;

(Id. at 13:47-57.)

Notably, both Claim 1 and Claim 22 specify certain food-grade sources from which to select when choosing a co-processing material under those claims. In contrast, Claim 45 only states that the food-grade source "comprises an amino acid." Based on this comparison, a POSITA would read the disputed terms in step (a)(ii) as having their plain and ordinary meanings because, as phrased by Defendants, "the fact that the patentee chose not to include additional processing requirements in Claim 45," yet did specify these additional requirements in Claims 1 and 22, "shows that the patentee did not intend to include additional limitations in step (a)(ii) in Claim 45." (Doc. No. 58 at 15); see also Woods v. DeAngelo Marine Exhaust, Inc., 692 F.3d 1272, 1285 (Fed. Cir. 2012) ("This court will not construe this otherwise clear term to include a limitation already present in some claims but not others.")

[6] As used in the RE'695 Patent, "[m]atter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue . . . ." (Doc. No. 1-1 at 1:4-8.)

Second, the specification supports the conclusion that these terms be given their plain and ordinary meanings. For example, the specification describes that the "natural stable color products" disclosed in the RE'695 Patent "are generated by processing Genipa americana fruit juice which contains genipin, genipin derivatives, or pre-genipin compounds, together with other edible juices or extracts which contain amino acids, polypeptides, proteins, and compounds with one or more primary amine groups." (Doc. No. 1-1 at 1:25-29.) In addition, the specification lists a broad range of potential materials with which the Genipa americana fruit juice should be processed to obtain the disclosed natural stable color product:

> The broad range of suitable edible materials comprises fruits, vegetables, grains, legumes, nuts, seeds, plant materials, animal materials including milk and eggs, microbial and algal materials, and by-products from such sources, which contain amino acids, polypeptides, and proteins.

(Id. at 3:52:56.) It then goes into detail on each of these potential co-processed materials, providing examples of food-grade sources that would fit the description. (See id. at 3:60-4:52.) For example, it states:[7]

> The co-process fruits, fruit juice, puree, juice concentrate, dried powder or extracts may be obtained from fruits included within the groups listed by the FDA (Form FDA 2438g (10/91) (Citrus, Pome, Stone, Tropical/Subtropical, Vine Fruits and Small Fruits and Berries) such as watermelon, white grape, pineapple, lychee, cantaloupe, banana, orange, apple, pear, lemon, passion fruit, red grape, blue- berry, tamarind, peach, papaya, acai, plum, guava, tangerine, borojo, cupuacu, goji, kiwi, etc.; this listing is not intended to limit the fruits that are suitable.
>
> The co-process vegetable, vegetable juice, puree, juice concentrate, dry powder, or extracts may be obtained from vegetables included within the groups listed by the FDA (Form FDA 2438g (10/91) (Root and Tuber, Bulb, Leaf & Stem, Brassica, Legume, Fruiting and Curcubit Vegetables) such as bean sprouts, green cabbage, celery, onions, sweet onions, asparagus, any leaf vegetables, green beans, peas, cauliflower, broccoli, carrot, pumpkins, bell peppers, potato, sweet potato, tomato, etc.; this listing is not intended to limit the vegetables that are suitable.

[7] The specification contains similar paragraphs providing examples of the grains, nuts, seeds, plant materials, animal materials, microbial materials, algal materials, and the by-products from such sources that could be used as the co-processed material. (See Doc. No. 1-1 at 4:13-52.)

(Id. at 3:60-4:12.)

In addition, the extrinsic evidence supports the construction of the terms in step (a)(ii) as having their plain and ordinary meaning. For example, Dr. Abbaspourrad testified at the Markman hearing that:

> [A] POSITA in this field knows, understands, has the awareness that, if you take Genipa americana, which has genipin or its derivative in it, combine it with amino acid or anything that has amino acid [that] gets you a blue color . . . So the requirement here is that, as long as it's food grade, as long as this is food grade, and it is amino acid, amino acid itself or has amino acid in it . . . Whether alone or in a protein with just sequence of these amino acid together, makes a bigger chain. I[f] these two [are] satisfied, amino acid and food grade, you have the negative value increasing for B, you have a blue color. This is plain and simple. That's – that's how a POSITA would understand this.

(Doc. No. 109 at 95:10-13, 96:5-14.)

