

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

Corning Incorporated  
Petitioner

v.

DSM IP Assets B.V.  
Patent Owner

---

Case IPR2013-00050  
Patent 6,323,255 B1

---

Before MICHAEL P. TIERNEY, JENNIFER S. BISK, and  
SCOTT E. KAMHOLZ, *Administrative Patent Judges*.

KAMHOLZ, *Administrative Patent Judge*.

DECISION  
Institution of *Inter Partes* Review  
37 C.F.R. § 42.108

## I. INTRODUCTION

### A. Background

Petitioner Corning Incorporation (“Corning”) filed a petition (“Pet.”) to institute an inter partes review of claims 1-19 (the “challenged claims”) of U.S. Patent 6,323,255 B1 (Ex. 1001) (the “’255 patent”). 35 U.S.C. § 311. Patent Owner DSM IP Assets B.V. (“DSM”) timely filed a Preliminary Response (“Prelim. Resp.”). Based on the record presented, we conclude that Corning has satisfied the burden to show, under 35 U.S.C. § 314(a), that there is a reasonable likelihood that it would prevail with respect to at least one of the challenged claims.

Corning contends that the challenged claims are unpatentable under 35 U.S.C. § 103 on the following specific grounds (Pet. 27-51):<sup>1</sup>

Reference(s)	Basis	Claims challenged
Bishop and Trapasso	§ 103	1-7, 12-17, and 19
Bishop, Trapasso, and Szum	§ 103	6
Bishop, Trapasso, Jackson, and Szum	§ 103	8-11
Szum and Trapasso	§ 103	1-8, 12-14, and 16-19
Szum, Trapasso, and Jackson	§ 103	9-11

For the reasons given below, we institute an *inter partes* review of claims 1-19 on all of the grounds asserted by Corning.

---

<sup>1</sup> The references relied upon are: U.S. Patent 4,849,462 (Ex. 1002) (“Bishop”); U.S. Patent 5,664,041 (Ex. 1003) (“Szum”); U.S. Patent 5,554,875 (Ex. 1004) (“Trapasso”); and U.S. Patent 4,900,126 (Ex. 1005) (“Jackson”). Corning supports its challenge with declarations by two of its employees, Michael Winningham (Ex. 1006) (“Winningham Decl.”) and Inna I. Kouzmina (Ex. 1007) (“Kouzmina Decl.”)

*B. The Invention*

The '255 patent is entitled "Radiation-Curable Composition" and generally relates to compositions that may be used as, e.g., optical fiber coatings and exhibit "reduced discoloration over time and/or high elongation." '255 patent, col. 1, ll. 4-7. The compositions in particular include "at least one transesterified and/or high-purity monomer," *id.* at ll. 7-9, to which is attributed the improved discoloration and elongation properties. *Id.* at col. 3, ll. 5-13. The '255 patent acknowledges that Trapasso discloses transesterified monomers having "excellent purity" but asserts that Trapasso does not disclose the usefulness of these monomers in making optical fiber coatings, nor that they improve the discoloration and elongation properties. *Id.* at col. 2, ll. 20-33. Claims 1 and 17, reproduced below, are the independent claims in the '255 patent and illustrate the claimed subject matter:

1. A radiation-curable composition comprising:
  - (i) a radiation-curable oligomer; and
  - (ii) at least one transesterified monomer, said transesterified monomer having a purity level of greater than 95% and less than 100 ppm of an organotin catalyst;
  - (iii) a silane adhesion promoter;wherein said composition upon cure has a  $\Delta E$  value of less than 20 when exposed to low intensity fluorescent light for a period of ten weeks.
  
17. A radiation-curable composition comprising:
  - (i) a radiation-curable oligomer; and
  - (ii) at least one transesterified monomer having a purity level of greater than 95% and less than 100 ppm of an organotin catalyst, said at least one transesterified monomer being selected from the group consisting of

isodecyl acrylate, isobomyl acrylate, and phenoxy-ethylacrylate;  
wherein said composition upon cure has a  $\Delta E$  value of less than 20 when exposed to low intensity fluorescent light for a period of ten weeks.<sup>2</sup>

Claims 2-16 depend directly or indirectly from claim 1, and claims 18-19 depend from claim 17. Claims 2-3 further specify the oligomer. Claims 4-11 specify use of the composition in fiber optics. Claims 12 and 13 further specify the monomer and the silane adhesion promoter, respectively. Claim 14 further requires a photoinitiator. Claims 15, 16, 18, and 19 specify additional material properties of the composition.

*C. Claim Construction*

As a step in our analysis for determining whether to institute a trial, we determine the meaning of the claims. Consistent with the statute and the legislative history of the AIA, the Board will interpret claims of an unexpired patent using the broadest reasonable construction in light of the specification of the patent. *See* Office Patent Trial Practice Guide, 77 Fed. Reg. 48756, 48766 (Aug. 14, 2012); 37 CFR § 42.100(b). Corning states that the terms of the challenged claims “are to be given their broadest reasonable interpretation, as understood by one of ordinary skill in the art and consistent with the disclosure” except as specifically construed otherwise. Pet. 18. Corning specifically addresses a number of claim terms. Pet. 19-27. In particular, Corning argues that the claim term “transesterified monomer” should be interpreted as “monomer containing an ester group” because “transesterified” refers not to any property of the monomer

---

<sup>2</sup> The term “isobomyl” in limitation (ii) appears to be a typographical error that should instead read --isobornyl--. *See, e.g.,* '255 patent, col. 8, l. 44.

but rather to the type of chemical reaction used to synthesize it. Pet. 23-24. While we do not disagree with Corning's reasoning, we find it unnecessary to depart from the express claim language at this stage of the proceeding, in part because the prior art Corning relies on expressly discloses monomers synthesized by transesterification.

