UNITED STATES PATENT AND TRADEMARK OFFICE

_____

BEFORE THE PATENT TRIAL AND APPEAL BOARD

_____

DR. SQUATCH, LLC
Petitioner

v.

THE PROCTER & GAMBLE COMPANY
Patent Owner

_____

IPR2024-01104
Patent No. 11,540,999

_____

PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. 11,540,999

TABLE OF CONTENTS

I. INTRODUCTION 3

II. GROUNDS FOR STANDING UNDER 37 C.F.R. § 42.104(a) 5

III. IDENTIFICATION OF CHALLENGES UNDER 37 C.F.R. § 42.104(b) AND RELIEF REQUESTED 5
A. Grounds for the Challenged Claims 5
B. The Challenges Presented Are Not Cumulative 6

IV. BACKGROUND OF THE TECHNOLOGY 7
A. Deodorants vs. Antiperspirants 7
B. Basics of Deodorants 7
i. Carrier Oils 8
ii. Structurants 9
iii. Fragrances 10
iv. Antimicrobials 10
v. Hardness of Anhydrous Stick Compositions 11
C. The Move to Natural Deodorants 12
i. Aluminum-Free 12
ii. Silicone-free 14
iii. Natural Antimicrobials 14
iv. Natural Fragrances 15

V. SUMMARY OF THE '999 PATENT 15
A. The Claimed Subject Matter 17
B. Prosecution History 18

VI. PRIOR ART 21
A. Effective Prior Art Dates 21

VII. ARGUMENTS 22
A. Statement of the Law 22
B. Level of Ordinary Skill in the Art 24
C. Grounds of Unpatentability 24
i. Ground 1 – Claims 1-7, 9-13, 15-18 are Obvious over Lesniak in view of Phinney and Bianchi '518 24

ii. Ground 2 – Claim 8 is Obvious Over Lesniak in view of Phinney, Bianchi ’518, and Lamb.....37
iii. Ground 3 – Claim 14 is Obvious Over Lesniak in view of Phinney, Bianchi ’518, and Bianchi ’254.....40
iv. Ground 4 – Claims 1-15, 17-18 are Obvious Over Native in view of Bianchi ’254 and Easy Homemade.....43
v. Ground 5 – Claim 16 is Obvious Over Native in view of Bianchi ’254, Easy Homemade, and Millet.....63

VIII. CONCLUSION.....66

TABLE OF AUTHORITIES

Page(s)

Cases

Almirall, LLC v. Amneal Pharms. LLC,
28 F.4th 265 (Fed. Cir. 2022) 23, 24

EI DuPont de Nemours & Co. v. Synvina CV,
904 F.3d 996 (Fed. Cir. 2018) 23

Medichem, S.A. v. Rolabo, S.L.,
437 F.3d 1157 (Fed. Cir. 2006) 23

PAR Pharm., Inc. v. TWI Pharms., Inc.,
773 F.3d 1186 (Fed. Cir. 2014) 22, 23

Persion Pharms. LLC v. Alvogen Malta Operations Ltd.,
945 F.3d 1184 (Fed. Cir. 2019) 30

Statutes

35 U.S.C. § 102(a)(1).....22, 23

35 U.S.C. § 102(a)(2).....23, 25

35 U.S.C. § 325(d) 21

PETITIONER'S EXHIBITS

Exhibit No.	Description
1001	U.S. Patent No. 11,540,999 ("the '999 Patent")
1002	Declaration of Bozena B. Michniak-Kohn, PhD
1003	U.S. Patent No. 11,433,018 ("Lesniak")
1004	U.S. Patent No. 9,314,412 ("Phinney")
1005	John H. Lamb, Sodium Bicarbonate: An Excellent Deodorant, 7(3) J. INVESTIGATIVE DERMATOLOGY 131-33 (1946) ("Lamb")
1006	U.S. Patent No. 6,048,518 ("Bianchi '518")
1007	Native Wayback Machine archives, captured May 26, 2016, November 23, 2016, November 1, 2015 respectively for: https:/www.nativecos.com https:/www.nativecos.com/product/deodorant/ https:/www.nativecos.com ("Native")
1008	U.S. Patent App. Pub. No. 2007/0166254 ("Bianchi '254")
1009	Wayback Machine archive, captured January 26, 2017, for http:/soapdelinews.com/2016/11/easy-homemade-deodorant-recipe.html ("Easy Homemade")
1010	Angelica Peebles, *P&G Has Acquired Native Natural Deodorant Brand*, CNBC (Nov. 15, 2017, 5:34 P.M.), https://www.cnbc.com/2017/11/15/pg-has-acquired-native-natural-deodorant-brand.html (last visited May 28, 2024)

1011	Rachel Lapidos, *P&G Has Acquired Cult-Fave Deodorant Brand Native*, WELL+GOOD (Nov. 17, 2017), https://www.wellandgood.com/pg-acquired-natural-deodorant-brand-native/ (last visited May 29, 2024)
1012	Alex Bitter, *P&G Buys Deodorant Brand Native for Undisclosed Sum*, S&P GLOBAL (Nov. 15, 2017, 5:31 PM) https://www.spglobal.com/marketintelligence/en/news-insights/trending/DWXgoreaSsTDRfJ0RDSMEg2 (last visited May 29, 2024)
1013	KARL LADEN ET AL., ANTIPERSPIRANTS AND DEODORANTS (Karl Laden ed., 2nd ed. 1999)
1014	U.S. Patent App. Pub. No. 2005/0142085
1015	Int'l Patent App. Pub. No. WO 2012/098189
1016	SoapDeliNews Wayback Machine archive, captured April 17, 2013, for https:/soapdelinews.com/2013/03/natural-handmade-lavender-patchouli-deodorant-recipe-with-printable-labels.html
1017	SoapDeliNews Wayback Machine archive, captured July 23, 2016, for http:/soapdelinews.com/2016/07/natural-neem-oil-deodorant-recipe.html
1018	SoapDeliNews Wayback Machine archive, captured October 19, 2012, for http:/soapdelinews.com/2012/10/diy-natural-homemade-deodorant-recipe.html
1019	LORRAINE WHITE, HOMEMADE DEODORANT 32 EASY TO MAKE ALL NATURAL & ORGANIC DEODORANT & BODY SPRAY RECIPES (2014)
1020	*Homemade Deodorant*, THE CRUNCHY URBANITE (Nov. 24, 2013) https://thecrunchyurbanite.com/2013/11/24/homemade-deodorant/ (last visited May 29, 2024)
1021	Piyatip Khuntayaporn & Jiraphong Suksiriworapong, *Efficacy of Essential Oil Formulations Against Malodor Causing Bacteria*, 44(4) PHARM. SCIS. ASIA 209-16 (2017)
1022	Laura G. Corral, et al., *A Research Note Antimicrobial Activity of Sodium Bicarbonate*, 53(3) J. FOOD SCI. 981-82 (1988)

1023	Pamela Emanoil, *Customers Itching for Personal Care Alternatives*, Apr. 2006 NAT. FOODS MERCHANDISER 40-42 (2006)
1024	Mohammed A. Shahtalebi et al., *Deodorant Effects of a Sage Extract Stick: Antibacterial Activity and Sensory Evaluation of Axillary Deodorancy*, 18(10) J. RSCH. MED. SCI. 833-39 (2013)
1025	U.S. Patent No. 5,585,092
1026	U.S. Patent No. 9,610,237
1027	U.S. Patent App. Pub. No. 2014/0199252
1028	James Lambert, *Silicone Safety and the Cosmetic Industry*, 126(11) *Cosms. & Toiletries* 810-15 (2011)
1029	Julia Pasquet et al., *The Contribution of Zinc Ions to the Antimicrobial Activity of Zinc Oxide*, 457 COLLOIDS & SURFACES: PHYSICOCHEMICAL & ENG'G ASPECTS 263-74 (2014)
1030	Rodrigo Carvalho, *Hydroxyisohexyl 3-Cyclohexene Carboxaldehyde (Lyral®) as Allergen: Experience from a Contact Dermatitis Unit*, 30(3) CUTANEOUS & OCULAR TOXICOLOGY 249-50 (2011)
1031	Maria V. Heisterberg, et al., *Deodorants are the Leading Cause of Allergic Contact Dermatitis to Fragrance Ingredients*, 64 CONTACT DERMATITIS 258-64 (2011)
1032	J. Handley & D. Burrows, *Allergic Contact Dermatitis from the Synthetic Fragrances Lyral and Acetyl Cedrene in Separate Underarm Deodorant Preparations*, 31 CONTACT DERMATITIS 288-90 (1994)
1033	Prosecution History Excerpts of U.S. Patent Application No. 17/194,437 ('999 file history)
1034	Prosecution History Excerpts of U.S. Patent Application No. 17/961,089
1035	Prosecution History Excerpts of U.S. Provisional Patent Application No. 62/527,180

1036	Schueller, R., & Romanowski, P., Multifunctional cosmetics (2003)
1037	Siquet, F., & Devleeschouwer, M. J., Antibacterial agents and preservatives, Handbook of Cosmetic Science and Technology (2009)
1038	Fed. Reg. Vol. 60, No. 176 (Sept. 12, 1995)
1039	Compendium of Food Additive Specifications, FNP 52 Add 13 (2005)
1040	Complaint For Patent Infringement (ECF No.1) from The Procter & Gamble Co. v. Dr. Squatch, LLC, Case No. 2:24-cv-04711 (C.D. Cal.)
1041	U.S. Patent No. 4,049,792
1042	JOHN A. DEAN, LANGE'S HANDBOOK OF CHEMISTRY (John A. Dean ed., 15th ed. 1999)
1043	U.S. Patent No. 4,919,934
1044	U.S. Patent App. Pub. No. 2018/0168954 ("Millet")
1045	U.S. Patent No. 11,497,706
1046	21 C.F.R. § 720.4(d) (1992)
1047	U.S. Patent No. 6,123,932
1048	Curriculum Vitae of Bozena B. Michniak-Kohn, Ph.D.
1049	Int'l Patent App. Pub. No. WO 2012/098189

1050	SAMUEL P. SADTLER ET AL., A TEXT-BOOK OF CHEMISTRY INTENDED FOR THE USE OF PHARMACEUTICAL AND MEDICAL STUDENTS (5th ed. 1918)

CLAIM LISTING

1. A deodorant stick comprising:

   a. at least one antimicrobial comprising magnesium hydroxide; and

   b. a primary structurant with a melting point of at least about 50° C.; and

   said stick being free of an aluminum salt; and

   said stick having a hardness from about 80 mm*10 to about 140 mm*10, as measured by penetration with ASTM D-1321 needle.

2. The deodorant stick of claim 1, wherein the antimicrobial is a powder with a water solubility of at most about 90 g/L at 25°C.

3. The deodorant stick of claim 1, wherein the deodorant stick is substantially free of baking soda.

4. The deodorant stick of claim 1, wherein the deodorant stick is substantially free of synthetic fragrance.

5. The deodorant stick of any claim 1, wherein the deodorant stick is substantially free of silicones.

6. The deodorant stick of claim 1, wherein the deodorant stick comprises from 0% to 5% silicones.

7. The deodorant stick of claim 1, comprising at least about 25% of a liquid triglyceride.

8. The deodorant stick of claim 1, further comprising an additional antimicrobial comprising baking soda.

9. The deodorant stick of claim 1, wherein the stick comprises from about 8% to about 20% of the primary structurant.

10. The deodorant stick of claim 1, wherein the primary structurant has a melting point from about 50° C. to 75° C.

11. The deodorant stick of claim 1, comprising less than 5% of secondary structurants having a melting point above 60° C.

12. A method of making the deodorant stick of claim 1, comprising the steps of combining the deodorant components in an open tank system, mixing the components, heating the components, and cooling the components.

13. The deodorant stick of claim 1, further comprising less than 8% of secondary structurants having a melting point at least about 60° C.

14. The deodorant stick of claim 1, wherein the primary structurant is stearyl alcohol.

15. The deodorant stick of claim 1, further comprising shea butter.

16. The deodorant stick of claim 1, further comprising tapioca starch.

17. The deodorant stick of claim 1, comprising at least about 25% caprylic/capric triglyceride.

18. The deodorant stick of claim 1, comprising at least about 25% of a triglyceride.

Pursuant to 35 U.S.C. §§ 311-19 and 37 C.F.R. § 42.1 *et seq.*, Dr. Squatch, LLC ("Dr. Squatch") requests *inter partes* review ("IPR") of claims 1-18 of U.S. Patent No. 11,540,999 ("the '999 Patent") (Ex. 1001) pursuant to 35 U.S.C. §§ 311-19 and 37 C.F.R. § 42.1 *et seq*. The '999 Patent is subject to AIA 35 U.S.C. §§ 102 and 103.

MANDATORY NOTICES

A. Real Party-In-Interest (37 C.F.R. § 42.8 (b)(1))

Petitioner certifies that Dr. Squatch, LLC is the real party-in-interest.

B. Related Matters (37 C.F.R. § (b)(2))

The '999 Patent is currently involved in the following proceeding: *The Procter & Gamble Co. v. Dr. Squatch, LLC*, Case No. 2:24-cv-04711 (C.D. Cal.).

C. Counsel and Service Information (37 C.F.R. § 42.8(b)(3) and (4))

Lead Counsel	Backup Counsel
Justin J. Oliver (Reg. No. 44,986) JOliver@Venable.com VENABLE LLP 600 Massachusetts Ave., NW Washington, DC 20001 T 202-721-5423 F 202-344-8300	Sarah S. Brooks (Reg. No. 57,071) SSBrooks@Venable.com VENABLE LLP 2049 Century Park East, Suite 2300 Los Angeles, CA 90067 T 310-229-0408 F 310-229-9901

Petitioner consents to electronic service of documents by email at:

DrSquatch-IPRs@Venable.com.