Dr. Abbaspourrad further stated in his expert declaration that "a POSITA reading Claim 45 in the context of the specification as a whole would have understood that the key common aspect of the disclosed co-processing 'juice or material' was the 'amino acids, polypeptides, or proteins, and other compounds with primary amine groups' in it because that is what reacts with the Genipa americana fruit to create the '[n]atural stable blue color.'" (Doc. No. 60 at ¶ 150.) He went on to explain that a POSITA would realize that "while the specification identifies multiple exemplary potential juices or materials, the common denominator is that they contain or comprise amino acids, polypeptides, proteins, or compounds with one or more primary amine groups." (Id. (citations and internal quotations omitted).) Moreover, Dr. Abbaspourrad opined that a POSITA would not understand the terms in step (a)(ii) as having the meaning Oterra proscribed to them because "the plain language of Claim 45 does not limit how the other juice or material is made or the specific source of amino acid other than it must be 'food[]grade,' whereas the plain language of other claims in the '695 Patent do. In view of this, in my opinion a POSITA would have

understood that the patentee did not intend to similarly limit Claim 45." (Id. at ¶ 152 (comparing the language of Claim 1 and Claim 22 with that of Claim 45) (citation omitted).)

Dr. Giusti's expert declaration similarly supports the conclusion that a POSITA would understand the terms in step (a)(ii) to have their plain and ordinary meaning based on the claim language and specification. For example, she explained that:

> Based on the plain language in Claim 45, I understand (a)(ii) to mean juice or material from a source containing at least one component suitable for providing a desired color when combined with Genipa americana fruit juice, and further that the source must contain an amino acid. I also understand that the source must be "food-grade," which is understood to mean non-toxic and safe for consumption.
>
> ***
>
> Moreover, because the recited "co-process materials" include, broadly, "plant materials" and "animal materials," a skilled person would know that each of those materials contains amino acids, since the proteins found in all living organisms include the same set of 20 amino acids.

(Doc. No. 61-2 at ¶¶ 124, 128.)

Oterra's argument that the terms in step (a)(ii) do not have their plain and ordinary meaning and instead can be understood to exclude pure chemicals, such as isolated amino acids, is premised on the prosecution history. Specifically, Oterra contends that because the additional processing requirements discussed above were originally added to Claim 1 during prosecution of the '319 Patent to overcome enablement and prior art rejections by the examiner, "the broader subject matter [originally recited in Claim 1 and] now recited in [C]laim 45 was surrendered during prosecution." (Doc. No. 86 at 10.) Based on this surrender, Oterra asserts that the terms in step (a)(ii) cannot be given their plain and ordinary meaning because doing so would violate the recapture rule.

But the recapture rule for reissued patents "applies only if the patentee surrendered subject matter in the original prosecution in order to overcome a prior art rejection." Cubist Pharms, Inc.

v. Hospira, Inc., 805 F.3d 1112, 1120 (Fed. Cir. 2015). And here, the additional processing requirements were added to Claim 1 during the '319 Patent's prosecution in response to an enablement rejection. (See Doc. No. 70-1 at 152 ("The Examiner has rejected claim 1, under the first paragraph of 35 U.S.C. §112, contending that the phrase 'other juice or extract from suitable food grade source selected to provide other components resulting in the desired color . . .' is not enabled by the present application. Claim 1 has been amended herein so as to list a specific group of materials from which the juice or extract is derived.")) As such, Oterra's recapture argument is misplaced.

Moreover, even if the additional processing requirements were added in response to a prior art rejection, the patentee did not clearly and unmistakably disclaim the use of pure chemicals, including isolated amino acids, in step (a)(ii). "When the prosecution history is used solely to support a conclusion of patentee disclaimer, the standard for justifying the conclusion is a high one." Maquet Cardiovascular LLC v. Abiomed Inc., 131 F.4th 1330, 1339 (Fed. Cir. 2025). "A patentee will only be bound to a disavowal that is both 'clear and unmistakable.'" Id. (quoting CUPP Computing AS v. Trend Micro Inc., 53 F.4th 1376, 1382 (Fed. Cir. 2022)).

