

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

OMEGA LINER COMPANY, INC.,

Petitioner

v.

BUERGOFOL GmbH,

Patent Owner.

IPR2023-01372
Patent 9,657,882 B2

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

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PETITIONER’S EXHIBIT LIST

Exhibit	Description	Previously Submitted
EX1001	U.S. Patent No. 9,657,882 (“ the ’882 Patent ”)	X
EX1002	File History of U.S. Patent No. 9,657,882	X
EX1003	Declaration of Dr. Steven B. MacLean (“ MacLean Decl. ”)	X
EX1004	<i>Curriculum Vitae</i> of Dr. Steven B. MacLean	X
EX1005	International Publication No. WO2011/157356 (“ Hummel ”) with certified English translation	X
EX1006	International Publication No. WO2011/157356 (Hummel) – original publication in German language	X
EX1007	International Publication No. WO2011/054434 (“ Schuhmann ”) with certified English translation	X
EX1008	International Publication No. WO2011/054434 (Schuhmann) original publication in German language	X
EX1009	Japanese Publication No. JP2002001819A (“ Nagai ”) with certified English translation	X
EX1010	Japanese Publication No. JP2002001819A (Nagai) original publication in Japanese language	X
EX1011	U.S. Publication No. 2011/0083765 (“ Stark ” or “ Stark-Hummel ”)	X
EX1012	U.S. Patent No. 4,009,063 (“ Wood ”)	X
EX1013	U.S. Publication No. 2005/0194718 A1 (“ Blades ”)	X

EX1014	International Publication No. WO2008/095967 (“ Gunter ”) with certified English translation	X
EX1015	International Publication No. WO2008/095967 (Gunter) original publication in German language	X
EX1016	Abdel-Bary, E., <i>Handbook of Plastic Films</i> (2003), pp. 5-40	X
EX1017	Alam, S., <i>Experimental and Numerical Evaluation of Cured in Place Pipe Lining System for High Temperature Applications in Sewer Pipes</i> (2011), pp. 32-51	X
EX1018	Bennett, R., <i>Guidelines for Trenchless Technology: Cured-in-Place Pipe (CIPP), Fold-and-Formed Pipe (FFP), Mini-Horizontal Directional Drilling (Mini-HDD), and Microtunneling</i> (1995), pp. 2-1 - 2-7	X
EX1019	Callister, W., <i>Materials Science and Engineering: An Introduction, Eighth Edition</i> (2010), pp. 537-540, 610-614	X
EX1020	Costa, F., <i>Thermoplastic Elastomers</i> (2009), pp. 101-146	X
EX1021	Deopura, B., <i>Polyesters and Polyamides</i> (2008), pp. 41-48	X
EX1022	Donaldson, B., <i>Water Quality Implications of Culvert Repair Options: Vinyl Ester Based and Ultraviolet Cured-in-Place Pipe Liners</i> (2012), pp. 1-21	X
EX1023	Khudyakov, I., <i>Release Coatings: Defining Performance</i> (2019), pp. 1-12	X
EX1024	Mark, H., <i>Encyclopedia of Polymer Science and Technology, Third Edition</i> (2004), pp. 203-218	X

	(Vol. 1), 635-670 (Vol. 1), 115-124 (Vol. 4), 63-88 (Vol. 6)	
EX1025	Nwabunma, D., <i>Polyolefin Blends</i> (2008), pp. 3-16, 27-29	X
EX1026	Odian, G., <i>Principles of Polymerization, Fourth Edition</i> (2004), pp. 1, 103-105, 465	X
EX1027	Salem, S., <i>Use of Trenchless Technologies for a Comprehensive Asset Management of Culverts and Drainage Structures</i> (2008), pp. 45-51	X
EX1028	Sterling, R., <i>State of Technology of Rehabilitation of Wastewater Collection Systems</i> (2010), pp. 16-20, A-12 – A-17	X
EX1029	<i>Pipeline Renewal Technologies™, The Elements of CIPP: Cured-in-Place Materials and Processes</i> (2020), pp. 1-11	X
EX1030	Mark, J., <i>Polymer Data Handbook</i> (1999), pp. 180-188, 518-527, 780-786	X
EX1031	Wypych, G., <i>Handbook of Antiblocking, Release, and Slip Additives 3rd Edition</i> (2014), pp. 1-5	X
EX1032	RESERVED	
EX1033	Original Complaint, August 15, 2022, <i>Buergofol GmbH v. Omega Liner Company, Inc.</i> , Case No. 22-cv-04112-KES (D. S.D.) (Dkt. 1)	X
EX1034	Affidavit of Service, September 26, 2022, <i>Buergofol GmbH v. Omega Liner Company, Inc.</i> , Case No. 22-cv-04112-KES (D. S.D.) (Dkt. 7)	X
EX1035	Buergofol's Opposition to Motion to Dismiss, November 18, 2022, <i>Buergofol GmbH v. Omega Liner Company, Inc.</i> , Case No. 22-cv-04112-KES (D. S.D.), (Dkt. 161)	X