D. Payment of Fees Under 37 C.F.R. §§ 42.15(a) & 42.103

The required fees are submitted herewith in accordance with 37 C.F.R. §§ 42.103(a) and 42.15(a). If any additional fees are due during this proceeding, the Office is authorized to charge such fees to Deposit Account No. 22-0261. Any overpayment or refund of fees may also be deposited in this Deposit Account.

I. INTRODUCTION

The ’999 Patent claims known deodorant stick compositions to capture basic concepts used in known “natural” deodorants. The ’999 Patent’s sole independent claim recites a deodorant stick with: (1) an “antimicrobial comprising magnesium hydroxide”; (2) “a primary structurant with a melting point of at least about 50° Celsius”; and (3) “a hardness from about 80 mm*10 to about 140 mm*10.” The ’999 Patent expressly acknowledged the pre-existence of similar deodorant sticks. In fact, it admits that a then-“currently marketed” aluminum-free deodorant stick (described as a “comparative” example in the specification) contained many ingredients recited in claim 1. This comparative example substantially matches the prior art published ingredient list for the Native deodorant applied below.

The distinction noted in the ’999 patent relative to the prior art is the recited hardness range. However, the claimed hardness range was known since at least the 1990’s to be the “typical” hardness used for stick deodorants to achieve “consumer acceptance.” Ex. 1006, 2:56-58, 6:23-29. Moreover, as a POSA long understood, the “typical” hardness range for a stick deodorant could be obtained simply by adjusting the amount of structurant used in the composition, making hardness an issue of routine optimization.

Claim 1 also recites that the composition is free of an aluminum salt. Dependent claims also recite exclusions related to, e.g., synthetic fragrance and

silicones. As was appreciated by a person of ordinary skill in the art ("POSA"), the concept of more health-conscious ingredient lists (e.g., excluding aluminum salts, silicone, etc.) had been known in the field (and preferred) before the critical date.

The prior art applied below exposes the claimed subject matter's lack of inventiveness. Lesniak renders obvious all claims when combined with Phinney and Bianchi '518. Lesniak sets forth most of the features of the claimed deodorant stick. Indeed, in a later application in the same family, the examiner applied Lesniak as an anticipatory reference against claims reciting many features recited in the present claims. Phinney teaches that magnesium hydroxide powder should be added as an antimicrobial for enhanced efficacy. Bianchi '518 teaches that the claimed hardness range was known and needed for consumer acceptance.

This Petition also relies on an ingredient list for a stick deodorant, which published before the critical date. That deodorant is from a company—Native—that Patent Owner acquired after the publication of the ingredient list, but before the critical date. Ex. 1007, 11; Ex. 1010, 1-2. Patent Owner stated that the reason for the acquisition was, in part, to reach customers who are "deliberate about what they put on their bodies." Ex. 1011, 2-3; Ex. 1012, 1. Further, the published ingredient list substantially matches the '999 Patent's comparative example, which is admitted in the '999 Patent to be "currently marketed" at the time of filing. The published Native ingredient list renders obvious all claims when combined with Bianchi '254,

and Easy Homemade (an independent formulator's publicly available website page describing natural deodorants). Specifically, while Native lists the ingredients in order of relative concentration, without quantitative amounts, Bianchi '254 (1) sets forth preferred quantified amounts of those ingredients in typical deodorant sticks and (2) teaches the claimed hardness range was known and preferred. Easy Homemade teaches that baking soda, the antimicrobial in Native, can be substituted with magnesium hydroxide, a non-irritating alternative.

Thus, as established in more detail below, the '999 Patent claims nothing more than well-known characteristics of deodorant sticks.

II. GROUNDS FOR STANDING UNDER 37 C.F.R. § 42.104(a)

Petitioner certifies that the '999 Patent is available for IPR and that Petitioner is not barred or estopped from requesting IPR. This petition is being filed within one year of Petitioner being served with the above-identified complaint.

III. IDENTIFICATION OF CHALLENGES UNDER 37 C.F.R. § 42.104(b) AND RELIEF REQUESTED

A. Grounds for the Challenged Claims

Petitioner requests (i) review of claims 1-18 of the '999 Patent on the grounds set forth below and (ii) that those claims be found unpatentable.

Ground	Claim(s)	Basis for Unpatentability
1	1-7, 9-13, 15-18	Obvious over Lesniak (Ex. 1003) in view of Phinney (Ex. 1004) and Bianchi '518 (Ex. 1006)
2	8	Obvious over Lesniak in view of Phinney, Bianchi '518, and Lamb (Ex. 1005)
3	14	Obvious over Lesniak in view of Phinney, Bianchi '518, and Bianchi '254 (Ex. 1008)
4	1-15, 17-18	Obvious over Native (Ex. 1007) in view of Bianchi '254 and Easy Homemade (Ex. 1009)
5	16	Obvious over Native in view of Bianchi '254, Easy Homemade, and Millet (Ex. 1044)

B. The Challenges Presented Are Not Cumulative

The grounds for unpatentability presented in this petition are not cumulative to prosecution of the '999 Patent. Lesniak and Phinney were of record during prosecution of the underlying application,[1] but not applied or addressed during prosecution. As discussed in more detail below, Lesniak was subsequently applied by the same examiner in prosecution of a later application in the family in a manner consistent with the application in this Petition. Other applied references were not considered during prosecution.

[1] Lesniak's specification also published as U.S. Patent Pub. No. 2017/0252288 and WO 2016/048425. References to Lesniak encompass the application of the specification published in other forms. Phinney's specification published as U.S. Patent Pub. No. 2017/0271517.

IV. BACKGROUND OF THE TECHNOLOGY

A. Deodorants vs. Antiperspirants

Deodorants form a category of cosmetic products that were developed to mask and/or counteract the buildup of unwanted human body odor. Ex. 1013, 169-83, 189-95. Deodorants typically contain antimicrobials and/or fragrances to inhibit the formation and perception of malodor. *Id.*, 201.

Antiperspirants are a subcategory of deodorants. Like deodorants, they were known to contain fragrances and/or antimicrobials, but they also included additional active ingredients such as aluminum or zinc salts that may block sweat pores in the skin. Ex. 1006, 3:5-11; Ex. 1014, ¶¶[0020]-[0026]; Ex. 1003, 3:39-4:21, 8:46-48, 10:27; Ex. 1015, 5; Ex. 1049, 3-4; Ex. 1049, 3-4; Ex. 1008, ¶[0064]; Ex. 1013, 73, 215. The blocking of sweat pores was known to reduce moisture and nutrients from glandular secretion, and ultimately curb the bacterial growth and metabolism responsible for malodorous compounds. Ex. 1013, 73; Ex. 1002, ¶¶32-33.

B. Basics of Deodorants

By the time of the purported invention, it was understood that anhydrous stick compositions were versatile and could be utilized in the development of deodorants (including antiperspirants). Ex. 1014, ¶[0008]. Anhydrous stick compositions were known to contain a wide range of ingredients, and typically contained a few well-established components described below. Ex. 1002, ¶¶34-36.

i. Carrier Oils

Liquid carriers were known components of stick deodorant and antiperspirant compositions prior to the purported invention. These materials could (1) function as emollients (skin conditioning agents that help maintain hydration); (2) help reduce undesirable visible residue (whitening) upon application of the composition to the skin; and/or (3) solubilize or disperse active ingredients such as the astringent metallic salts in antiperspirants. Ex. 1014, ¶¶[0002], [0037], [0050]; Ex. 1008, ¶¶[0046], [0050]; Ex. 1006, 4:22-26; Ex. 1013, 330-31. It was known that existing anhydrous liquids (used in personal care applications) could be used as carriers in stick compositions. Ex. 1014, ¶¶[0037], [0044]. While silicone oils (synthetic polymers) were often used as liquid carriers in traditional stick compositions (Ex. 1006, 4:9-15; Ex. 1014, ¶¶[0038]-[0043], [0046]), non-silicone oils had also been identified as useful. Ex. 1008, ¶¶[0015], [0017], [0043]-[0054]. Glyceryl esters of fatty acids, or triglycerides such as capric/caprylic triglycerides, had specifically been recognized as suitable (non-silicone) carrier oils of natural origin. Ex. 1008, ¶[0050]; Ex. 1003, 2:38-39, 9:45-46.

It was known that the carrier oil component of a stick deodorant could be a silicone oil, natural oil, and combinations thereof. *E.g.*, Ex. 1008, ¶¶[0013]-[0020], [0038]-[0054]; Ex. 1007, 11; Ex. 1016, 6-7; Ex. 1017, 5-7; Ex. 1018, 5-6. The total amount of carrier oil could be, for example, about 40-80% by weight of the stick

composition and, where mixtures of silicone and natural oils, each could comprise, e.g., 20-40% by weight of the total stick composition. Ex. 1008, ¶¶[0013]-[0020], [0038]-[0054]. A POSA would have understood that whether to use a silicone oil or natural oil (or a combination)—and what oil amount to use—was simply a design choice. Ex. 1002, ¶¶37-38.

ii. Structurants

Typically, structurants were known to be materials solid at ambient conditions that were added to stick compositions to solidify the carrier oil. Ex. 1008, ¶[0057]; Ex. 1014, ¶¶[0028]-[0029]; Ex. 1001, 5:1-5.

Structurants with different melting point temperatures were used, often in combination, to adjust properties of the stick including hardness. Ex. 1014, ¶[0029]; Ex. 1015, 19-24; Ex. 1049; Ex. 1001, 3:62-67, 5:45-48; Ex. 1013, 331. Known examples of structurants included waxes (waxy materials), organic solids, modified silicone solids, crystalline or other gellants, and combinations thereof. Ex. 1014, ¶[0029]. Long chain fatty alcohols such as stearyl alcohol had been recognized and used as preferred structurants. *Id.*, ¶[0030]; Ex. 1007, 11; Ex. 1008, ¶¶[0001], [0019], [0058]-[0059], [0071]; Ex. 1013, 247. Arrowroot powder was also known to thicken stick compositions.[2] Ex. 1019, 5, 11-15, 17-19, 23; Ex. 1020, 2-5.

[2] From its infringement complaint, Petitioner understands Patent Owner's position to be that arrowroot powder, listed in Native's ingredient list, does not count as a structurant. Ex. 1040, 4 (identifying stearyl alcohol, but not arrowroot powder, as a

Structurants were known to comprise, for example, 3-35% by weight of the total stick composition. Ex. 1014, ¶[0028]; Ex. 1002, ¶¶39-41.

iii. Fragrances

Fragrances were commonly incorporated into deodorants and antiperspirants to mask axillary malodors or odors from the product base. Ex. 1013, 194-201, 250-51. Some natural or essential oil fragrances had also been known to possess antimicrobial activity. Ex. 1013, 195-96; Ex. 1021, 209, 211-12; Ex. 1002, ¶42.

iv. Antimicrobials

Numerous antimicrobials were included as active ingredients in deodorants and antiperspirants to prevent axillary odor by eliminating the bacteria responsible for formation of odorous compounds. Ex. 1013, 171-83. Sodium bicarbonate (i.e., baking soda), in particular, had long been used in deodorants and antiperspirants and was thought to deodorize via chemical modification of odorous compounds, i.e., reacting with the acidic compounds responsible for malodor to form non-volatile salts. *Id.*, 190, 347; Ex. 1005, 133. It was also understood that baking soda had antimicrobial and/or adsorptive properties as well. Ex. 1013, 190; Ex. 1022, 981-82; Ex. 1005, 133. Some users reported that baking soda in deodorant sticks irritated

---

structurant). Thus, Petitioner relies upon Patent Owner's position in this regard for purposes of the IPR only. Petitioner reserves the right to present positions in any related litigation on this point that may differ from Patent Owner's position on the "primary structurant" (i.e., Petitioner may argue in the alternative, in litigation, that arrowroot powder does count as a structurant).

their skin. Ex. 1017, 5-6; Ex. 1009, 6. Magnesium hydroxide, another antimicrobial, had been used as a substitute for baking soda and was not found to cause the same type of skin irritation. Ex. 1017, 5-8; Ex. 1009, 6, 9; Ex. 1004, 5:52-60, 6:9-12, 6:31-34, 8:40-44; Ex. 1002, ¶43.

v. Hardness of Anhydrous Stick Compositions

Hardness was a known physical parameter affecting consumer acceptance that was measured and controlled during the development of stick compositions. Ex. 1006, 6:23-25; Ex. 1014, ¶[0003]. Hardness was known to be closely related to other product attributes such as strength against breakage, storage stability, and product aesthetics (e.g., smooth application/gliding on the skin, and drier skin feel after use). Ex. 1014, ¶[0003]. Formulators endeavored to develop compositions that had "satisfactory strength and hardness while exhibiting aesthetically pleasing attributes." *Id.*, ¶¶[0003]-[0005]. Since long before the '999 Patent, it was known that formulations that contained too large an amount of structurant(s) could result in overly hard structures that were "too brittle" and/or "cosmetically unacceptable." *Id.*, ¶[0003].

One test that was used to measure hardness of a stick composition was the needle penetration test. Ex. 1006, 2:56-58, 6:23-29; Ex. 1008, ¶[0026]. A higher value corresponds to a softer stick. Ex. 1008, ¶[0026]. Well before the '999 Patent, it was known that the hardness of "typical" stick compositions using an ASTM D-

1321 needle penetration test ranged from about 7.0 mm to about 14.0 mm,[3] and that products with hardness that fell outside that range would "typically generate low consumer acceptance ratings." Ex. 1006, 2:56-58, 6:23-29.

Formulators were aware that the hardness of a stick composition could be controlled by adjusting the concentration or type of liquid carrier and/or structurant (e.g., more structurant, balancing waxes with high and low melting points, etc.). Ex. 1014, ¶[0037] ("Such [liquid carrier] concentration will vary depending upon variables such as desired product hardness . . . ."); Ex. 1001, 3:62-67, 5:45-48, 6:39-40, 7:50-53. For example, U.S. Patent 4,049,792, a patent assigned to Patent Owner which is incorporated by reference in the '999 Patent (Ex. 1001, 10:60-64) states:

> The low melting point wax can be used as an adjunct to the high melting point wax to provide structure and as an emollient. The low melting point wax can also be used to adjust the feel of the stick. ***One skilled in the art will easily be able*** to make a product which feels more brittle, soft, slippery, sticky, rough, etc., by blending various suitable high melting point and low melting point waxes.