Here, Oterra's argument that the patentee disclaimed the use of pure chemicals, including isolated amino acids, in step (a)(ii) is based on the following response from the patentee when responding to the USPTO examiner's prior art rejection:

> Further, and very importantly, the [prior art's] reaction utilizes pure chemicals or selected extracts from Gardenia/Genipa americana in reaction with pure chemicals (including amino acids) and proteins. In contrast, the claims of the present application do not use extract/purified materials, but rather utilize fruit juices or fruit/water extracts. [The prior art] does not in any way teach or suggest . . . the use of the juices or extracts themselves, rather than the pure chemicals taught in [the prior art].

(Doc. No. 70-1 at 154-55 (emphasis added).) Through this explanation, Oterra asserts that the patentee disclaimed the use of "pure chemicals (including amino acids)" in step (a)(ii). (See Doc. No. 86 at 10.)

Dr. Giusti supports Oterra's argument in her expert declaration, opining that "the patentee clearly distinguished a 'food-grade source' that 'comprises an amino acid' from the isolated amino acids per se such as the 'pure chemicals (including amino acids) used in [the prior art].'" (Doc. No. 61-2 at ¶ 131.) Conversely, Dr. Abbaspourrad stated in his expert declaration that, through this distinction, the patentee only disclaimed the use of pure chemicals in step (a)(i). Specifically, he opined as follows:

> [D]uring prosecution of the '319 Patent, the [patentee] argued that [the prior art's] use of "pure chemicals" or "true extracts" from the Huito fruit in reaction with "pure chemicals (including amino acids) and proteins" is different from the pending claims that "do not use extract/purified materials" from Huito fruit. A POSITA would have understood that the applicant was focused on distinguishing [the prior art's] use of extracts from Huito since the claimed method clearly uses Huito fruit juice.

(Doc. No. 60 at ¶ 142 (emphasis added).) And he reiterated this opinion at the Markman hearing, testifying that:

> [W]hat the[] patentee does here, which also is obvious from the background in this patent '695, is that they are only contrasting the first part [meaning step (a)(i)], comparing using whole fruit juice, versus the purified version of the fruit juice, right? So that's the point of distinction that they make and it's very clear . . . So a POSITA would understand, as you also mentioned, Your Honor, the first part [i.e., step (a)(i)] is a whole fruit, as you said. Whole fruit needs to be used, right? And that's a part -- part that they made distinction within prior art, that, in this patent, they teach they use the whole fruit or puree or extract as is. There is no processing here.

(Doc. No. 109 at 100:21-101:1, 102:10-15.) Thus, as revealed by the fact the experts here reached differing opinions on whether the patentee disclaimed the use of pure chemicals in step (a)(ii), the

alleged disclaimer is not "clear and unmistakable to one of ordinary skill in the art," meaning Oterra has not met the high standard of demonstrating prosecution disclaimer.

Accordingly, in light of both the intrinsic and extrinsic evidence, the Court construes "other juice or material" and "a suitable food-grade source that contains at least one component capable of providing the desired color when combined with the Genipa americana fruit juice defined in (a)(i), wherein the food-grade source comprises an amino acid" to have their plain and ordinary meaning.

6. "predetermined period of time"

Oterra's Proposed Construction	Defendants' Proposed Construction
Indefinite; alternatively, "any period of time determined in advance"	"period of time determined in advance"

a. Indefiniteness Challenge

Oterra has failed to prove with clear and convincing evidence that "predetermined period of time" is indefinite. This term appears in Claims 46 through 50:

> 46. The method according to claim 45 wherein the heat treatment comprises heating the mixture for a predetermined period of time.
>
> 47. The method according to claim 46 wherein the predetermined period of time is about 0.1 to 8 hours.
>
> 48. The method according to claim 46 wherein the predetermined period of time is about 0.1 to 4 hours.
>
> 49. The method according to claim 46 wherein the predetermined period of time is about 0.1 to 1 hours.
>
> 50. The method according to claim 45 wherein the heat treatment comprises heating the mixture at about 50-95 degrees Centigrade for a predetermined period of time of about 1 to 4 hours.

(Doc. No. 1-1 at 15:13-25.)

Oterra argues that "RE'695 does not define what a 'predetermined period of time' is, nor does it provide any guidance regarding what period of time is necessary or useful for the heating step, or any guidance or explanation regarding whether the period of time needed to achieve the 'stable, natural colors' will vary and, if so, how to account for such variance." (Doc. No. 61 at 25.) Notably, in making this argument, Oterra points to no intrinsic or extrinsic evidence. And through reference to both the intrinsic and extrinsic evidence, a POSITA would reasonably understand the meaning of "predetermined period of time."