EX1036	Amended Scheduling Order, July 12, 2023, <i>Buergofol GmbH v. Omega Liner Company, Inc.</i> , Case No. 22-cv-04112-KES (D. S.D.), (Dkt. 161)	X
EX1037	First Amended Complaint, July 13, 2023, <i>Buergofol GmbH v. Omega Liner Company, Inc.</i> , Case No. 22-cv-04112-KES (D. S.D.) (Dkt. 169)	X
EX1038	Buergofol's Responses to Omega's Interrogatories to Buergofol (Set Two) (Nos. 6-13), March 31, 2023	X
EX1039	Buergofol's Infringement Contentions (Response to Interrogatory No. 14), April 24, 2023	X
EX1040	Dr. Kurt Stark LinkedIn Profile, https://www.linkedin.com/in/dr-kurt-stark-b681881b8/ , September 8, 2023	X
EX1041	Sotera Stipulation	X
EX1042	Declaration of Monte M. Bond in Support of Petitioner's Motion for <i>Pro Hac Vice</i> Admission Under 37 C.F.R. §42.10(c)	X
EX1043	U.S. Patent No. 5,114,763 (Brant et al.)	
EX1044	U.S. Publication No. 2012/0225998 A1 (Kiss et al.)	
EX1045	U.S. Publication No. 2006/0293474 A1 (Brant et al.)	
EX1046	U.S. Publication No. 2009/0076216 A1 (Kiss et al.)	
EX1047	Material Data Sheet for Lanxess Durethan® C 38 F, https://www.matweb.com/search/datasheet_print.aspx?matguid=b743d35d2c4b4d4da2864e128b8f21ba , July 31, 2024	

EX1048	<i>Technical Information Durethan® C 38 F Series</i> , Lanxess, August 21, 2012	
EX1049	Material Data Sheet for Evalior Durethan® B 40 FAM, https://www.matweb.com/search/datasheet_print.aspx?matguid=f1e36ee80e74408caa8eaa023ca5af0b , July 2, 2024	
EX1050	Ash, M., <i>Handbook of Plastic and Rubber Additives, Second Edition</i> (2013), pp. 678, 687, 689, 734, 735, and 890	
EX1051	Product Information Sheet for Constab PE-SA 270, Antiblock-Slip Masterbatch, Constab Polyolefin Additives GmbH, (October 1, 2012)	
EX1052	Deposition Transcript of Dr. Patrick Brant, taken on August 7, 2024	
EX1053	U.S. Publication No. 2013/0085244 A1 (ZHAO et al.)	
EX1054	Buergofol's Infringement Contentions, May 7, 2024	
EX1055	Buergofol's Response to Request for Admission No. 15, August 31, 2024	
EX1056	Declaration of Irina Hinrichs regarding translation of International Publication No. WO2011/157356 (EX1005)	
EX1057	Transcript of September 17, 2024 Conference Call with Board	X
EX1058	Quality Agreement (Buergofol and Saertex), February 27, 2006, with certified English translation (translation of EX1059)	

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EX1062	Declaration of Nils Fuechtjohann, in original German language, executed version	
EX1063	Certified English translation of the Declaration of Nils Fuechtjohann (EX1062)	
EX1064	TEGO® RC Silicones Practical Guide, August 2013	
EX1065	U.S. Publication No. 2024/0101752 A1 (Amajjahe et al.)	
EX1066	Overview of Materials for Nylon 6, Film Grade, https://www.matweb.com/search/datasheet_print.aspx?matguid=6532b02c347d446b8241390cc04a3e6 , September 4, 2024	
EX1067	Overview of Materials for Linear Low Density Polyethylene (LLDPE), Film Grade, https://www.matweb.com/search/datasheet_print.aspx?matguid=48fba88d2f7e4279978ed05fa575cadf , September 4, 2024	
EX1068	Buergofol's Letter to Dr. Stark, May 22, 2024, with certified translation (translation of EX1069)	
EX1069	Buergofol's Letter to Dr. Stark, May 22, 2024, in original German language	

EX1070	Buergofol's Email to Dr. Stark, June 21, 2024, with certified translation (translation of EX1071 without attached declaration)	
EX1071	Buergofol's Email to Dr. Stark, June 21, 2024, in original German language and with original English language declaration attached to email	
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I. INTRODUCTION

Buergofol GmbH (“PO”) fails to meaningfully dispute that Omega’s obviousness combinations teach all elements of claims 1, 3-7, and 10-13 (“Challenged Claims”) of U.S. Patent No. 9,657,882. Instead, PO presents meritless arguments that ignore the combined teachings of the references or misrepresent them through straw-man arguments like bodily incorporation. The Board need go no further than it did at institution to find the Challenged Claims unpatentable.

PO’s claim of “unexpected results” relies on self-serving declarations filled with unsupported subjective beliefs – and false statements. PO’s litigation-driven claim construction is incorrect and unnecessary to resolve this IPR, as accepting it would only strengthen Hummel as anticipatory prior art and render the claims indefinite.

II. OBVIOUSNESS GROUNDS

A. POSITA’s Knowledge of Adhesion Problems.

PO does not dispute that using migrating compounds in films to reduce adhesion risk was well-known. Instead, relying on false declarations, PO falsely claims it “invented” the coating after allegedly discovering an adhesion risk *in its own film* in the “spring of 2012.” (*See infra*, Section III.D.1.)