Ex. 1041, 4:37-44 (emphasis added). A greater amount of structurants was known to result in harder sticks, while a lesser amount was known to result in softer sticks. Ex. 1014, ¶¶[0003], [0028]-[0029]; Ex. 1002, ¶¶44-46.

C. The Move to Natural Deodorants

i. Aluminum-Free

[3] This range is the same as from about 70 mm*10 to about 140 mm*10 stated in the '999 Patent. Ex. 1001, 12:66-13:1 (explaining that 80 mm*10 is the same as 8 mm).

By the time of the purported invention, it was known that many consumers were seeking cosmetic products that were natural or otherwise free of potentially harmful ingredients. Ex. 1010, 2; Ex. 1012, 1; Ex. 1023, 40-41. As a result of the connection with safety and health, the term "natural" in the deodorant category became associated not only with the inclusion of natural ingredients, but also the absence of aluminum, which some believed was correlated to an increased risk of Alzheimer's disease, breast cancer, and/or prostate cancer. Ex. 1024, 833; Ex. 1013, 215, 332; Ex. 1023, 40; Ex. 1007, 5, 8, 11.

Aluminum-free deodorant sticks were well documented before the filing of the '999 Patent. In fact, independent formulators had shared recipes online for homemade deodorants that were all-natural and free of aluminum. *See* Ex. 1020; Ex. 1018; Ex. 1016; Ex. 1017. In response to the trend, cosmetic companies had also launched deodorant products addressing those consumer preferences. For example, the deodorant company Native had developed and marketed natural, aluminum-free deodorant sticks as early as 2016.[4] Ex. 1007, 5, 11; Ex. 1002, ¶¶47-48.

[4] Comparative Formula 1 in the '999 Patent, which is described in the specification as a "currently marked product," contains the same nine most predominant ingredients by weight as Native's 2016 natural, aluminum-free deodorant stick. Ex. 1007, 5, 11; Ex. 1001, 3:1-45, Table 1; 5:18-19 (indicating "hydrogenated castor oil" and "castor wax" are interchangeable and refer to the same material). Patent Owner acquired Native after the commercial introduction of the Native deodorants but before the effective filing date of the '999 Patent. Ex. 1007, 11; Ex. 1010, 1-2.

ii. Silicone-free

The move to natural deodorant formulations also involved the removal of certain synthetic ingredients, such as silicones, from stick compositions. Consumers preferred silicone-free formulations due to real or perceived health and environmental risks related to silicones. Ex. 1026, 1:41-57. For example, silicone and its degradants had potential links to autoimmune system deficiencies in women with silicone breast implants as well as other disorders. *Id.* Some publications suggested that silicones could cause environmental harms, such as bioaccumulation and environmental toxicity. *Id.*; Ex. 1027, ¶¶[0003]-[0004]; Ex. 1028, 814-15.

As discussed in Section IV.B.ii.a, the liquid carrier in traditional stick compositions could be comprised of both synthetic silicone oils and natural, non-silicone oils, like triglycerides. Natural deodorant stick formulations, including Native's 2016 deodorant and others, were known to contain only natural oils. Ex. 1007, 11; Ex. 1017, 6; Ex. 1016, 6; Ex. 1002, ¶¶49-50.

iii. Natural Antimicrobials

Developing natural deodorant formulations also involved replacing synthetic antimicrobials, like triclosan, with natural alternatives. Natural antimicrobials such as sodium bicarbonate (i.e., baking soda) and zinc oxide were known to have been incorporated into deodorant compositions. Ex. 1018, 5-6; Ex. 1016, 6; Ex. 1007, 11; Ex. 1004, 5:52-60, 6:9-12, 6:31-34, 8:40-44; Ex. 1003, 3:50-4:21; Ex. 1029, 264;

Ex. 1013, 2, 170, 373-74. As mentioned above, formulators (including even those making homemade sticks) were aware that using baking soda in natural deodorant stick formulations could result in unwanted skin irritation for some users. Ex. 1017, 5-7 ("[T]he absence of baking soda means no itchy, red pits . . . for those of us with sensitive skin."); Ex. 1009, 6, 9 (discussing the "rash you get after using deodorant with baking soda."). Magnesium hydroxide had been used as a natural antimicrobial alternative that did not cause the same type of skin irritation. Ex. 1009, 6; Ex. 1004, 5:52-60, 6:9-12, 6:31-34, 8:40-44; Ex. 1002, ¶51.

iv. Natural Fragrances

The push towards natural deodorant formulations also involved replacing synthetic fragrances with natural alternatives like essential oils. Ex. 1007, 11; Ex. 1030; Ex. 1031; Ex. 1032; Ex. 1023. Natural fragrances were desired by some consumers, over synthetic fragrances, based on their perceived relative safety and/or lower allergy incidence rates. Ex. 1023, 40. In addition, many natural essential oils possessed antimicrobial activity, a property particularly well-suited for deodorants. Ex. 1013, 196; Ex. 1021, 209, 211-12; Ex. 1002, ¶52.

V. SUMMARY OF THE '999 PATENT

The '999 Patent relates to "deodorant compositions and methods relating thereto." Ex. 1001, 1:16-17. The patent admits there was a known consumer preference for natural (e.g., silicone-free), aluminum-free deodorant sticks that were

not too hard. *Id.*, 1:21-45, 3:4-14, Table 1. The '999 Patent purports to provide compositions to address those consumer demands. The patent discloses, for example:

> A deodorant stick comprising: at least about 25% of a liquid triglyceride; at least one antimicrobial; a primary structurant with a melting point at least about 50°C.; and less than 8% of secondary structurants having a melting point of at least about 60°C.; said stick being free of an aluminum salt; and said stick having a hardness from about 80 mm*10 to about 140 mm*10, as measured by penetration with ASTM D-1321 needle.

Id., 1:38-45. Table 1 provides compositions of two known "currently marketed" deodorant sticks, Comparative Example 1 and Comparative Example 2.[5] *Id.* at 3:4-45, Table 1. Notably, Comparative Example 1 and Comparative Example 2 contain all the above-listed features/elements of the '999 Patent disclosed deodorant stick compositions, except that the hardness of the comparative formulas (i.e., hardness of 63 mm*10 and 56 mm*10, respectively) fell outside of the '999 Patent's stated range (i.e., "about 80 mm*10 to about 140 mm*10"). *Id.*, 1:37-44, 3:4-45, Table 1. Notably, the broad hardness range stated in the '999 Patent mimics the range known in the field, since at least 1998, to represent consumer preference. Ex. 1006, 6:23-29.

[5] *See* n.4, above, indicating Comparative Example 1 and Comparative Example 2 contain substantially the same ingredient list as the Native prior art formula.

Also, the ’999 Patent’s general formulation calls for structurants typically having a melting point above 50° C in order to provide a stable structure to the stick. Ex. 1001, 3:46-48. The ’999 Patent acknowledges that there were many known structurants from the field that met this requirement, including, e.g., beeswax and stearyl alcohol. *Id.*, 5:6-27, 5:53-61; Ex. 1002, ¶53-56.

A. The Claimed Subject Matter

The ’999 Patent contains eighteen claims. Claim 1, the only independent claim, is directed to a deodorant stick comprising:

- at least one antimicrobial comprising magnesium hydroxide;
- a primary structurant with a melting point of at least about 50° C.;
- wherein said stick is free of an aluminum salt; and
- wherein said stick has a hardness from about 80 mm*10 to about 140 mm*10, as measured by penetration with ASTM D-1321 needle.

Dependent claim 2 limits the antimicrobial as having certain properties (e.g., powder form, water solubility). Dependent claims 3-5 contain negative limitations providing that the deodorant stick is substantially free of certain materials, such as baking soda, synthetic fragrance, or silicones. Dependent claim 6 provides further limitations regarding the amount of silicone (including 0%). Dependent claims 7, 17, and 18 address the amount of triglycerides. Dependent claims 9, 10 and 14 limit the amount, properties (e.g., melting point), and material of the primary structurant.

Dependent claims 11 and 13 limit the amount and properties (e.g., melting point) of secondary structurants. Dependent claim 12 recites a method of making the deodorant stick. Finally, dependent claims 15 and 16 provide that the deodorant stick is further comprised of shea butter and tapioca starch, respectively.

B. Prosecution History

U.S. Patent Application No. 17/194,437 ("the '437 Application"), which issued as the '999 Patent, is a continuation of U.S. Patent Application No. 16/716,542 (now U.S. Patent No. 10,966,915), which is a continuation of U.S. Patent Application No. 16/021,965 (now U.S. Patent No. 10,543,164), filed on June 28, 2018, which claims priority to Provisional Application No. 62/647,104, filed on March 23, 2018, and Provisional Application No. 62/527,180, filed on June 30, 2017.[6]

In an initial Office Action dated May 31, 2022, the Examiner rejected claims of the application as being anticipated by and/or obvious over U.S. Patent 5,433,943 ("Osipow"). Ex. 1033, 1-11. The Examiner also rejected claims on the basis of nonstatutory double patenting. *Id.* In response, the Applicant, *inter alia*, amended the only independent claim, inserting language requiring that "the at least one

[6] The 2017 provisional does not disclose the hardness range measured with an ASTM D-1321 needle contained in the specification of the '999 Patent. The hardness information was added in the 2018 provisional application, which was filed after Patent Owner's acquisition of Native.

antimicrobial" comprise magnesium hydroxide, and removing a limitation requiring "less than 8% of secondary structurants having a melting point of at least about 60°C." *Id.*, 12-15. The Applicant also filed a terminal disclaimer to obviate the nonstatutory double patenting rejection. *Id.*, 15-18. The application was subsequently allowed. *Id.*, 22-32.

Although a version of Lesniak was of record during prosecution of the '437 Application, the examiner did not address the reference. However, during the prosecution of a subsequent application in the patent family, pending U.S. Patent Application No. 17/961,089 ("the '089 Application"), ***the same examiner later recognized the applicability of Lesniak***. Specifically, in an Office Action dated July 3, 2023, the examiner rejected claims of the '089 Application over Lesniak on both anticipation and obviousness grounds. Ex. 1034, 5-15. In doing so, the examiner concluded that Lesniak disclosed each feature of independent claim 1 of the '999 Patent except the feature requiring the antimicrobial to be magnesium hydroxide. *Id.*, 1-15 (*see* claims 1, 4, and 9). The examiner also found Lesniak disclosed other features found in the dependent claims of the '999 Patent, such as the deodorant stick having at least 25% liquid triglyceride (claims 7, 17-18 of the '999 Patent), and the deodorant stick composition not containing baking soda (claim 3 of the '999 Patent) or synthetic fragrance (claim 4 of the '999 Patent). *Id.*

Notably, in view of the ’089 Application specification, the examiner concluded that because Lesniak compositions were comprised of (i) at least 25% liquid triglyceride, and (ii) a structurant having a melting point greater than about 50°C, it would be expected that Lesniak’s compositions would have a similar hardness range as disclosed. *Id.*

In response to the rejection, the Applicant amended the claims of the ’089 Application to recite that the deodorant stick (i) is substantially free of synthetic fragrance, (ii) is anhydrous, (iii) is substantially free of silicones, (iv) and has a hardness from about 70 mm*10 to about 140 mm*10 as measured by penetration with ASTM D-1321 needle. *Id.*, 20-23. Despite the amendments—including, notably, a limitation requiring a hardness range that is similar to ’999 Patent’s stated range—the examiner still found the claims to be unpatentable in view of Lesniak. *Id.*, 20-33.

Also, in the ’089 Application, in response to a double-patenting rejection, the Applicant filed a terminal disclaimer over the ’999 Patent. *Id.*, 16-19.[7]

[7] For the reasons discussed in this section, the application of Lesniak does not implicate 35 U.S.C. § 325(d).

VI. PRIOR ART

A. Effective Prior Art Dates

The ’999 Patent is not entitled to a priority date of June, 30, 2017, the filing date of Provisional Application No. 62/527,180. Specifically, the 2017 provisional application fails to disclose a deodorant stick composition (i) comprising 25% liquid triglyceride (required in all claims) or (ii) having a hardness of from about 80 mm*10 to about 140 mm*10 as measured with an ASTM D-1321 needle. Ex. 1035, 1-54. The earliest date the ’999 Patent can claim priority is therefore March 23, 2018, the filing date of Provisional Application No. 62/647,104. Nevertheless, the references addressed below are prior art regardless of which priority date is used.

U.S. Patent No. 11,433,018 (“Lesniak”) (Ex. 1003), a patent issued under Section 151 and which names another inventor, was effectively filed on June 18, 2015 (PCT/US2015/036498). It is therefore prior art under AIA 35 U.S.C. § 102(a)(2). As discussed in Section V.B, Lesniak was not applied during prosecution.

U.S. Patent No. 9,314,412 (“Phinney”) (Ex. 1004) issued on April 19, 2016, making it prior art under AIA 35 U.S.C. § 102(a)(1). Phinney was of record, but not applied during prosecution.

Lamb (Ex. 1005) is an article published in *The Journal of Investigative Dermatology* in 1946, making it prior art under AIA 35 U.S.C. § 102(a)(1). Lamb was not of record during prosecution.

U.S. Patent No. 6,048,518 ("Bianchi '518") (Ex. 1006) issued on April 11, 2000, making it prior art under AIA 35 U.S.C. § 102(a)(1). Bianchi '518 was not of record during prosecution.

U.S. Patent App. Pub. No. 2007/0166254 ("Bianchi '254") (Ex. 1008) was published on July 19, 2007, making it prior art under AIA 35 U.S.C. § 102(a)(1). Bianchi '254 was not of record during prosecution.