In the context of the claims, a POSITA would understand that the term "predetermined period of time" refers to the amount of time the mixture described in Claim 45 should be heated in order to stabilize it as described in step (c). The specification supports this understanding, specifying that the heat treatment in step (c) "may take place for up to about 8 hours, preferably about 0.1 to 4 hours, and more preferably about 0.1 to 1 hours . . . ." (Doc. No. 1-1 at 4:62-64.) Moreover, Dr. Abbaspourrad explained that "a POSITA would generally understand that when performing the claimed method(s) a period of time to subject the mixture to a heat treatment would be selected in advance by the person conducting the process as this is standard practice." (Doc. No. 60 at ¶ 183.)

Therefore, because Oterra has failed to carry its burden of demonstrating with clear and convincing evidence that the term is indefinite and because a POSITA would reasonably understand the meaning of "predetermined period of time" in light of the claims and specification, the term is not indefinite.

b. Claim Construction

The Court construes "predetermined period of time" to mean "period of time determined in advance." The intrinsic evidence discussed above supports this construction. Specifically, the

claim language would make clear to a POSITA that the term is referring to the amount of time the mixture described in Claim 45 should be heated. For example, Claim 46 recites "[t]he method according to claim 45 wherein the heat treatment comprises heating the mixture for a predetermined period of time." (Doc. No. 1-1 at 15:13-15.) And Claims 47 through 49 provide varying "predetermined period[s] of time" of "above 0.1 to 8 hours," "about 0.1 to 4 hours," "about 0.1 to 1 hours," and "about 0.1 to 4 hours." (See id. at 15:16-21.) Based on this context, "a POSITA would have understood in view of the wording of the claims that the heat treatment time directly relates to the time it takes to 'stabilize' the mixture." (Doc. No. 58 at 22.)

The specification provides further insight into this predetermined period of time, noting that the heat treatment "may take place for up to about 8 hours, preferably about 0.1 to 4 hours, and more preferably about 0.1 to 1 hours . . . ." (Doc. No. 1-1 at 4:62-64.) Thus, as noted by Defendants, "the specification supports a plain and ordinary meaning of the term 'predetermined period of time,' wherein the heat treatment is applied for a predetermined period of time to achieve the noted stability and color." (Doc. No. 58 at 22.)

Moreover, as discussed supra, Dr. Abbaspourrad explained in his declaration that "a POSITA would generally understand that when performing the claimed method(s) a period of time to subject the mixture to a heat treatment would be selected in advance by the person conducting the process as this is standard practice." (Doc. No. 60 at ¶ 183.)

Accordingly, the intrinsic and extrinsic evidence confirm that a POSITA would understand "predetermined period of time" to mean "period of time determined in advance." See Elantech Devices Corp. v. Synaptics, Inc., No. 06–01839, 2007 WL 1056782, at *6 (N.D. Cal. Apr. 6, 2007) ("The term 'maintaining said signal for a predetermined period of time' means 'to continue, retain, or repeat the signal for a period of time that was determined before.'"); Homeland Housewares,

LLC v. Whirlpool Corp., 865 F.3d 1372, 1375 (Fed. Cir.) ("[T]he plain meaning of 'predetermined' is to determine beforehand.")

V. CONCLUSION

For the foregoing reasons, the disputed claim terms are construed as follows:

Claim Term	**Court's Construction**
"stable, natural colors"	Plain and ordinary meaning
"color having an increased -b value based on the CIE LAB scale"	Bluer color
"processed mixture defined in step (c)"	The mixture that exists after steps (a), (b), and (c) have occurred
"Genipa americana fruit juice"	Juice from Genipia americana fruit, but not as an extract
"other juice or material"	Plain and ordinary meaning
"a suitable food-grade source that contains at least one component capable of providing the desired color when combined with the Genipa americana fruit juice defined in (a)(i), wherein the food-grade source comprises an amino acid"	Plain and ordinary meaning
"the desired color"	A bluer color
"predetermined period of time"	Period of time determined in advance
"stable natural juice-based colorant"	Plain and ordinary meaning

An appropriate Order follows.