PO asks the PTAB to find that a POSITA would not recognize any adhesion or tearing problems “with the *Hummel film*.” (POR, 12:7-10.) However, Hummel

teaches removal of the inner film and the risks of adhesion-tearing after resin curing. (EX1005, 5:4-7, 5:13-17, 7:9-10, 12:23-24, 15:7-9, 22:25-30, 23:1-3, 24:13-14.) Hummel discloses the need for robust mechanical properties of inner film in a CIPP liner to “withstand the loads occurring ... during inflation ... or – after successful repair – during removal from the pipe.” (EX1005, 5:13-17.) Hummel also discloses an improved inner film that can be “peeled off¹ as an inner tube, preferably without tearing or seizing therefrom.” (EX1005, 7:9-10, 23:3.) PO’s inventor declarations assert no issues with Hummel’s film “because the film was never made commercially (POR, 29:6-10; EX2003, ¶¶15-20; EX2004, ¶13), but whether anyone commercialized a film in the scope of Hummel’s claims is irrelevant to the plain teachings of Hummel.

Also, a POSITA’s knowledge is not limited to a single patent reference. *Application of Wood*, 599 F.2d 1032, 1036 (C.C.P.A. 1979). For example, Nagai

¹ PO quibbles that “withdraw/remove” is a better translation of “abziehen/abgezogen” in Hummel. (POR, 23-29.) However, “peel off” is the more accurate translation (EX1056, Decl. of Irina Hinrichs.) The ’882 Patent itself uses “peeled off” twice for translating the term “abgezogen.” (EX1001, 8:59, 8:63; EX1002, 23:7, 23:9.)

expressly discloses the various problems of adhesion, tearing and clogging of the inner film. (EX1009, ¶¶0008, 0016, 0026, 0027, 0029.) Furthermore, both Hendrik Hummel and Dr. Stark (co-inventors of the '882 Patent) were aware of the “permanently bonded,” “sticking,” “ripping” and “tearing” problems with inner films adhering to cured resin, as disclosed in U.S. Publication No. 2011/0083765A1 (“Stark-Hummel”). (EX1011, ¶¶0072, 0079, 0093, 0174, 0175.)

B. Hummel and Schuhmann (Ground 3).

PO does not dispute that Hummel as modified by Schuhmann teaches all elements of the Challenged Claims as Schuhmann discloses a coating of a migrating compound “applied over . . . the outer facing external side.”² Instead, PO focuses solely on Hummel’s need to improve release effect, improperly ignoring the combined teachings, and wrongly argues bodily incorporation of Schuhmann into Hummel, which the petition never proposed.

PO baselessly argues there would be no reasonable expectation of success in modifying Hummel with Schuhmann because Schuhmann is for “sticky” products. However, the '882 Patent expressly states that the “stickiness” of pipelining cured “sticky resin” is similar to adhesive tape used in its release tests. (EX1001, 13:19-

² Schuhmann also teaches incorporation of the migrating compound into the external layer that migrates to form a coating. (Petition, Paper 2, 42:21-43:12.)

21, 17:34-36.) Like the '882 Patent, Schuhmann discloses using “wax” as the preferred release agent. (EX1007, 6:10-11.) Schuhmann also discloses the use of Constab® PE-SA 270 as the release agent – the same “migrating compound” cited in the '882 Patent. (EX1007, p. 23; EX1001, 15:15-18, 16:3-65; EX1051.)

PO’s argument that “Hummel does not disclose any need or desire to improve the release effect” is not only without merit but is irrelevant. PO cannot demonstrate nonobviousness by attacking a single reference – a proper analysis considers what the *combination* of references would suggest. *In re Keller*, 642 F.2d 413, 425 (C.C.P.A. 1981). Furthermore, Hummel discloses inner film that may remain attached to the cured resin or be removed without “tearing or seizing,” demonstrating a need to improve the release effect for the removable version. (EX1005, 7:9-10, 15:7-10, 15:23-24, 23:3.) And in any event, modifying Hummel with Schuhmann’s release agent is nothing more than use of a known technique to improve a similar device. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). Even had Hummel not provided an explicit teaching in this regard (and it plainly does), such is not required under the law of obviousness.

PO’s argument that a POSITA would not modify Hummel’s external layer to include an embossed coating of Schuhmann is just an argument for bodily incorporation. “The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference. . .

. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.” *In re Keller*, 642 F.2d at 425. Furthermore, Hummel expressly states that “[p]referably, the multilayer film according to the invention can be embossed” (EX1005, 13:13, emphasis added). Also, Schuhmann discloses a non-embossed “smooth” release film in Comparative Example V1b containing 4% Constab® PE-SA 270, same as the “migrating compound” used in the ’882 Patent. (EX1007, p. 23; EX1001, 15:15-18, 16:3-65; EX1051.) Additionally, and while irrelevant, PO’s claim that embossing in Schuhmann would create mechanical interlocking due to “valleys” is baseless, as Schuhmann describes patterns like “point-shaped,” with embossing heights as small as 5 µm—similar to the size of calcium carbonate particles in Constab® PE-SA 270 used in the ’882 Patent as the “migrating compound.” (EX1007, 15:1-30; EX1051.)

Finally, PO’s claims of so-called “unexpected results” are addressed in Section III below.

C. Hummel and Nagai (Ground 4).

PO does not dispute that Hummel as modified by the teachings of Nagai also teach all elements of the Challenged Claims.³ Instead, it focuses solely on Hummel's need to improve release effect, improperly ignoring the combined teachings, and wrongly argues bodily incorporation.

PO repeats its flawed argument that Hummel does not need a release agent. PO cannot rewrite the plain language of a reference, or demonstrate nonobviousness by attacking a single reference – a proper analysis considers what the *combination* of references would suggest and knowledge in the art. *In re Keller*, 642 F.2d at 425. Hummel discloses inner film that may remain attached to the cured resin or be removed without “tearing or seizing,” demonstrating an interest in a release effect for the removable film. (EX1005, 7:9-10, 15:7-10, 15:23-24, 23:3.) And, in any event, it was well-known in the art to use release agents with removable films. (EX1007, 5:6-15, 18:9-29; EX1009, ¶0016.)