Native (Ex. 1007) is a website page that was published and available to the public on at least November 23, 2016, making it prior art under AIA 35 U.S.C. § 102(a)(1). Native was not of record during prosecution.

Easy Homemade (Ex. 1009) is a website page that was published and available to the public on at least January 26, 2017, making it prior art under AIA 35 U.S.C. § 102(a)(1). Easy Homemade was not of record during prosecution.

U.S. Patent App. Pub. No. 2018/0168954 ("Millet") (Ex. 1044), a patent application published under Section 122(b) and which names another inventor, was effectively filed on May 10, 2016 (PCT/FR2016/051095). It is therefore prior art under AIA 35 U.S.C. § 102(a)(2). Millet was not of record during prosecution.

VII. ARGUMENTS

A. Statement of the Law

When evaluating a motivation to combine, it is not necessary to show that a combination is "the *best* option, only that it be a *suitable* option." *PAR Pharm., Inc.*

v. TWI Pharms., Inc., 773 F.3d 1186, 1197–98 (Fed. Cir. 2014). "[A] given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine." *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006).

"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *EI DuPont de Nemours & Co. v. Synvina CV*, 904 F.3d 996, 1006 (Fed. Cir. 2018). Thus, "[n]ormally, it is to be expected that a change in temperature, or in concentration, or in both, would be an unpatentable modification." *Id.* "A more specific application of this general principle is that '[a] prima facie case of obviousness typically exists when the ranges of a claimed composition overlap the ranges disclosed in the prior art.'" *Id.* "[S]uch overlap creates a presumption of obviousness." *Id*. Patentees can rebut that presumption by showing the claimed range "produce[s] a new and unexpected result which is ***different in kind and not merely in degree*** from the results of the prior art." *Id.* (emphasis added). "A claimed range that demonstrates such unexpected results is referred to as a 'critical' range, and the patentee has the burden of proving criticality." *Id*.; *also Almirall, LLC v. Amneal Pharms. LLC*, 28 F.4th 265, 268-73 (Fed. Cir. 2022).

In addition, "[w]hen a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field,

the combination must do more than yield a predictable result." *Alimirall*, 28 F.4th, 274-75 (citation omitted) (affirming Board's reliance on known "interchangeability" of gelling agents in finding substitution obvious).

Finally, a "reference need not state a feature's absence in order to disclose a negative limitation." *Id.*, 273.

B. Level of Ordinary Skill in the Art

A person of ordinary skill in the art would have (1) at least a B.S. or equivalent degree; and (2) at least two years of experience in cosmetics formulations. Ex. 1002, ¶¶26-28.

C. Grounds of Unpatentability

i. Ground 1 – Claims 1-7, 9-13, 15-18 are Obvious over Lesniak in view of Phinney and Bianchi '518

Overview of the Combination

The combination of Lesniak in view of Phinney and Bianchi '518 renders claims 1-7, 9-13, and 15-18 of the '999 Patent obvious. Lesniak describes natural anhydrous personal care compositions, including a deodorant stick in the form of an antiperspirant stick,[8] which Lesniak seeks to make more palatable to consumers. Ex. 1003, 1:16-35, 4:22, 4:61-67, 5:5-32, 10:27, 10:32-33.

Lesniak explains such compositions may comprise, e.g.:

[8] *See* Ex. 1036, 2 ("[A]ll antiperspirants are deodorants...."); Ex. 1037, 246.

- at least about 25 wt% of a liquid triglyceride, such as caprylic/capric triglyceride (*id.*, 2:38-39, 9:45-46);
- about 8 to 19 wt% of a primary structurant, such as beeswax (*id.*, 1:39-54, 2:5-7, 2:24-25);
- about 3% to 15 wt% of a secondary structurant (*id.*, 9:45-54);
- at least one antimicrobial, such as zinc oxide (*id.*, 3:39-4:21, 8:31-9:59); and
- tapioca starch or shea butter (*id.*, 3:30, 3:66, 4:11, 8:5, 8:31-32, 9:19, 9:34, 10:43-44, 11:5).

Lesniak's compositions do not contain aluminum salts, baking soda, or synthetic fragrances. *Id.*, 3:50-4:21, 8:37-42.[9]

While Lesniak teaches deodorant stick compositions may contain zinc oxide (a known antimicrobial), it does not expressly teach the use of magnesium hydroxide. However, in view of Phinney, a POSA would have found it obvious to add magnesium hydroxide to the composition of Lesniak. Phinney states that metal oxides, such as zinc oxide, are not particularly efficacious antimicrobials in deodorants when used alone. Ex. 1004, 2:33-37. Consequently, Phinney describes using magnesium hydroxide as an antimicrobial in a deodorant stick, in addition to

[9] Lesniak also describes how to make the compositions in stick form. *Id.*, 15:9-45.

zinc oxide. *Id.*, 5:52-60, 6:9-12, 6:31-34, 8:40-44. Phinney acknowledges that prior publications described magnesium hydroxide as an "effective deodorant" and touts its enhanced effectiveness in preventing odor when used in combination with zinc oxide. Ex. 1004, 1:12-22, 2:33-37, 5:64-66.

Lesniak also does not expressly teach hardness as measured by penetration with an ASTM-D 1321 needle. However, Bianchi '518 teaches that the claimed hardness range of about 7.0 mm to about 14.0 mm (equivalent to about 70 mm*10 to about 140 mm*10)[10], as measured by penetration with an ASTM-D 1321 needle, was "typical[]," and products outside of the range were known to generate low consumer acceptance ratings. Ex. 1006, 2:56-58, 6:23-29. Accordingly, it would be obvious to formulate Lesniak's deodorant stick to be within the claimed hardness range inasmuch as Bianchi '518 teaches that the range was long known to be needed for consumer acceptance of deodorant sticks.[11] Ex. 1002, ¶¶57-61.

Petitioner is not aware of any secondary considerations that would rebut obviousness.

Motivation Supporting the Combination

A POSA would have been motivated to combine Lesniak with Phinney and Bianchi '518. Both Lesniak and Phinney are directed to deodorants with "natural

[10] *See* n.3, above.
[11] *See also* Ex. 1025, 12:41-55 (Patent Owner claiming an ASTM D-1321 hardness range of 75 to 120 in 1995).

ingredients" (Ex. 1004, 1:5-9; Ex. 1003, 4:61-5:31, 9:45, 10:27, 10:31-33) and describe the use of known antimicrobials (*id.*, 1:15-19, 5:52-67, 6:31-34, 8:40-44; Ex. 1003, 3:39-4:21, 8:31-9:59). Lesniak teaches using zinc oxide (a known antimicrobial), while Phinney teaches that combining magnesium hydroxide with zinc oxide improves antimicrobial properties. Thus, a POSA would have been motivated to incorporate magnesium hydroxide into Lesniak's composition following Phinney's guidance, as this combination would improve odor protection while maintaining the "natural" composition intended by Lesniak.

A POSA would have also been motivated to combine Lesniak and Bianchi '518. By the time of the filing of the '999 Patent, a POSA would have known that hardness was an "important physical parameter affecting consumer acceptance," and would have looked to achieve hardness levels that were taught in the field to achieve consumer acceptance. Bianchi '518 informs the knowledge in the field on this point. Ex. 1006 at 6:23-25.

Bianchi '518 is a patent in the field that generally discloses low residue "antiperspirant sticks, substantially free of water and long chain fatty alcohols" and methods related thereto. Ex. 1006, 1:8-14, 1:53-2:2. Bianchi '518 explains that a hardness from about 7.0 mm to about 14.0 mm (equivalent to about 70 mm*10 to about 140 mm*10)[12] was "typical" for stick compositions, and that products falling

[12] *See* n.3, above.

outside that hardness range typically generated low consumer acceptance ratings. *Id.*, 2:57-58; 6:28-29. Moreover, because Lesniak is directed to formulating deodorant sticks with desirable "skin feel" for consumers. (Ex. 1003, 1:16-35), a POSA would have naturally consulted publications, like Bianchi '518, to determine acceptable hardness ranges and ensure the stick composition met consumer preferences. Ex. 1002, ¶¶62-65.

Reasonable Expectation of Success

A POSA would have had a reasonable expectation of success in using magnesium hydroxide as an antimicrobial in Lesniak's composition because Phinney described it as an "effective antimicrobial" and showed it had been successfully formulated into deodorant compositions containing zinc oxide where it provided long lasting odor protection. Moreover, a POSA would have appreciated that deodorant compositions could be formed through various combinations of known ingredients, such as antimicrobials, as simple design choices. Ex. 1002, ¶66.

A POSA would have also had a reasonable expectation of success to formulate a deodorant stick such as the stick disclosed by Lesniak to have a hardness within the claimed range because others, such as the inventors in Bianchi '518, had successfully formulated antiperspirants and deodorants to have a hardness within that range. Ex. 1006, 2:56-58, 6:23-29. A POSA would have readily understood that adjusting the amount of structurant in Lesniak's compositions (using less if the

deodorant was too hard, and vice-versa) could achieve the target hardness.[13] For instance, Lesniak describes formulating a deodorant stick with 8% to 19% of a primary structurant, such as beeswax, and also optionally including 3% to 15% of a secondary structurant, such as sunflower seed wax and/or hydrogenated castor oil. Ex. 1003, 9:45-54, 1:39-2:30, 3:43-4:21, 5:32-48. A POSA would have understood that the hardness could be adjusted by altering the amount of the primary structurant and/or by incorporating secondary structurants. Ex. 1002, ¶¶66-67.

Analogous Art

Lesniak, Phinney, and Bianchi '518 are in the same field as the '999 Patent, and all relate to personal care compositions, including deodorant and/or antiperspirant sticks.[14] Ex. 1001, Abstract, 6:59-9:20; Ex. 1003, Abstract, 3:39, 4:22, 8:43-46, 9:45, 10:27; Ex. 1004, Abstract, 5:52-60, 6:9-12, 6:31-34, 8:40-44; Ex. 1006, Abstract, 1:8-35, 2:57-58, 6:23-29; Ex. 1002, ¶68.

[13] Ex. 1014, ¶¶[0028]-[0029] (defining structurant in the same manner as the '999 Patent and stating that the "structurant material contributes to the stick form with the desired . . . hardness"), [0003] ("Using a large amount of waxy structurant may not be necessarily effective since it may result in an overly hard structure.").

[14] *See* n. 8, above. Lesniak's discussion of other personal care compositions, such as sunscreens, does not make it any less applicable to the formulation of deodorant and/or antiperspirant Topical formulations could have multiple applications, including as sunscreens and/or deodorants. Patent Owner has other patents directed to "cosmetic stick compositions" with applications in "sun care, moisturizing … and antiperspirants/deodorant sticks." Ex. 1043, Abstract, 1:5-9.

’999 Patent Claims	Obviousness Based on Lesniak in view of Phinney and Bianchi ’518
1. A deodorant stick comprising:	To the extent the preamble is limiting, Lesniak discloses a deodorant stick in the form of an antiperspirant stick. Ex. 1003, 4:22, 9:45, 10:27 (“Optionally, the composition is a stick . . . . The composition can also be an antiperspirant.”).[15] Ex. 1002, ¶70.
a. at least one antimicrobial comprising magnesium hydroxide; and	Lesniak teaches deodorant stick compositions containing zinc oxide (a known antimicrobial), but it does not expressly teach adding magnesium hydroxide. Phinney discloses a deodorant stick that comprises magnesium hydroxide as an antimicrobial, in addition to zinc oxide (which is converted to zinc hydroxide in Phinney’s formulations). Ex. 1004, 5:52-60, 6:9-12, 6:31-34, 8:40-44. A POSA would have been motivated to add magnesium hydroxide to the Lesniak’s deodorant stick compositions because it was known that “a mixture of the hydroxides of zinc and magnesium could provide long lasting protection against odour due to perspiration,” whereas zinc oxide alone was less effective “due to insolubility and low hydrolysis rate to a hydroxide form that could show some

[15] Patent Owner may argue, due to FDA regulations for antiperspirant active ingredients, Lesniak’s compositions must include an aluminum salt to be considered antiperspirants. But the standards for anticipation and obviousness are distinct from FDA regulatory requirements. *Persion Pharms. LLC v. Alvogen Malta Operations Ltd*., 945 F.3d 1184, 1193 (Fed. Cir. 2019). Moreover, Patent Owner’s U.S. Patent No. 11,497,706, which is related to the ’999 Patent and similarly claims a “deodorant stick being free of an aluminum salt,” expressly identifies “antiperspirant actives” that do not include aluminum, such as zinc salts and “any of the antimicrobial[s] discussed above”—a list of more than twenty-five non-aluminum compounds. Ex. 1045, 10:31-43, 16:40-62, 26:56-60. Thus, a POSA would understand Lesniak’s antiperspirants to be antiperspirants based on the use of zinc salt (notwithstanding the absence of aluminum). In any event, a POSA would understand those compositions to be deodorants that do not include aluminum, regardless of whether they would be considered an antiperspirant.

	activity." *Id.*, 1:12-22, 2:33-37, 5:64-66 (discussing the "previously recognized synergy between the zinc and magnesium compounds"), 5:48-49 (explaining that magnesium hydroxide "has low solubility and therefore does not 'wash away' under heavy perspiration"). Alternatively, a POSA would have been motivated to replace the zinc oxide in Lesniak's deodorant stick with magnesium hydroxide, as both were known to have been used as antimicrobials in natural deodorant sticks, but zinc oxide was thought to have lower efficacy in combatting odor. *Id.*; Ex. 1002, ¶¶71-72.
b. a primary structurant with a melting point of at least about 50° C.; and	Lesniak describes formulating a deodorant stick with a primary structurant ("first wax"), such as beeswax, having a melting point of at least about 50° Celsius.[16] Ex. 1003, 1:39-2:30, 3:43-4:21, 5:32-6:23, 8:57-9:59; *see* Ex. 1001, 5:6-7 (admitting that beeswax melts between 50° C. and 70° C.). In addition, the '999 Patent admits that "[i]t is known that to formulate a solid antiperspirant or deodorant stick, the structurants generally have a melting point above 50° C." Ex. 1001, 3:46-47. At a minimum, the overlap between the claimed melting point range and the ranges in Lesniak renders the claim presumptively obvious. Ex. 1003, 2:20-21 ("In certain embodiments, the first wax has a melting point of 38° C. to 65° C., optionally 45° C. to 65° C. or 60° C. to 65° C."). The '999 Patent discloses nothing critical or unexpected regarding the claimed range relative to the prior art ranges, as would be required to overcome this presumption of obviousness. Ex. 1002, ¶¶73-74.
said stick being free of an aluminum salt; and	Lesniak describes formulating a deodorant stick that is free of an aluminum salt. Ex. 1003, 1:39-2:30, 3:43-4:21, 5:32-6:23, 8:31-9:59.