Like Hummel, Nagai expressly discloses the problems with adhesion and tearing of the inner film. (EX1009, ¶¶0008, 0016, 0026, 0027, 0029.) A POSITA

³ PO makes a baseless argument for dependent claim 11 attempting to improperly rewrite “external side” to “external layer” as to the location where the migrating compound is added to.

would logically be motivated to combine Nagai's release agent consisting of "silicone" or "wax" with Hummel to improve the release properties of the removable film. (EX1009, ¶0016.) And in any event, modifying Hummel with Nagai's release agent is nothing more than use of a known technique to improve a similar device. *KSR*, 550 U.S. at 417 (2007).

PO also incorrectly asserts that Nagai does not disclose the limitations of dependent claim 11. PO improperly attempts to rewrite claim 11 by stating the claim requires the migrating compound to be added to the external "layer" and not the external "side" as Nagai teaches. (POR, 55:18-20.) However, the express language of claim 11 states that the migrating compound is only "added to an external side" of the film which is perfectly consistent with the language of claim 1 "wherein the coating is applied over ... the outer facing external side."⁴ (EX1001, 20:34-36.)

⁴ During prosecution, PO cancelled original dependent claim 8 which stated "added to an external layer" and replaced it with dependent claim 25 (now issued claim 11) which stated "added to an external side." (EX1002, 117:22-25, 137:13-15.) During prosecution, PO also added independent claim 32 (now issued claim 1), which added the "applied over ... external side" wherein clause not present in original independent claim 1 that was also cancelled. (EX1002, 116:2-5, 136:10-11, 138:16-17.)

PO's claim that Nagai's coatings (wax or silicone) would negatively impact film properties is baseless and has no support. First, PO does not dispute that the use of migrating compounds (e.g., wax) in film was well-known to a POSITA. Second, the TEGO® RC silicones used by PO are well-known for use on plastic films. (EX1064, p. 21.) Finally, the obviousness test is not whether Nagai may be bodily incorporated into Hummel, but rather what their combined teachings would suggest to a POSITA. *In re Keller*, 642 F.2d at 425.

Finally, PO asserts that Hummel and Nagai use different curing systems to support a baseless claim that the inner film would collapse on UV lamps. (EX1005, 5:7-12.) But, the ground only relies on Nagai for teaching that it is known to add a migrating compound to a film for addressing potential release issues. It does not rely on Nagai for a curing methodology. And in any event, both Hummel and Nagai disclose UV-curing of resin where the liner is inflated. (EX1005, 5:7-12; EX1009, ¶0012.)

D. Hummel Does Not Teach Away.

PO argues that Hummel teaches away but does not identify anything in Hummel that in any way discourages a release coating. Furthermore, Hummel discloses inner film that may remain attached to the cured resin or be removed without “tearing or seizing,” demonstrating a need to improve the release effect for the removable version. (EX1005, 7:9-10, 15:7-10, 15:23-24, 23:3.) A POSITA

would have known that to create a removable inner film with a release effect, they could either add a migrating compound (e.g., wax) to the external layer to form a release coating, or apply a release coating (e.g., silicone, wax) over the external surface. (EX1003, ¶¶178-195, 234-242.)

Finally, PO's argument that Hummel "teaches away from conditioning its film" (POR, 57:6-14) is misplaced, as Hummel defines "conditioning" as the reversible absorption of moisture by the film which is not related to a release coating (EX1005, 8:9-13).

III. NO SECONDARY EVIDENCE OF NONOBVIOUSNESS

A. PO Failed to Compare Results to Closest Prior Art.

To rebut a *prima facie* case of obviousness, comparisons must be made with the closest prior art reference. *In re Burckel*, 592 F.2d 1175, (CCPA 1979). PO's comparison of examples B1-B6 with V1 is entirely inadequate, as V1 is not identified as prior art nor is it the closest prior art.

For the "applied over" coating, the single closest reference is Nagai, which teaches applying a "release agent" coating ("wax" or "silicone") to the film's external surface. (EX1009, ¶0016.) For PO's proposed construction of a coating formed by "migration," Hummel is the closest prior art, disclosing the external layer treated with migrating compounds like "lubricants" and "waxes" from "0.01-20% by weight." (EX1005, 11:18-12:4).

B. Results Lack Both Commensurability and Nexus to Claim Scope.

1. No Results of “Applied Over” Migrating Compound.

PO provides test results only for a migrating compound “incorporated into” the external layer but offers none for the claimed migrating compound “applied over” the external surface. As a result, PO’s “unexpected results” are not commensurate with the claim scope and should be disregarded.

Without such testing, it’s unclear whether the alleged results are from a “coating” or Constab® PE-SA 270 (polyethylene + calcium carbonate + unknown slip agent, EX1051) “incorporated into” the external layer. Instead, PO’s expert only offers an unsupported and counterintuitive assertion that a migrating compound “applied over” the surface would somehow yield the same elongation properties as Constab® PE-SA 270 incorporated into the external layer. (EX2001, ¶¶73, 75.)