[16] Beeswax is the "primary" structurant because it is the structurant in the greatest amount. Ex. 1001, 4:5-13; Ex. 1039, 11 (reporting melting point of 62-65°C. for beeswax).

	To the extent that Patent Owner argues that Lesniak does not explicitly articulate the negative limitation, a POSA would have understood Lesniak's formulations to be complete deodorant sticks that did not require additional ingredients such as an aluminum salt. *Id.* Indeed, Lesniak's formulations include zinc oxide, which was a known alternative to aluminum. *Id.*[17] Moreover, a POSA would have understood Lesniak's preference for "natural" ingredients to militate against inclusion of ingredients such as aluminum that were thought to be unsafe. *Id.*, 1:16-31, 4:61-67, 5:5-32, 10:31-33; Ex. 1002, ¶¶75-76.
said stick having a hardness from about 80 mm*10 to about 140 mm*10, as measured by penetration with ASTM D-1321 needle.	Bianchi '518 teaches a hardness range of about 7.0 mm to about 14.0 mm (equivalent to about 70 mm*10 to about 140 mm*10)[18], as measured by penetration with an ASTM-D 1321 needle, was "typical[]," and products outside of this range were known to generate low consumer acceptance ratings. Ex. 1006, 2:56-58, 6:23-29. A POSA therefore would have been motivated to formulate Lesniak's deodorant stick to have a hardness within the claimed range. At a minimum, the overlap between the claimed hardness range and the range in the prior art renders the claim presumptively obvious. Also, a POSA would have understood that the adjustment of the hardness of the stick was an issue of routine optimization (even without Bianchi '518, as an examiner found in applying Lesniak in a related application discussed above in the prosecution history section). The '999 Patent discloses nothing critical or unexpected regarding the claimed range. Ex. 1002, ¶¶77-78.

[17] Ex. 1014, ¶[0018] ("[A]ntiperspirant actives include astringent metallic salts, particularly inorganic and organic salts of aluminum, zirconium, and zinc, as well as mixtures thereof.").
[18] *See* n.3, above.

2. The deodorant stick of claim 1, wherein the antimicrobial is a powder with a water solubility of at most about 90 g/L at 25° C.	Lesniak describes formulating a deodorant stick with an antimicrobial powder in the form of zinc oxide, which, as a POSA would have known, has a water solubility of at most about 90 g/L at 25° C. Ex. 1003, 8:46-48 ("[T]he zinc oxide is added to the compositions as a powder, not as a pre-formed dispersion of zinc oxide in a carrier.").[19] Ex. 1002, ¶79.
3. The deodorant stick of claim 1, wherein the deodorant stick is substantially free of baking soda.	Lesniak describes formulating a deodorant stick with zinc oxide, an antimicrobial, and without baking soda (another antimicrobial). *See* claim 1 analysis, above; Ex. 1003, 1:39-2:30, 3:43-4:21, 5:32-6:23, 8:31-9:59. Phinney teaches using magnesium hydroxide as an antimicrobial in addition to or as a replacement of the zinc oxide in Lesniak's deodorant stick. *See* claim 1(a) analysis, above. A POSA would have understood Lesniak's formulations as modified by Phinney to be complete deodorant sticks that did not require additional ingredients such as baking soda. *Id.* Moreover, a POSA would have understood that baking soda could be an irritant for some individuals and that magnesium hydroxide was often used as an alternative to baking soda for that reason. Ex. 1002, ¶80 (citing Ex. 1009, 6, 9).
4. The deodorant stick of claim 1, wherein the deodorant stick is substantially free of a synthetic fragrance.	Lesniak describes formulating a deodorant stick without synthetic fragrance and, in particular, describes the use of natural fragrances. Ex. 1003, 8:31-41 ("Examples of essential oils which may be used as natural fragrances include lavender oil, apricot oil, bay oil, calendula oil, Aztec marigold oil, lemongrass oil, rose oil, lime oil, white grapefruit oil."). A POSA would have understood Lesniak's formulations to be complete deodorant sticks that did not require additional ingredients such as synthetic fragrance. *Id.*, 1:39-2:30, 3:43-4:21, 5:32-6:23, 8:31-9:59. Moreover, a POSA would have understood Lesniak's preference for "natural" ingredients to militate against

[19] Ex. 1038, 47335 ("The reported water solubility of zinc oxide ranges from 1.6 milligrams per liter (mg/L) (29 deg.C) to 5 mg/L (25 deg.C).").

	inclusion of synthetic fragrance. *Id.*, 1:16-31, 4:61-67, 5:5-32, 10:31-33; Ex. 1002, ¶81.
5. The deodorant stick of any claim 1, wherein the deodorant stick is substantially free of silicones.	Lesniak describes formulating a deodorant stick without silicones. Ex. 1003, 1:39-2:30, 3:43-4:21, 5:32-6:23, 8:31-9:59. A POSA would have understood Lesniak's formulations to be complete deodorant sticks that did not require additional ingredients such as silicones. *Id.* Moreover, a POSA would have understood Lesniak's preference for "natural" ingredients to militate against inclusion of synthetic ingredients such as silicones. *Id.*, 1:16-31, 4:61-67, 5:5-32, 10:31-33; Ex. 1002, ¶82.
6. The deodorant stick of claim 1, wherein the deodorant stick comprises from 0% to 5% silicones.	*See* claim 5. Ex. 1002, ¶83.
7. The deodorant stick of claim 1, comprising at least about 25% of a liquid triglyceride.	Lesniak describes formulating a deodorant stick with at least about 25% of a liquid triglyceride, such as caprylic/capric triglyceride, which the '999 Patent identifies as an exemplary liquid triglyceride, as a POSA would have known (Ex. 1001, 6:22-25). Ex. 1003, 9:45-59 ("In certain embodiments, the stick comprises 46 to 56% by weight of the ester . . . In certain embodiments for the stick, the ester comprises caprylic/capric triglyceride."); 1:39-63, 2:31-41, 3:43-4:21 (disclosing examples of points within the claimed range, e.g., 48% caprylic/capric triglyceride), 6:30-43, 8:57-9:44. At a minimum, the overlap between the claimed liquid triglyceride range and the ranges in Lesniak renders the claim presumptively obvious. The '999 Patent discloses nothing critical or unexpected regarding the claimed range relative to the prior art ranges, as would be required to overcome this presumption of obviousness. Ex. 1002, ¶¶84-85.

9. The deodorant stick of claim 1, wherein the stick comprises from about 8% to about 20% of the primary structurant.	Lesniak describes formulating a deodorant stick with 8% to 19% of a primary structurant ("first wax"), such as beeswax. Ex. 1003, 9:45-51, 1:39-2:30, 3:43-4:21 (disclosing examples of points within the claimed range, e.g., 13.5% beeswax), 5:32-48. At a minimum, the overlap between the claimed primary structurant range and the ranges in Lesniak renders the claim presumptively obvious. The '999 Patent discloses nothing critical or unexpected regarding the claimed range relative to the prior art ranges. Ex. 1002, ¶¶86-87.
10. The deodorant stick of claim 1, wherein the primary structurant has a melting point from about 50° C. to 75° C.	*See* claim 1(b). Ex. 1002, ¶88.
11. The deodorant stick of claim 1, comprising less than 5% of secondary structurants having a melting point above 60° C.	Lesniak describes formulating a deodorant stick with 3% to 15% of a secondary structurant ("second wax"), such as sunflower seed wax and/or hydrogenated castor oil, having a melting point above 60° C. Ex. 1003, 9:45-54, 1:39-2:30, 3:43-4:21, 5:32-48. Lesniak also describes formulating a deodorant stick with 2% of a secondary structurant such as hydrogenated castor oil, having a melting point above 60° C, and thus discloses a point within the claimed range. *Id.*, 8:66-9:34. At a minimum, the overlap between the claimed range of secondary structurants and the range in the prior art renders the claim presumptively obvious. The '999 Patent discloses nothing critical or unexpected regarding the claimed range. To the contrary, it admits that limiting secondary structurants merely reduces the hardness of the stick (Ex. 1001, 3:5-57), which a POSA would have expected based on the definition of structurant.[20] Ex. 1002, ¶¶89-90.

[20] *See* n.13, above.

12. A method of making the deodorant stick of claim 1, comprising the steps of combining the deodorant components in an open tank system, mixing the components, heating the components, and cooling the components.	Lesniak describes a method of making an anhydrous stick that involves combining components in an open tank system, mixing the components, heating the components, and cooling the components. Ex. 1003, 10:41-11:7 (describing a manufacturing process that involves "combin[ing]," "mixing," "heat[ing]," and "cooling" the components). Lesniak's method of making an anhydrous stick describes the use of a bench-top mixer and Silverson L4RT bench-top homogenizer. A POSA would have known these standard lab equipment mixers were used on an open tank system (e.g., a beaker or other open top vessel). Ex. 1002, ¶91 (citing Ex. 1003, 10:41-11:7).
13. The deodorant stick of claim 1, further comprising less than 8% of secondary structurants having a melting point at least about 60° C.	*See* claim 11. Ex. 1002, ¶92.
15. The deodorant stick of claim 1, further comprising shea butter.	Lesniak describes that shea butter is an option for a deodorant stick. Ex. 1003, 3:30, 3:66, 4:11, 8:5, 9:19, 9:34. Ex. 1002, ¶93.
16. The deodorant stick of claim 1, further comprising tapioca starch.	Lesniak describes that tapioca starch may be additionally included in a deodorant stick. Ex. 1003, 8:31-32, 10:43-44, 11:4-6. Ex. 1002, ¶94.
17. The deodorant stick of claim 1, comprising at least about 25%	*See* claim 7. Ex. 1002, ¶95.

caprylic/capric triglyceride.	
18. The deodorant stick of claim 1, comprising at least about 25% of a triglyceride.	*See* claim 7. Ex. 1002, ¶96.

ii. Ground 2 – Claim 8 is Obvious Over Lesniak in view of Phinney, Bianchi '518, and Lamb

Overview of the Combination

The combination of Lesniak in view of Phinney, Bianchi '518 and Lamb renders claim 8 obvious. As explained above, Lesniak in view of Phinney and Bianchi '518 renders obvious all of the limitations of independent claim 1. *Supra* § VII.C.i. While those references do not expressly teach baking soda as an antimicrobial, Lamb discloses a deodorant stick comprising baking soda as an effective antimicrobial. Ex. 1005, 132. Lamb concludes baking soda is an "excellent deodorant" and "a valuable underarm deodorant for common daily usage." *Id.*, 132-33. Accordingly, it would be obvious to add baking soda to the composition of Lesniak in view of Phinney and Bianchi '518 to provide additional odor protection, as taught by Lamb. Ex. 1002, ¶97.

Petitioner is not aware of any secondary considerations that would rebut obviousness.

Motivation Supporting the Combination

It would have been obvious to use the teachings of Phinney, Bianchi '518, and Lamb in Lesniak's deodorant stick composition. A POSA would have been motivated to combine Lesniak, Phinney, and Bianchi '518 for the reasons stated in Section VII.C.i, above. While Phinney taught that zinc oxide and magnesium hydroxide had improved efficacy against malodor when used in combination, Lamb taught that baking soda was another effective antimicrobial that could be used in deodorants. A POSA would have recognized that deodorant compositions often use multiple antimicrobials. While it was known baking soda could cause skin irritation for some users (*supra* § IV.C.iii), a POSA would have still known baking soda was an optional antimicrobial.

Lamb is an article that was published in *The Journal of Investigative Dermatology*. The article describes a study which evaluated the effectiveness of baking soda as an underarm deodorant in more than 90 patients and explains that baking soda may be used as an antimicrobial in a deodorant stick. Ex. 1005, 131-33. Lamb concludes that baking soda is an "excellent deodorant" that "lasts through the entire day." A POSA would have looked at scientific publications, like Lamb, in evaluating options for antimicrobials in deodorants. Ex. 1002, ¶¶98-100.

Reasonable Expectation of Success

A POSA would have had a reasonable expectation of success in using baking soda as an antimicrobial because Lamb showed baking soda had been successfully

formulated into deodorant stick compositions. Ex. 1005, 131-33. Moreover, a POSA would have appreciated that deodorant compositions could be formed through various combinations of known ingredients, such as antimicrobials, as simple design choices. Ex. 1002, ¶101.

Analogous Art

Lesniak, Phinney, Bianchi '518, and Lamb are in the same field as the '999 Patent, and all relate to personal care compositions, including deodorant and/or antiperspirant sticks.[21] *See* Ex. 1001, Abstract, 1:21-34; Ex. 1003, Abstract, 3:39, 4:22, 8:43-46, 9:45, 10:27; Ex. 1004, Abstract, 5:52-60, 6:9-12, 6:31-34, 8:40-44; Ex. 1005, 131-33; Ex. 1006, Abstract, 1:8-35, 2:57-58, 6:23-29. Ex. 1002, ¶102.

a) [8] The deodorant stick of claim 1, further comprising an additional antimicrobial comprising baking soda.