2. No Results of Other Migrating Compounds Claimed.

Examples B4-B6 only test adding Constab® PE-SA 270 which is mainly polyethylene with calcium carbonate and an unknown “slow migration antiblock additive.” (EX1051.) The claim term “migrating compound” is broad, as the ’882 Patent states the “migrating compound has preferably a molecular weight lower than 10,000 g/mol,” encompassing thousands or even millions of different compounds. (EX1001, 5:35-36.)

PO fails to explain why it never tested other migrating compounds within this broad claim scope. PO also has no basis for “reasonably concluding that the great

number and variety of compositions included in the claims would behave in the same manner as the tested composition.” *In re Lindner*, 457 F.2d 506, 509 (CCPA 1972).

Claim 1 also has no minimum or maximum amount of migrating compound, therefore PO’s unexpected results evidence with unknown percentages of alleged migrating compound is not commensurate in scope with the claims.

3. Results Not from Claimed “Migrating Compound”.

Dr. Boutrid merely speculates, without providing any supporting evidence or rationale, that a “possible cause” for the increased elongation “could be an additional protective or healing effect on the external polyamide layer” from the “coating.” (EX2004, ¶22.) However, PO has failed to identify the “coating” of a “migrating compound” as the “contributing cause” for the alleged unexpected results in the end product, and therefore has failed to establish a nexus. *In re Magerlein*, 602 F.2d 366, 373, (CCPA 1979). In fact, PO and its expert have no knowledge of what or how much “migrating compound,” *if any*, is present in Constab® PE-SA 270 used in examples B4-B6 (*see infra*, Section III.D.2.), and thus, no nexus or commensurability exists.

In examples B4-B6, the relatively small amount of increased elongation at break and splice formation would be from the majority component polyethylene (not a “migrating compound”) in Constab® PE-SA 270. (EX1051; EX1050, p. 14.) Polyethylene is significantly more elastic than polyamide, so it is common sense that

adding polyethylene to polyamide would increase the elasticity of the film. (EX1066, p. 2, rows 6-10; EX1067, p. 2, rows 1-6.) Furthermore, the increased release effect in examples B4-B6 would be from the calcium carbonate (also not a “migrating compound”) in Constab® PE-SA 270. (EX1051.) Accordingly, “the offered secondary consideration actually results from something other than what is both claimed and *novel* in the claim, [so] there is no nexus to the merits of the claimed invention.” *In re Huai-Hung Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011) (emphasis in original).

4. Unknown 1% in Example B5.

Example B5 identifies the external layer 1 as containing 85.5% Durethan® C38F, 9.5% Durethan® B40FAM and 4% Constab PE-SA 270 (EX1001, 16:33-35), but this only totals 99%, leaving 1% unaccounted for. It is unknown if the unidentified 1% in example B5 is the cause of the results or something else.

5. No Testing with Claimed “Reactive Plastic Resin.”

PO never provided any testing of the film used with “reactive plastic resin,” as required by claim 1. (EX1001, 20:24-26.)

6. Comparative Example V1 Is Within Claim Scope.

PO asserts comparative example V1 has a migrating compound and therefore would be in the scope of claim 1. Since comparative example V1 is within the scope of claim 1 and has no unexpected results, there are no unexpected results for the claimed range.

C. Results Are Expected.

1. Results Expected for Release Effect and COF.

The amount and type of “migrating compound” in examples B4-B6 and V1 is unknown, and PO’s expert and Dr. Boutrid’s claims are false, making them insufficient to establish unexpected results. (*See infra*, Sections III.D.2-3.)

A POSITA would know that including a lubricant (e.g., wax) and a particle filler (e.g., calcium carbonate) would not only improve the release effect but would also lower the coefficient of friction as disclosed by Blades. (EX1013, Fig. 1, ¶¶0080-0090.) Also, Dr. Boutrid testified that he “anticipated” the increased release effect would be “accompanied by a lowering of the coefficient of friction (COF).” (EX2004, ¶¶21, 47; *see also*, EX1001, 17:56-57.)

2. Silicone Coating Expected to Increase Release and Elasticity.

PO claims unexpected results from adding a coating of polysiloxane (silicone) to the film. Silicone, including TEGO® RC silicone acrylates, added to plastic film is widely known to a POSITA to increase the release effect against adhesives, such as the tape used for testing in the ’882 Patent. (EX1003, 39:26-27, 40:9-41:3; EX1009, ¶¶0016; EX1014, pp. 3, 11, 20; EX1064, pp. 4, 17.) PO applied the TEGO® RC silicone acrylates at the recommended application weight of approximately 1 g/m² (EX1001, 15:40-65; EX1064, p. 9), which predictably provided the *expected* release effect against the test adhesive tape.

Furthermore, adding an elastic silicone layer to film would naturally increase the film's mechanical properties, such as elasticity and strength, so there is no unexpected improvement in mechanical properties adding a silicone layer to plastic film. For instance, the patent application filed by the manufacturer of TEGO® RC silicone acrylates discloses the high elastic properties of the TEGO® RC silicone acrylates having significantly higher elongation at break properties compared to polyamide. (EX1065, ¶¶0318, 0331, Formulations F7-F9.)

3. Polyethylene in Constab PE-SA 270 Increased Elongation.

Constab® PE-SA 270 is an “Antiblock-Slip Masterbatch,” which inherently would increase release effect and reduce the COF. (EX1051.) Additionally, since polyethylene is the primary material in Constab® PE-SA 270 (EX1050, p. 14; EX1051) and is significantly more elastic than polyamide (EX1066-EX1067), adding it to the external polyamide layer would naturally increase elongation at break and improve splice formation.