Lesniak in view of Phinney and Bianchi '518 teaches deodorant stick compositions containing zinc oxide and magnesium hydroxide, but it does not expressly teach deodorant stick compositions containing baking soda as an antimicrobial. Lamb describes a deodorant stick using baking soda as an antimicrobial. Ex. 1005, 132. While it was known that baking soda could cause skin irritation for some users (*supra* § IV.C.iii), a POSA would have known that baking soda could be used in the deodorant sticks disclosed by Lesniak in view of Phinney

[21] *See* n.8,14, above.

and Bianchi ’518 because baking soda was known to react with the acidic compounds responsible for malodor to form non-volatile salts and could provide enhanced efficacy against axillary malodor. *Id*., 133; Ex. 1002, ¶103. It was also an existing, accepted ingredient for deodorants.

iii. Ground 3 – Claim 14 is Obvious Over Lesniak in view of Phinney, Bianchi ’518, and Bianchi ’254

Overview of the Combination

The combination of Lesniak in view of Phinney, Bianchi ’518 and Bianchi ’254 renders claim 14 obvious. As explained above, Lesniak, Phinney and Bianchi ’518 render obvious all of the limitations of independent claim 1. *Supra* § VII.C.i. While Lesniak describes formulating deodorant compositions with “fatty alcohols,” which a POSA would have understood to include stearyl alcohol (a known structurant with a melting point of at least about 50° C), it does not expressly disclose using stearyl alcohol as the primary structurant. Ex. 1003, 8:31-32; Ex. 1001, 5:6-10, 53-54; Ex. 1008, Tables 1, 5. Bianchi ’254 states stearyl alcohol is a “widely used” structurant “of particular interest” for deodorants and describes examples comprising 12-25% of stearyl alcohol as the structurant present in the greatest amount. Ex. 1008, ¶¶[0001], [0018], [0019], [0058]. Therefore, a POSA would have found it obvious to use stearyl alcohol as the primary structurant in the composition of Lesniak, as taught by Bianchi ’254. Ex. 1002, ¶104.

Petitioner is not aware of any secondary considerations that would rebut obviousness.

Motivation Supporting the Combination

It would have been obvious to use the teachings of Phinney, Bianchi '518, and Bianchi '254 in Lesniak's deodorant stick composition. A POSA would have been motivated to combine Lesniak, Phinney, and Bianchi '518 for the reasons stated in Section VII.C.i, above. Lesniak aims to formulate deodorant sticks that have a consumer-preferred "skin feel" (e.g., reduced tackiness and drag). Ex. 1003, 1:16-35, 5:51-53. While Lesniak describes using "fatty alcohols" in its deodorant compositions, it does not expressly state stearyl alcohol is useful as the primary structurant. *Id.*, 8:31-32. Bianchi '254, aiming to achieve stick compositions with a "'clean', non-sticking feeling", highlights stearyl alcohol as a "widely used" structurant "of particular interest" for deodorants, and provides examples where it is successfully used as the primary structurant. Ex. 1008, ¶¶[0001], [0010], [0018], [0019], [0058]. Accordingly, a POSA would have been motivated to incorporate stearyl alcohol as the primary structurant in Lesniak's deodorant compositions to achieve consumer-preferred "skin feel." Ex. 1002, ¶¶105-106.

Reasonable Expectation of Success

A POSA would have had a reasonable expectation of success in using stearyl alcohol as the primary structurant in Lesniak's composition because Bianchi '254

described it as a "widely used" structurant and showed it had been successfully formulated into deodorant compositions as the primary structurant. Moreover, a POSA would have appreciated that deodorant compositions could be formed through various combinations of known ingredients, such as structurants, as simple design choices. Ex. 1002, ¶107.

Analogous Art

Lesniak, Phinney, Bianchi '518, and Bianchi '254 are in the same field as the '999 Patent, and all relate to personal care compositions, including deodorant and/or antiperspirant sticks.[22] *See* Ex. 1001, Abstract, 1:21-34; Ex. 1003, Abstract, 3:39, 4:22, 8:43-46, 9:45, 10:27; Ex. 1004, Abstract, 5:52-60, 6:9-12, 6:31-34, 8:40-44; Ex. 1006, Abstract, 1:8-35, 2:57-58, 6:23-29; Ex. 1008, Abstract, Title, ¶¶[0010]-[0021]; Ex. 1002, ¶108.

a) [14] The deodorant stick of claim 1, wherein the primary structurant is stearyl alcohol.

Lesniak describes formulating deodorant compositions with "fatty alcohols," which a POSA would have understood to include stearyl alcohol, a structurant with a melting point of at least about 50° C according to the '999 Patent (and as generally known in the field). Ex. 1003, 8:31-32; Ex. 1001, 5:6-10, 53-54; Ex. 1008, Tables 1, 5. Bianchi '254 singles out stearyl alcohol as a "widely used" structurant "of

[22] *See* n.8,14, above.

particular interest" for deodorants. Ex. 1008, ¶¶[0001], [0058]. Bianchi '254 describes deodorant formulations comprising 12-25% of stearyl alcohol as the structurant present in the greatest amount. *Id.*, ¶¶[0018], [0019]. A POSA would have been motivated to use stearyl alcohol as a primary structurant in Lesniak's deodorant formulations and would have had a reasonable expectation of success in doing so because stearyl alcohol was a preferred option that had already been used successfully as the primary structurant in deodorant sticks. Ex. 1002, ¶109.

iv. Ground 4 – Claims 1-15, 17-18 are Obvious Over Native in view of Bianchi '254 and Easy Homemade

Overview of the Combination

The combination of Native in view of Bianchi '254 and Easy Homemade renders claims 1-15, and 17-18 of the '999 Patent obvious. Native is a printed publication from a website for the Native deodorant product, which sets forth the ingredients for a natural, aluminum-free deodorant stick, which was being marketed and sold in 2016. Ex. 1007, 5, 11. A POSA looking to formulate new deodorant compositions would have looked to existing formulations and would have understood that commercial deodorant brands typically provided ingredient lists of their products on their websites. Native, in particular, was a website that would have been well known to a POSA, inasmuch as Native was a well-known deodorant. Attesting to the fact that Native was a known leader in the field, Patent Owner acquired Native in 2017. Ex. 1010, 3 ("Native reached internet fame").

Native discloses features of deodorant stick compositions claimed in the ’999 Patent; however, it does not expressly teach the percentage of each ingredient used, including the percentage of liquid triglyceride (carrier oil), primary structurant with a melting point of at least about 50°C, and secondary structurants having a melting point of at least about 60°C. Native also does not disclose the hardness of the deodorant stick. Bianchi ’254 describes antiperspirant stick compositions, which establish that the claimed concentrations of ingredients were conventional and that the claimed hardness range was standard. Accordingly, it would be obvious to formulate a deodorant stick such as the stick disclosed by Native using ingredient concentrations and hardnesses taught by Bianchi ’254.

While Native teaches a deodorant stick composition comprising an antimicrobial, it does not teach a deodorant stick composition (1) substantially free of baking soda (Native’s antimicrobial); (2) comprising an antimicrobial a powder with a water solubility of at most about 90 g/L at 25°C; or (3) comprising magnesium hydroxide as the antimicrobial. A POSA would have known, however, that deodorants containing baking soda (Native’s antimicrobial) could cause skin irritation for some users. Ex. 1009, 6. Easy Homemade explains that magnesium hydroxide, which the ’999 Patent indicates is a powder with a water solubility below

90 g/L at 25°C,[23] could be used to replace baking soda as an antimicrobial in deodorant compositions, and it works just as well. *Id.*, 6, 9. Accordingly, it would be obvious to use magnesium hydroxide as a substitute to baking soda in the composition of Native, as taught by Easy Homemade.

Easy Homemade is a printed publication from a website dedicated to natural deodorant formulations. It describes a successful strategy that had been implemented by an independent formulator to avoid the possible skin irritation caused baking soda. A POSA seeking a solution to that problem would have known there were dedicated online resources in which independent formulators shared suitable ingredient for and methods of formulating natural deodorants, making Easy Homemade relevant. Furthermore, a POSA would have appreciated that such websites from independent formulators striving for more natural options presented an indication of consumer preferences, which a POSA would desire to meet in formulating new commercial products. Easy Homemade was widely accessible, being part of a series of related "Soap Deli News" articles dedicated to deodorant formulations with significant engagement from individuals globally. Ex. 1002, ¶¶110-113; Ex. 1009; Ex. 1016; Ex. 1017; Ex. 1018.

[23] *See* Ex. 1042, 14, 39 (indicating the aqueous solubility of magnesium hydroxide is 0.00125 g/100 mL, which is equivalent to 0.0125 g/L); Ex. 1002, ¶134 (citing Ex. 1050, 395).

Petitioner is not aware of any secondary considerations that would rebut obviousness.

Motivation Supporting the Combination

In making a natural, aluminum-free deodorant stick composition, a POSA would have looked to existing compositions, such as Native. Native's deodorant stick composition is comprised of caprylic/capric triglyceride, baking soda, stearyl alcohol, hydrogenated castor oil, polyglycerol-3 beeswax, and jojoba esters. Ex. 1007, 11. Silicones, aluminum salts, and synthetic fragrances are not included in the composition. *Id.* As a POSA would have understood, Native lists its deodorant stick ingredients in order from greatest to least concentration Ex. 1002, ¶114 (citing Ex. 1046); however, it does not expressly teach the percentage of each ingredient used nor state the hardness of the deodorant stick. In the absence of express teachings on these points, a POSA would have looked to other publications in the field with suitable examples.

Bianchi '254 is a publication in the field which describes "fatty-alcohol containing antiperspirant stick compositions" and methods related thereto. Ex. 1008, Abstract, ¶¶[0010]-[0012], [0021]. Native's primary structurant—stearyl alcohol—is a fatty alcohol. Thus, Bianchi '254 would have been of particular use for a POSA looking for percentages to use for Native's formulation.

Bianchi ’254 describes antiperspirant stick compositions including the percentages of liquid triglyceride (carrier oil), primary structurant with a melting point of at least about 50°C (e.g., stearyl alcohol), and secondary structurants with a melting point of at least about 60°C (e.g., castor wax, polyethylene). *Id.*, ¶¶[0015]-[0019], [0131], [0060]-[0061], Table 5. Bianchi also describes antiperspirant sticks having, e.g., “hardness values of from 8 to 15 mm, preferably 8 to 10 mm, measured pursuant to” a test with a DIN 51-579 needle (*id.*, ¶¶[0026], [0117]), which the ’999 Patent admits is an ASTM-D 1321 needle (Ex. 1001, 11:45-12:15) and would have been understood by a POSA as such. When formulating a natural, aluminum-free deodorant stick based on the composition in Native, a POSA would have looked at publications describing other stick compositions, like Bianchi ’254, for information regarding preferred hardnesses and amount of ingredients.

It also would have been obvious to apply the teachings of Easy Homemade to Native’s deodorant stick composition. While Native teaches a deodorant stick composition comprising an antimicrobial (baking soda), a POSA would have known that deodorants containing baking soda could cause skin irritation for some users. A POSA would have looked to publications in the field of deodorants describing natural antimicrobials that were not known to cause skin irritation, and would seek to understand consumer demands in the field (not being suitably met by existing offerings) for guidance on new products. Easy Homemade is a website page that sets

forth the ingredients for and method of making a natural deodorant. Ex. 1009, 5-9. Easy Homemade confirms what a POSA would have known–namely, that magnesium hydroxide could be used to replace baking soda as an antimicrobial in deodorant compositions, and it works just as well. *Id.*, 6, 7; Ex. 1002, ¶¶114-117.

Reasonable Expectation of Success

A POSA would have had a reasonable expectation of success in formulating a deodorant stick such as the stick disclosed by Native with percentages of liquid triglyceride, primary structurant, and secondary structurants within the claimed ranges, because others, such as the inventors of Bianchi '254, had successfully formulated antiperspirant sticks within those claimed ranges. Ex. 1008, ¶¶[0001], [0015]-[0019], [0023], [0026], [0050], [0058], [0060]-[0061], [0117], [0131], Table 5. Moreover, Native identifies the specific ingredient to use, but lacks the weight percents, where Bianchi '254 teaches the conventional weight percentages to be used for the various components such that the combination would aid the POSA in making a deodorant similar to Native's. With respect to hardness, a POSA would have had a reasonable expectation of success in achieving the same for reasons already discussed above.[24]

[24] *See* n.13, above.

A POSA would have also had a reasonable expectation of success in formulating Native's deodorant stick using Easy Homemade's magnesium hydroxide antimicrobial as an alternative to baking soda. In particular, Easy Homemade shows that the simple substitution was achievable even by people formulating deodorants at home (with less skill than a POSA). Ex. 1009, 6, 9.

A POSA would have appreciated that deodorant compositions could be formed through various combinations of known ingredients, such as antimicrobials, structurants, and carrier oils, as simple design choices. Ex. 1002, ¶¶118-120.

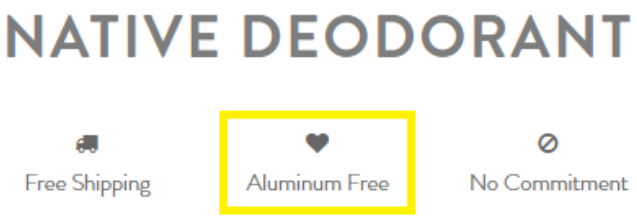
Analogous Art

Native, Bianchi '254, and Easy Homemade are in the same field as the '999 Patent, and all four relate to personal care compositions, including deodorants and/or antiperspirants.[25] *See* Ex. 1001, Abstract, 6:59-9:20; Ex. 1007, 5-8, 11; Ex. 1008, Abstract, ¶¶[0010]-[0021]; Ex. 1009, 5-9; Ex. 1002, ¶121.

'999 Patent Claims	**Obviousness Based on Native in View of Bianchi '518 and Easy Homemade**
1. A deodorant stick comprising:	To the extent the preamble is limiting, Native teaches a deodorant stick.

[25] *See* n.8, above.

	 Ex. 1007, 11; Ex. 1002, ¶122.
a. at least one antimicrobial comprising magnesium hydroxide; and	Native teaches a deodorant stick composition comprising baking soda. A POSA would have known that deodorants containing baking soda could cause skin irritation for some users. Easy Homemade discloses the substitution of magnesium hydroxide powder as a non-skin irritating antimicrobial substitute for baking soda in deodorant sticks. Ex. 1009, 6 ("I fell victim to the . . . rash you get after using deodorant with baking soda. Eventually I discovered that I could swap the baking soda with magnesium hydroxide . . . and it worked just as well."). Ex. 1002, ¶123.
b. a primary structurant with a melting point of at least about 50° C.; and	Native's deodorant stick comprised stearyl alcohol, which is a structurant that melts between 50° C. and 70° C. according to the '999 Patent (and as generally known in the field). Ex. 1001 at 5:6-10, 53-54; Ex. 1008, Tables 1, 5. Ingredients Caprylic/capric triglyceride (which is a fancy way of saying fractionated coconut oil), arrowroot powder, stearyl alcohol, baking soda, shea butter, coconut oil, hydrogenated castor oil, polyglycerol-3 beeswax (which is a fancy way of saying cera bellina wax), jojoba esters, tocopherol (which is a fancy way of saying Vitamin E), L. acidophilus (which is a natural bacteria found in your body already), dextrose, glyceryl caprylate, glyceryl undecylenate. Our scented deodorants include oils. Lavender & Rose is made with Lavender Oil and Geranium Oil. Eucalyptus & Mint is made with Eucalyptus Oil and Spearmint Oil. Due to FDA recommendations, we use the term "fragrance" to refer to these oils. Ex. 1007, 11.

	Stearyl alcohol is the "primary" structurant because it is the first structurant listed in the ingredient list and, thus, the structurant in the greatest amount.[26] Ex. 1001, 4:5-13. Also, Bianchi '254 singles out stearyl alcohol as a "widely used" structurant "of particular interest" for antiperspirants. Ex. 1008, ¶¶[0001], [0058]. Bianchi '254 describes antiperspirant formulations comprising 12-25% of a fatty alcohol, such as stearyl alcohol, as the structurant present in the greatest amount. Ex. 1008, ¶¶[0018]-[0019], [0131] (showing formulations with 18% stearyl alcohol as primary structurant and 3.5% castor wax as secondary structurant). Thus, a POSA would have been motivated to use a primary structurant with a melting point of at least about 50° Celsius, such as stearyl alcohol, in a deodorant stick, inasmuch as both Native and Bianchi '254 describe doing so. Ex. 1002, ¶¶124-127.
said stick being free of an aluminum salt; and	Native describes an "Aluminum Free" deodorant stick, which a POSA would have understood to mean that the formulation did not contain an aluminum salt. The listed ingredients, discussed above, confirm this.  Ex. 1007, 11. In addition, Native touted its "NATURAL INGREDIENTS", which a POSA would have understood to militate against inclusion of ingredients such as aluminum that were thought to be unsafe. *Id.*, 5; Ex. 1002, ¶¶128-129.

[26] *See* n.2, above.

said stick having a hardness from about 80 mm*10 to about 140 mm*10, as measured by penetration with ASTM D-1321 needle.	Native does not state the hardness of the deodorant stick. Bianchi '254, however, describes that its antiperspirant sticks have "hardness values of from 8 to 15 mm, preferably 8 to 10 mm, measured pursuant to" a test with a DIN 51-579 needle (Ex. 1008, ¶¶[0026], [0117]), which is an ASTM-D 1321 needle according to the '999 Patent (Ex. 1001, 11:45-12:15), and as would have been understood by a POSA. Ex. 1002, ¶130 (citing Ex. 1047, 8:59-9:13). A POSA would have been motivated to formulate a deodorant stick, such as Native's deodorant stick, to have a hardness within Bianchi '254's preferred ranges because a POSA would have (i) looked to other references for preferred hardness ranges in the absence of any explicit teaching on this point in Native and (ii) known that customer preferred hardness levels within the claimed range and the ranges stated in Bianchi '254. Ex. 1002, ¶132 (citing Ex. 1006, 2:56-58, 6:23-29)). And a POSA would have had a reasonable expectation of success in doing so for reasons addressed above. At a minimum, the overlap between the claimed hardness range and the ranges in the prior art renders the claim presumptively obvious (even without Bianchi '254, as an examiner found in related prosecution discussed above that the hardness would have been obvious to achieve). The '999 Patent discloses nothing critical or unexpected regarding the claimed range relative to the prior art ranges. Ex. 1002, ¶¶130-133.
2. The deodorant stick of claim 1, wherein the antimicrobial is a powder with a water solubility of at most	*See* claim 1(a) analysis, above. The '999 Patent indicates magnesium hydroxide was an antimicrobial that meets this claim limitation. Ex. 1001, 6:59-63, 7:20-21, 8:19-22[27]. A POSA would have been motivated to substitute magnesium hydroxide powder for baking soda in the deodorant disclosed in Native for the reasons addressed above. With that simple substitution of one known option

[27] *See* n.23, above.

about 90 g/L at 25° C.	for another, Native's composition would match the claim requirement. Ex. 1002, ¶134.
3. The deodorant stick of claim 1, wherein the deodorant stick is substantially free of baking soda.	*See* claim 1(a). Ex. 1002, ¶135.
4. The deodorant stick of claim 1, wherein the deodorant stick is substantially free of a synthetic fragrance.	The Native website discloses and/or suggests a deodorant stick free from synthetic fragrance, as its "fragrance" referred to natural essential oils. Ingredients Caprylic/capric triglyceride (which is a fancy way of saying fractionated coconut oil), arrowroot powder, stearyl alcohol, baking soda, shea butter, coconut oil, hydrogenated castor oil, polyglycerol-3 beeswax (which is a fancy way of saying cera bellina wax), jojoba esters, tocopherol (which is a fancy way of saying Vitamin E), L. acidophilus (which is a natural bacteria found in your body already), dextrose, glyceryl caprylate, glyceryl undecylenate. Our scented deodorants include oils. Lavender & Rose is made with Lavender Oil and Geranium Oil. Eucalyptus & Mint is made with Eucalyptus Oil and Spearmint Oil. Due to FDA recommendations, we use the term "fragrance" to refer to these oils. Ex. 1007, 11. In addition, Native touted its "NATURAL INGREDIENTS", which a POSA would have understood to exclude synthetic fragrances. *Id*., 5. Ex. 1002, ¶¶136-137.
5. The deodorant stick of any claim 1, wherein the deodorant stick is substantially free of silicones.	Native discloses and/or suggests a deodorant stick that did not contain silicones, as no silicones are listed in the ingredients.

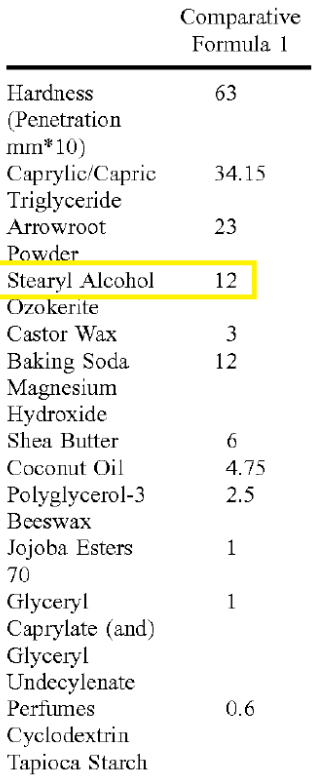
	Ingredients: Caprylic/capric triglyceride (which is a fancy way of saying fractionated coconut oil), arrowroot powder, stearyl alcohol, baking soda, shea butter, coconut oil, hydrogenated castor oil, polyglycerol-3 beeswax (which is a fancy way of saying cera bellina wax), jojoba esters, tocopherol (which is a fancy way of saying Vitamin E), L. acidophilus (which is a natural bacteria found in your body already), dextrose, glyceryl caprylate, glyceryl undecylenate. Our scented deodorants include oils. Lavender & Rose is made with Lavender Oil and Geranium Oil. Eucalyptus & Mint is made with Eucalyptus Oil and Spearmint Oil. Due to FDA recommendations, we use the term "fragrance" to refer to these oils. Ex. 1007, 11. In addition, Native touted its "NATURAL INGREDIENTS", which a POSA would have understood to exclude synthetic ingredients such as silicones. *Id*., 5. Ex. 1002, ¶¶138-139.
6. The deodorant stick of claim 1, wherein the deodorant stick comprises from 0% to 5% silicones.	*See* claim 5. Ex. 1002, ¶140.
7. The deodorant stick of claim 1, comprising at least about 25% of a liquid triglyceride.	Native describes a deodorant stick that comprised, as its first ingredient, caprylic/capric triglyceride, which the '999 Patent describes as an exemplary liquid triglyceride. Ex. 1001, 6:22-25 ("[T]he triglycerides of the present invention are liquid . . . . An example may be caprylic/capric triglyceride."). Ingredients: Caprylic/capric triglyceride (which is a fancy way of saying fractionated coconut oil), arrowroot powder, stearyl alcohol, baking soda, shea butter, coconut oil, hydrogenated castor oil, polyglycerol-3 beeswax (which is a fancy way of saying cera bellina wax), jojoba esters, tocopherol (which is a fancy way of saying Vitamin E), L. acidophilus (which is a natural bacteria found in your body already), dextrose, glyceryl caprylate, glyceryl undecylenate. Our scented deodorants include oils. Lavender & Rose is made with Lavender Oil and Geranium Oil. Eucalyptus & Mint is made with Eucalyptus Oil and Spearmint Oil. Due to FDA recommendations, we use the term "fragrance" to refer to these oils. Ex. 1007, 11.

	A POSA would have known that Native listed each ingredient in descending order of amount. Ex. 1002, ¶¶114, 142 (citing Ex. 1046 ("in descending order of predominance by weight")). Thus, a POSA would have understood the Native deodorant stick to comprise a substantial amount of liquid triglyceride, since caprylic/capric triglyceride is the most predominant ingredient. Indeed, the '999 Patent admits that a "currently marketed" product (Comparative Formula 1), which had the same nine most predominant ingredients by weight—in the same order—as the deodorant stick disclosed on the Native website, comprised 34.15% caprylic/capric triglyceride. Comparative Formula 1 Hardness (Penetration mm*10) 63 Caprylic/Capric Triglyceride 34.15 Arrowroot Powder 23 Stearyl Alcohol 12 Ozokerite Castor Wax 3 Baking Soda 12 Magnesium Hydroxide Shea Butter 6 Coconut Oil 4.75 Polyglycerol-3 2.5 Beeswax Jojoba Esters 1 70 Glyceryl 1 Caprylate (and) Glyceryl Undecylenate Perfumes 0.6 Cyclodextrin Tapioca Starch Ex. 1001, 3:1-45. Regardless of the admission that using the claimed amount was not inventive, it was well known that deodorants typically comprised more than 25% of a carrier oil component such as liquid triglyceride. Specifically, Bianchi '254 describes an antiperspirant stick with 40-

	80% oil. In Bianchi '254, part of the oil carrier (20-40% of the total) is a natural oil such as a liquid triglyceride. Ex. 1008, ¶¶[0017], [0050]. Bianchi '254 also describes that the antiperspirant stick further comprised 20-40% of silicone oil. *Id.*, ¶[0016]. A POSA would have understood that silicone oil and liquid triglyceride both functioned as "carrier oils" that, among other things, solubilize and disperse other ingredients (*id.*, ¶¶[0015], [0023], cl. 17, 18), and therefore would have been motivated to use even more liquid triglyceride when formulating a natural deodorant stick (like in Native) that did not include, e.g., silicone oil, to meet what the '999 Patent admits was an existing consumer preference (Ex. 1001, 1:19-34). Thus, a POSA would have been motivated to use at least about 25% of a liquid triglyceride in a deodorant stick, and would have had a reasonable expectation of success in doing so, inasmuch as (i) Bianchi '254 already suggests the same with its 20-40% amount, (ii) a POSA would have, based on Bianchi '254's overall oil teachings, used even more of the liquid triglyceride when making a stick with only that oil carrier (as taught by Native). The overlap between the claimed liquid triglyceride range and the ranges in the prior art renders the claim presumptively obvious. The '999 Patent discloses nothing critical or unexpected regarding the claimed range relative to the prior art ranges. Ex. 1002, ¶¶141-145.
8. The deodorant stick of claim 1, further comprising an additional antimicrobial comprising baking soda.	Native's deodorant stick comprised baking soda, which the '999 Patent describes as (and was known to be) an exemplary antimicrobial. Ex. 1001, 6:59-61.