4. Results Not Superior.

The test data does not indicate any superior properties. Example B1 (silicone coating) shows a small 2% increase for splice formation and a small 15.9% increase for elongation at break. Example B4 (migrating compound) shows an even smaller 1.1% increase for splice formation and an even smaller 8.5% increase for elongation at break. The other examples are not much better.

To help put the test data in perspective, the splice formation range for examples B1-B6 is only 17.0-22.8% – only slightly better than 15.9% for example V1. Furthermore, the elongation at break range for examples B1-B6 is only 89-108.3% – only slightly better than 80.5% for example V1.

D. PO's Declarations Lack Credibility.

PO's expert, Dr. Patrick Brant, makes numerous unsupported statements, relying heavily on demonstrably false statements in the inventor declarations discussed below. (EX2001, ¶13 et seq.) He simply "agrees" with Dr. Boutrid's unsupported assertions, providing no explanation or evidence for how a "coating" of a migrating compound would improve mechanical properties or why the results would be unexpected. (EX2001, ¶¶28, 33, 58, 59, 66-75.)

Furthermore, both inventors have a financial stake in the outcome, as Gregor Schleicher is a co-owner of Buergofol (EX2003, ¶4) and both are entitled to royalty payments from profits related to the '882 Patent (EX1038, 8:23-9:7).

1. False Statements About Knowledge of Adhesion Problems.

The two inventor declarations falsely claim there were never any adhesion and tearing issues with PO's inner film before the "spring of 2012." (EX2003, ¶¶22-24; EX2004, ¶¶14-19.) However, there were in fact, "massive" problems.

Dr. Boutrid received a complaint⁵ dated February 26, 2009 from PO's customer Saertex stating "[d]uring several construction projects, our customers complained on a massive scale because the inner foil you supplied was extremely difficult to remove from the liner after installation." (EX1060, p. 2; EX1061-EX1063.) A sample of the film with adhesion problems was even sent to PO by Saertex. (*Id.*)

Further demonstrating PO's awareness of adhesion issues long before the "spring of 2012," Dr. Boutrid, as PO's "QM/Quality Officer," signed a 2006 Quality Management Agreement with Saertex acknowledging problems with "[s]trong adhesion of the film to the laminate after curing." (EX1058, p. 2 at §1, p. 6 at §7; EX1059, p. 1, §1.)

2. False Statements About EBS Wax in Examples B4-B6.

The '882 Patent, along with PO's opposition and supporting declarations, assert that the external layer of examples B4-B6 contain 1%, 4%, and 6% by weight of "EBS wax" as the "migrating compound" added to the external layer of the inner

⁵ Omega independently obtained this evidence, which should have been served as inconsistent evidence, but instead appears to have been improperly concealed. *Spectrum Solutions LLC v. Longhorn Vaccines & Diagnostics, LLC*, IPR2021-00847, Paper No. 142 (PTAB July 11, 2024).

film which migrated to the surface to create a release coating. (EX1001, 15:15-18, 16:4-50, 18:9-18, 19:58-67; POR, pp. 65, 66, 67:1-11; Ex. 2001, ¶¶ 69–72; Ex. 2004, ¶¶ 36, 41–43, 48, 58.) The '882 Patent defines “wax” by its ordinary meaning (EX1001, 5:39-55) and says “[t]he (release) wax Constab PE-SA 270 made with ethylene bis stearamide (EBS) ... was used as migrating lipophilic compound.” (EX1001, 15:15-18, emphasis added.)

However, Constab® PE-SA 270 is not a “release wax,” “EBS wax,” or a “migrating lipophilic compound.” Based on available information, it is an “Antiblock-Slip Masterbatch” comprised mainly of *polyethylene* as a carrier with *calcium carbonate* as an antiblock and an unknown “slow migration antiblock additive.” (EX1051.) The percentages of each component are not disclosed.

While PO has been less than forthcoming about the contents of Constab® PE-SA 270, Omega found an additive handbook listing the Constab® PE-SA family and none of the listed masterbatches contain EBS wax or 100% slip agent. (EX1050, p. 14, 1:49-2:12.) PO’s expert has the same additive handbook in his office he uses for reference. (EX1052, Tr., 184:2-18.)

During cross-examination, and in stark contrast to the claims in the declarations (EX 2001, ¶72; EX2004, ¶58), PO’s expert admitted that he did not know what was in Constab® PE-SA 270 or the percentages of EBS wax (if any wax)

in examples B4-B6. (EX1052, Tr., 166:12-167:7, 177:9-178:21, 179:16-180:2, 180:20-181:4.) PO's expert stated:

16	Q. But you don't know what's in Constab?
17	A. I don't know what's in it.
18	Q. You don't know if it even contains EBS
19	wax?
20	A. I'm pretty sure based on the wording
21	from the declaration and from the patent that it's
22	got EBS wax in it.
1	Q. But you don't know how much?
2	A. No.

(EX1052, Tr., 179:16-180:2):

After being confronted with the Product Information sheet for Constab PE-SA 270 (EX1051) and the handbook (EX1050, p. 14), PO's expert confirmed Constab® PE-SA 270 is a "masterbatch" that could contain "88 percent polyethylene" as the carrier material he said was "normal for a masterbatch," leaving less than 12 percent for calcium carbonate and the unknown "slow migration antiblock." (EX1052, Tr., 199:21-200:17.)

PO's expert also stated the actual percentages of any type of migrating compound – if even present – for examples B4-B6 could be much less than the percentages stated in the '882 Patent and his declaration (EX1052, Tr., 180:20-181:4):

20	Q. Nothing.
21	So the amount of migrating compound
22	actually contained in Constab could be much less
1	than the 1 percent or the 4 percent or the 6 percent
2	contained -- set forth in Examples B3 -- excuse
3	me -- B4, 5, and 6; correct?
4	A. In principle, that's correct. Yeah.

The amount and identity of “migrating compound(s),” if any, in examples B4-B6 remains unknown. Rather than coming clean regarding what Constab® PE-SA 270 actually consists of, PO continued to advance the wax content claims despite knowing they were false.

3. False Statements About EBS Wax in Example V1.

The '882 Patent claims example V1 is “without wax additivation” and does not mention any wax content. (Ex. 1001, 15:20-28.)

PO’s expert asserts that Durethan® B40FAM (“B40FAM”) used in example V1 contains “less than 0.1% of EBS wax.” (EX2001, ¶16.) However, he admitted during cross-examination that he had no knowledge of the additives in B40FAM, could not recall where he got the information for his claim that B40FAM contained “less than 0.1% EBS wax” aside from PO’s counsel, and even stated that “it doesn’t matter to me.” (EX1052, Tr., 112:3-7, 113:5-13, 114:8-115:2, 116:17-118:5, 138:1-3, 151:2-152-1, 162:11-163:4.)

Furthermore, Dr. Boutrid only claims an unidentified “slip agent” in B40FAM is “less than 0.1% (1,000 ppm).” (EX2004, ¶37.) However, Dr. Boutrid fails to provide support for this allegation and makes no reference to the presence of “EBS wax” as asserted by PO’s expert.

Finally, while PO submitted the datasheet for Durethan® CI 31F (EX2010) to the Board in support of its arguments against Hummel, it failed to provide the datasheet for Durethan® B40FAM which contradicts PO’s claim of “less than 0.1%” EBS wax. The datasheet reveals that B40FAM has a “high slip agent and lubricant content,” indicating B40FAM includes significantly more than 0.1% slip agent and also the presence of a second migrating compound (lubricant). (EX1049, 1:3.)

4. Inventor Declarations Not in Native German Language.

The inventors signed English-language declarations (EX2003, EX2004) even though German is their native language, PO has provided no evidence they understood the contents of what they signed, and Dr. Boutrid requires a translator (Paper 18, 2:9-11). Therefore, both inventor declarations should be disregarded. *Mendez v. MCSS Rest. Corp.*, 564 F. Supp. 3d 195, 210 (E.D.N.Y. 2021); *Sicom S.P.A. v. TRS Inc.*, 168 F. Supp. 3d 698, 709 (S.D.N.Y. 2016) (collecting cases).

5. Declarations Not Signed “Under Penalty of Perjury.”

Also, PO’s declarations (EX2001, EX2003, EX2004) were not signed “under penalty of perjury” as mandated by 28 U.S.C. § 1746, which appears purposeful

considering the false statements made. Therefore, PO's declarations should be disregarded.

6. PO Threatened Inventor Who Refused to Sign Declaration.

On May 22, 2024, PO's counsel threatened the lead inventor, Dr. Kurt Stark, with legal action and "damages" if he did not cooperate in this IPR proceeding. (EX1068, p. 3; EX1069.) On June 21, 2024, PO's counsel then emailed Dr. Stark a declaration to sign without prior discussion. (EX1070-EX1071.) On June 26, 2024, Dr. Stark emailed Omega a marked-up version of the declaration, noting that "some statements are completely silly from a scientific point of view." (EX1072.)

IV. PO'S CLAIM CONSTRUCTION

1. "Coating" Includes a "Coating or Covering."

PO argues that "coating" only applies to a migrating compound "applied over" the external surface, while "covering" applies solely to a migrating compound "incorporated into" the film that migrates to the surface. (POR, pp. 12-23). Going as far to argue that "[t]here is nothing in the claim that mandates that the term 'coating' also include a 'covering.'" (POR, 13:15-16.) The plain language of claim 1 says otherwise.

Claim 1 unequivocally specifies that a "coating" includes "coating *or covering*". (EX1001, 20:31-33.) Claim 1 specifically states, "a coating of at least one of (1) a coating with a polysiloxane; or (2) a coating or covering with at least

one migrating compound.” (*Id.*) This is entirely consistent with the specification that differentiates “coating” and “covering” as being a matter of a *preferred minimum thickness*, with the maximum thickness being identical. The specification explains that a covering is preferably between “5 nm and 3 μm ,” while a coating is preferably between “0.1 to 3 μm .” (EX1001, 7:6-10.)

Furthermore, the specification consistently describes the “coating” as being formed by the migration of the migrating compound to the film’s external surface. (EX1001, 5:23-26, 5:27-30, 17:29-30, 18:64-67.) PO has consistently argued the same in the lawsuit. 35 U.S.C. §301(a)(2) (*see*, EX1033, ¶¶15, 40; EX1035, 11:10-24; EX1037, ¶¶15, 40; EX1039, p. 6; EX1054, p. 18.) Even PO’s expert testified that a POSITA “would have understood the term ‘covering’ to be a type of ‘coating.’” (EX2001, ¶25.)