	Ingredients Caprylic/capric triglyceride (which is a fancy way of saying fractionated coconut oil), arrowroot powder, stearyl alcohol, baking soda, shea butter, coconut oil, hydrogenated castor oil, polyglycerol-3 beeswax (which is a fancy way of saying cera bellina wax), jojoba esters, tocopherol (which is a fancy way of saying Vitamin E), L. acidophilus (which is a natural bacteria found in your body already), dextrose, glyceryl caprylate, glyceryl undecylenate. Our scented deodorants include oils. Lavender & Rose is made with Lavender Oil and Geranium Oil. Eucalyptus & Mint is made with Eucalyptus Oil and Spearmint Oil. Due to FDA recommendations, we use the term "fragrance" to refer to these oils. Ex. 1007, 11. A POSA would have known that deodorant compositions often use multiple antimicrobials. While baking soda was known to cause skin irritation for some users (*see* claim 1(a) analysis, above), a POSA would have been motivated to use baking soda as an additional antimicrobial to enhance odor protection. Ex. 1002, ¶¶146-147.
9. The deodorant stick of claim 1, wherein the stick comprises from about 8% to about 20% of the primary structurant.	Native discloses a deodorant stick that comprised stearyl alcohol, which is a structurant according to the '999 Patent (Ex. 1001, 5:6-11, 5:53-54). Ingredients Caprylic/capric triglyceride (which is a fancy way of saying fractionated coconut oil), arrowroot powder, stearyl alcohol, baking soda, shea butter, coconut oil, hydrogenated castor oil, polyglycerol-3 beeswax (which is a fancy way of saying cera bellina wax), jojoba esters, tocopherol (which is a fancy way of saying Vitamin E), L. acidophilus (which is a natural bacteria found in your body already), dextrose, glyceryl caprylate, glyceryl undecylenate. Our scented deodorants include oils. Lavender & Rose is made with Lavender Oil and Geranium Oil. Eucalyptus & Mint is made with Eucalyptus Oil and Spearmint Oil. Due to FDA recommendations, we use the term "fragrance" to refer to these oils. Ex. 1007, 11. Bianchi '254 singles out stearyl alcohol as a "widely used" structurant "of particular interest" for antiperspirants. Ex. 1008, ¶¶[0001], [0058]. While Native does not state the amount of stearyl alcohol to use, Bianchi '254 teaches making antiperspirant formulations comprising 12-25% of a fatty alcohol, such

	as stearyl alcohol, as the structurant present in the greatest amount. *Id.*, ¶¶[0018]-[0019], [0131] (showing formulations with 18% stearyl alcohol as primary structurant and 3.5% castor wax as secondary structurant). Thus, a POSA would have been motivated to use from about 8% to about 20% of a primary structurant such as stearyl alcohol in a deodorant stick, and would have had a reasonable expectation of success in doing so, because that amount of stearyl alcohol had already been used successfully as a structurant in deodorant and antiperspirant sticks. At a minimum, the overlap between the claimed primary structurant range and the ranges in the prior art renders the claim presumptively obvious. The ’999 Patent discloses nothing critical or unexpected regarding the claimed range relative to the prior art ranges. Also, of note, the ’999 Patent admits that a “currently marketed” product (Comparative Formula 1), which had the same nine most predominant ingredients by weight—in the same order—as the deodorant stick disclosed on the Native website, comprised 12% stearyl alcohol.

	 Ex. 1001, 3:1-45. At the very least, this is an admission that the claimed amount of stearyl alcohol was not inventive. Ex. 1002, ¶¶148-152.
10. The deodorant stick of claim 1, wherein the primary structurant has a melting point from about 50° C. to 75° C.	*See* claim 1(b). Ex. 1002, ¶153.
11. The deodorant stick of claim 1, comprising less than 5% of secondary structurants having	Native describes a deodorant stick that comprised secondary structurants (i.e., structurants provided in lesser amounts than the primary structurant), such as hydrogenated castor oil (castor wax), which a POSA would have understood (and the '999 Patent admits) have a melting point of at least about 60° Celsius. Ex. 1001, 5:6-19; Ex. 1008, Tables 1, 5.

a melting point above 60° C.	Ingredients: Caprylic/capric triglyceride (which is a fancy way of saying fractionated coconut oil), arrowroot powder, stearyl alcohol, baking soda, shea butter, coconut oil, hydrogenated castor oil, polyglycerol-3 beeswax (which is a fancy way of saying cera bellina wax), jojoba esters, tocopherol (which is a fancy way of saying Vitamin E), L. acidophilus (which is a natural bacteria found in your body already), dextrose, glyceryl caprylate, glyceryl undecylenate. Our scented deodorants include oils. Lavender & Rose is made with Lavender Oil and Geranium Oil. Eucalyptus & Mint is made with Eucalyptus Oil and Spearmint Oil. Due to FDA recommendations, we use the term "fragrance" to refer to these oils. Ex. 1007, 11. Because Native describes the use of secondary structurants but does not specifically state what percentages of secondary structurants to use, a POSA would have looked to guidance in the field. Bianchi '254 provides such guidance and establishes that using less than 5% was a known option that a POSA would have understood he or she could rely upon to supplement the information from Native. In particular, Bianchi '254 discloses antiperspirant sticks comprising 3-8% "co-structurant[s] having a melting point of 75 to 95° C." Ex. 1008, ¶¶[0060]-[0061]. Bianchi '254 specifically discloses embodiments of such sticks comprising co-structurants 3.5% castor wax and 1% polyethylene (in addition to stearyl alcohol, the primary structurant), for a total of 4.5% of secondary structurants having a melting point above 60° C. *Id.*, ¶[0131]. Thus, Bianchi '254 describes specific examples within the claimed range and a range that substantially overlaps the claimed range. A POSA therefore would have been motivated to use less than 5% of the secondary structurants in Native, and would have had a reasonable expectation of doing so, based on the use of that range of structurants in the prior art such as Bianchi '254. At a minimum, the overlap between the claimed range of secondary structurants having a melting point above 60° C. and the ranges in the prior art renders the claim presumptively obvious. The '999 Patent discloses nothing critical or unexpected

	regarding the claimed range relative to the prior art ranges. To the contrary, it admits that limiting secondary structurants merely reduces the hardness of the stick (Ex. 1001, 3:5-57), which a POSA would have expected based on the definition of structurant.[28] Ex. 1002, ¶¶154-157.
12. A method of making the deodorant stick of claim 1, comprising the steps of combining the deodorant components in an open tank system, mixing the components, heating the components, and cooling the component s	Bianchi '254 describes a method of making an anhydrous stick that involves combining components in an open tank system, mixing the components, heating the components, and cooling the components. Ex. 1008, ¶¶[0022]-[0024], [0073]-[0079] (describing a manufacturing process that involves "forming a mixture", "heating" and "cooling" the components). A POSA would have understood that such method steps could be carried out with standard lab equipment on an open tank system (e.g., a beaker or other open top vessel). Ex. 1002, ¶158 (citing Ex. 1003, 10:41-11:7).
13. The deodorant stick of claim 1, further comprising less than 8% of secondary structurants having a melting point at least about 60° C.	*See* claim 11. Ex. 1002, ¶159.
14. The deodorant stick of claim 1, wherein the primary structurant is stearyl alcohol.	*See* claim 1(b). Ex. 1002, ¶160.

[28] *See* n.13, above.

15. The deodorant stick of claim 1, further comprising shea butter.	Native discloses a deodorant stick that comprised shea butter, which is an emollient according to the '999 Patent (Ex. 1001, 6:47-57). Ingredients Caprylic/capric triglyceride (which is a fancy way of saying fractionated coconut oil), arrowroot powder, stearyl alcohol, baking soda, shea butter, coconut oil, hydrogenated castor oil, polyglycerol-3 beeswax (which is a fancy way of saying cera bellina wax), jojoba esters, tocopherol (which is a fancy way of saying Vitamin E), L. acidophilus (which is a natural bacteria found in your body already), dextrose, glyceryl caprylate, glyceryl undecylenate. Our scented deodorants include oils. Lavender & Rose is made with Lavender Oil and Geranium Oil. Eucalyptus & Mint is made with Eucalyptus Oil and Spearmint Oil. Due to FDA recommendations, we use the term "fragrance" to refer to these oils. Ex. 1007, 11. Also, of note, the '999 Patent admits that a "currently marketed" product (Comparative Formula 1), which had the same nine most predominant ingredients by weight—in the same order—as the deodorant stick disclosed on the Native website, comprised 6% shea butter. Comparative Formula 1 Hardness (Penetration mm * 10) 63 Caprylic/Capric Triglyceride 34.15 Arrowroot Powder 23 Stearyl Alcohol 12 Ozokerite Castor Wax 3 Baking Soda 12 Magnesium Hydroxide Shea Butter 6 Coconut Oil 4.75 Polyglycerol-3 Beeswax 2.5 Jojoba Esters 1 70 Glyceryl Caprylate (and) Glyceryl Undecylenate 1 Perfumes 0.6 Cyclodextrin Tapioca Starch

	Ex. 1001, 3:1-45. At the very least, this is an admission that the use of shea butter was not inventive. Ex. 1002, ¶¶161-162.
17. The deodorant stick of claim 1, comprising at least about 25% caprylic/capric triglyceride.	*See* claim 7. Ex. 1002, ¶163.
18. The deodorant stick of claim 1, comprising at least about 25% of a triglyceride.	*See* claim 7. Ex. 1002, ¶164.

v. Ground 5 – Claim 16 is Obvious Over Native in view of Bianchi '254, Easy Homemade, and Millet

Overview of the Combination

The combination of Native in view of Bianchi '254, Easy Homemade, and Millet renders claim 16 obvious. As explained above, Native in view of Bianchi '254 and Easy Homemade renders obvious all of the limitations of independent claim 1. *Supra* § VII.C.iv. Native, Bianchi '254, and Easy Homemade do not expressly teach the usefulness of tapioca starch in deodorant sticks. A POSA would have known that sweat and moisture in the axillary could give rise to malodor via growth of odor-causing bacteria and would have would have looked for natural fillers that were effective in absorbing sweat and moisture. Millet teaches starch is an effective filler in deodorants capable of absorbing sweat and moisture, and that

tapioca starch is specifically preferred. Ex. 1044, ¶¶[0038]-[0039], [0042]. Accordingly, it would have been obvious to use tapioca starch in the Native deodorant stick, as taught by Millet. Ex. 1002, ¶165.

Petitioner is not aware of any secondary considerations that would rebut obviousness.

Motivation Supporting the Combination

It would have been obvious to use the teachings of Bianchi '254, Easy Homemade, and Millet in Native's deodorant stick composition. A POSA would have been motivated to combine Native, Bianchi '254, and Easy Homemade for the reasons stated in Section VII.C.iv, above. While Native, Bianchi '254, and Easy Homemade do not expressly teach the usefulness of tapioca starch in deodorant sticks, a POSA would have known that sweat and moisture in the axillary give rise to odor-causing bacteria and would have looked to publications in the field of deodorants describing natural fillers that were effective in absorbing moisture and sweat.

Millet is publication in the field that describes anhydrous deodorant sticks containing ingredients of natural origin. Ex. 1044, ¶[0004]. Millet states its compositions provide a "soft texture," that are effective against "perspiration odors." *Id.* It explains that starch can be used advantageously as a filler to absorb moisture and sweat in deodorants, and that tapioca starch is specifically preferred. *Id.*,

¶¶[0038]-[0039], [0042]. Accordingly, a POSA would have looked to Millet to find effective fillers like tapioca starch, particularly where the known improvement was known to maintain a natural composition effective against "perspiration odors" and provide a "soft texture." Ex. 1002, ¶¶166-168.

Reasonable Expectation of Success

A POSA would have had a reasonable expectation of success in formulating a deodorant stick, using the teachings of Native, Bianchi '254, Easy Homemade and further adopting Millet's tapioca starch. Millet shows that starch was a well-known filler ingredient capable of absorbing sweat and moisture, and that tapioca starch was preferred. Ex. 1044, ¶¶[0038]-[0042], [0048]-[0050]. Moreover, a POSA would have appreciated that deodorant compositions could be formed through various combinations of known ingredients, such as fillers, as simple design choices. Ex. 1002, ¶169.

Analogous Art

Native, Bianchi '254, Easy Homemade, and Millet are in the same field as the '999 Patent, and all five relate to personal care compositions, including deodorants and/or antiperspirants.[29] *See* Ex. 1001, Abstract, 6:59-9:20; Ex. 1007, 5-8, 11; Ex. 1008, Abstract, ¶¶[0010]-[0021]; Ex. 1009, 5-9; Ex. 1044, Abstract, ¶¶[0001]-[0003]; Ex. 1002, ¶170.

[29] *See* n.8, above.

a) [16] The deodorant stick of claim 1, further comprising tapioca starch.

Native, Bianchi '254, and Easy Homemade do not expressly teach the usefulness of tapioca starch in a deodorant stick. Millet discloses deodorant sticks comprising starch as a filler capable of absorbing moisture and sweat, and describes tapioca starch as preferred. Ex. 1044, ¶¶[0002], [0038]-[0039], [0042], [0048], [0050]. A POSA would have been motivated to use tapioca starch as a filler (and had an expectation of success) since Millet indicated that it was suitable for natural compositions having a "soft texture" and which were also effective against "perspiration odors." *Id.*; Ex. 1002, ¶171.

VIII. CONCLUSION

Petitioner submits that claims 1-18 of the '999 Patent are unpatentable and requests institution of *Inter Partes* Review.

DATED: June 28, 2024 Respectfully submitted,

By: _/Justin J. Oliver/_____
Justin J. Oliver
Reg. No. 44,986
VENABLE LLP
600 Massachusetts Ave., NW
Washington, DC 20001
T 202-721-5423
F 202-344-8300

CERTIFICATE OF COMPLIANCE WITH 37 C.F.R. § 42.24

I hereby certify that this petition complies with the word count limitation of 37 C.F.R. § 42.24(a)(1)(i) because the petition contains a total of 13,968 words. This total excludes the cover page, signature block, and the parts of the petition exempted by 37 C.F.R. § 42.24(a)(1).

DATED: June 28, 2024

/Justin J. Oliver/_____

Justin J. Oliver
Reg. No. 44,986
VENABLE LLP
600 Massachusetts Ave., NW
Washington, DC 20001
T 202-721-5423
F 202-344-8300

CERTIFICATE OF SERVICE

The undersigned certifies that a complete copy of this Petition for *Inter Partes* Review of U.S. Patent No. 11,540,999 and all Exhibits and other documents filed together with this Petition were served on the official correspondence address for the patent shown in PAIR via FEDERAL EXPRESS next business day delivery, on this date:

GLOBAL IP SERVICES
CENTRAL BUILDING, C9
ONE PROCTER AND GAMBLE PLAZA
CINCINNATI, OH 45202

DATED: June 28, 2024

/Justin J. Oliver/_____
Justin J. Oliver
Reg. No. 44,986
VENABLE LLP
600 Massachusetts Ave., NW
Washington, DC 20001
T 202-721-5423
F 202-344-8300