2. PO’s Construction Creates Indefiniteness.

Setting aside the disconnection from the intrinsic record,⁶ PO’s proposed construction also renders the claims indefinite by requiring the unclaimed process step of migrating the migrating compound to the external surface after manufacturing the inner film. *IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d

⁶ PO’s reliance on assorted foreign prosecution histories cannot recast the language of its claims to recite the opposite. (POR, 15-17.)

1377, 1384 (Fed. Cir. 2005). For example, PO argues “coating” refers to “*conventional coating techniques*,” and “covering” refers only to the “covering” that is “*formed when a migrating compound migrates* to the surface of the polymer layer.” (POR, 12:19-13:3.) The claims of the ‘882 Patent are directed to an insertion tube, not its manufacturing process.

PO also argues that an undefined “small amount of migrating compound” is neither a coating nor covering due to vague assertions of “inferior” mechanical and release properties, which are also undefined in the ‘882 Patent.⁷ (POR, 21:9-14.) However, claim 1 does not require, and the ‘882 Patent does not specify, a minimum amount of migrating compound in the external layer or a minimum thickness on the external surface (or film properties⁸), and PO’s expert could not even identify how

⁷ PO’s expert’s unsupported claim that an unknown amount less than 0.012% (120 ppm) of a migrating compound allegedly present in example V1 would not form a “covering” (EX2001, ¶¶15-19) is contradicted by his cross-examination testimony (EX1052, 207:13-208:4), PO’s recent discovery response (EX1055, p. 2), and his own patent filings (EX1043, 7:7-17; EX1052, 75:3-77:5; EX1044, ¶0314; EX1045, ¶¶0443, 0559; EX1046, ¶0494; EX1053, ¶0213).

⁸ Conflictingly, PO’s expert testified that a “coating” may exist “even if it did not perform the purpose and function.” (EX2001, ¶14.)

much EBS wax would create a coating or covering.⁹ (EX1052, 205:13-206:1). Moreover, the '882 Patent states the migration of the compound is time-dependent and temperature-dependent (EX1001, 5:26-27, 18:19-23.), making infringement unpredictable over time and under varying temperature conditions, further compounding indefiniteness.

V. HUMMEL ALONE

A. Hummel (Ground 1).

Hummel discloses inner film that may remain attached to the cured resin or be removed (EX1005, 15:7-10, 15:23-24), which PO acknowledges (POR, 56:17-57:1) and was well-known since the 1970's (EX1012, 5:51-56).

For Hummel's film that remains attached to the cured resin, Hummel's Examples B1-B4 specifically disclose using a polyamide with "no additives" (Durethan® CI 31F) for the external layer (e). (EX1005, p. 27; EX2010.) Likewise, Stark-Hummel, co-invented by Dr. Stark, describes Comparative Example 5 using a polyamide without additives (Durethan® C38F), resulting in a film "permanently bonded" to the cured resin. (EX1011, ¶¶0148, 0172-0175; EX1047.)

⁹ A disclaimer in an IPR is not binding on the PTAB. *CUPP Computing AS v. Trend Micro Inc.*, 53 F.4th 1376, 1383-84 (Fed. Cir. 2022).

For Hummel's film that is removed from the cured resin, Hummel teaches that the external layer (e) may, "if necessary," be treated with migrating compounds such as "lubricants" and "waxes" from "0.01-20% by weight." (EX1005, 11:18-12:4.) A POSITA would have readily understood the need to add well-known lubricants or waxes to the external layer (e) of Hummel to achieve a release effect for film removal. (EX1003, ¶¶126-134.)

PO argues a POSITA would not know which additive to choose from a "large laundry list" of possibilities. (POR, p. 39.) This does not change the fact that all are nonetheless taught. Indeed, other than dependent claim 10, the claims do not specify any type of migrating compound, presumably acknowledging such varied options, and the specification broadly describes "migrating compound" offering no boundaries whatsoever on what qualifies. (EX1001, 5:35-6:29.)

The specification teaches that a wide range of substances, "*preferably* [with] a molecular weight lower than 10,000 g/mol," could be used, but provides no definitive limits. Indeed, this "laundry list" would be significantly more numerous. (EX1001, 5:35-36, emphasis added.)

PO also argues "Hummel discloses a preferred range of 0.1-10%" (POR, 42:12-13), but this is not a distinction from the '882 Patent which sets no minimum or maximum amount of migrating compound. The '882 Patent merely describes the

migrating compound is “preferably at least 0.1% by weight” with no limits and even discloses a 6% example. (EX1001, 6:16-19, 16:45-65.)

B. Hummel and POSITA Knowledge (Ground 2).

Omega’s expert explained how TPEs offer excellent flexibility and elongation along with the motivation to modify Hummel. (EX1003, ¶¶71, 136-138.)

VI. CONCLUSION

Petitioner has demonstrated that Challenged Claims are unpatentable.

Dated: October 7, 2024

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE WITH WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), I certify that this petition complies with the type-volume limits of 37 C.F.R. § 42.24(a)(1)(i) because it contains 5,497 words (less than the 5,600 word limit), according to the word-processing system used to prepare this petition, excluding parts of this petition that are exempted by 37 C.F.R. § 42.24(a) (including the table of contents, a table of authorities, mandatory notices, a certificate of service or this certificate word count, appendix of exhibits, and claim listings).

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE, including Exhibits EX1043-EX1056 and EX1058-EX1072, was served by filing this document on the date indicated below through the Patent Trial and Appeal Case Tracking System (P-TACTS) and via e-mail to the following attorneys of record for the Patent Owner listed below:

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