DSM does not address, specifically, any of Corning's proposed interpretations. Prelim. Resp. 39. According to DSM, it is unnecessary, for purposes of this decision, to construe any claim terms. *Id.*

We have considered Corning's comments but find that none of them is material for purposes of this decision.

Although not directly addressed in the "claim construction" section of Corning's Petition, we note that Winningham explains that the term "(meth)acrylate" in claims 2 and 3 means "methacrylate or acrylate." Winningham Decl. ¶ 23. DSM does not comment on this interpretation. We adopt it for purposes of this decision.

## II. ANALYSIS

### A. Overview

In its Petition, Corning contends that the subject matter in the challenged claims is unpatentable over the prior art and suggests that the claims were allowed during prosecution simply because many of the claim limitations were in the form of inherent properties not recited explicitly in the prior art. Pet. 3-4. To support this position, Corning presents testimony of Inna I. Kouzmina, who states that she is a scientist employed by Corning with advanced degrees in Chemistry and about 14 years of experience in research and development of optical fiber coatings. Kouzmina Decl. ¶¶ 1-3. Kouzmina declares that she prepared several sample

compositions disclosed in the prior art and tested these samples for the properties recited in the '255 patent claims. Kouzmina Decl. ¶ 4. Kouzmina's testimony includes details about the conditions used and procedures followed to prepare the samples (¶¶ 5-17) and the testing of the samples and the results obtained (¶¶ 18-27).

Corning also presents the testimony of Dr. Michael Winningham, who states that he is a Research Manager for Corning with both an M.S. and Ph.D. in Chemistry and over 15 years of relevant experience. Winningham Decl. ¶¶ 1-3. Winningham states that he reviewed the Kouzmina Declaration and provides testimony that the sample creation and testing was done in a manner consistent with good scientific practices and procedures. *Id.* at ¶ 65. Winningham also opines that the procedures used to create each sample were either the same as set forth in the references or the functional equivalent, with any differences being "nominal" ones which would not alter the relevant properties of the resulting sample. *Id.* at ¶ 66. Winningham then discusses the testing of the samples and opines that each test was a valid method for determining the relevant property and that any difference in the testing procedures used by Kouzmina from any tests described in the references was nominal and would result in essentially the same values. *Id.* at ¶¶ 67, 73, 77.

DSM responds that Corning's Petition must be denied. Prelim. Resp. 1. DSM contends that Corning has not satisfied its burden of showing any of the asserted obviousness grounds because (a) Corning bases each of these challenges on *ex post facto* testing, *id.* at 1-2, (b) Corning has not shown that a person of ordinary skill in the art would have been motivated to combine the art relied upon to reach the claimed invention, *id.* at 2, and (c) Corning has not shown that a person of ordinary skill in the art would have had a reasonable expectation of

success, *id.* at 2-3.

*B. Obviousness Based on Bishop*

*1. Obviousness of claims 1-7, 12-17, and 19 over Bishop and Trapasso*

*Overview of Bishop*

Bishop relates to optical glass fiber coatings curable by ultraviolet light. Bishop, col 1, ll. 11-15. Bishop describes the incorporation of various organofunctional silanes to improve adhesion of the coating to glass fiber in humid environments, including gamma-mercaptopropyl trimethoxy silane. col. 1, ll. 45-46.<sup>3</sup> Bishop describes several coating compositions based on “Desolite 950-030,” which is described as containing urethane acrylate oligomer, *N*-vinyl pyrrolidone, phenoxyethyl acrylate, diethoxyacetophenone, and phenothiazine. col. 3, ll. 9-12. The urethane acrylate oligomer is constituted by polypropylene glycol, among other things. col. 3, ll. 12-20.<sup>4</sup> The urethane acrylate oligomer is radiation-curable, as may be inferred from Bishop’s disclosure of subjecting the Desolite 950-030 coatings to ultraviolet radiation. col. 5, ll. 40-47. Among the coatings based on Desolite 950-030 is one, identified as “Example 4.4” by Corning (Pet. 28), which further contains mercaptopropyl trimethoxy silane. col. 6, ll. 13-18. The diethoxyacetophenone in Desolite 950-030 is identified as a photoinitiator, col. 4, ll. 38-39, and Bishop discloses that photoinitiators may be used in mixtures, ll. 43-44.

---

<sup>3</sup> Bishop’s disclosure of mercaptopropyl trimethoxy silane as a mercapto functional silane adhesion promoter in optical fiber coatings is acknowledged in the ’255 patent at col. 10, ll. 34-36.

<sup>4</sup> The ’255 patent indicates that oligomers made from polypropylene glycol contain polyether groups. ’255 patent, col. 3, l. 58 to col. 4, l. 11.

*Overview of Trapasso*

Trapasso discloses the use of organotin-catalyzed transesterification reactions for producing acrylate ester monomers, including phenoxyethyl acrylate. col. 1, ll. 11-21; col. 16, ll. 15-34. Trapasso explains that the esters have many commercial applications, including as UV coatings and as reactive diluents for radiation curable oligomers. col. 1, ll. 22-35. Trapasso discloses that the acrylate ester monomers thus prepared have purity levels greater than about 95% (col. 5, ll. 20-30) and contain less than 100 ppm of organotin catalyst (col. 11, ll. 24-27). Trapasso also discloses that the high-purity esters have lower color and enhanced cure rates. col. 3, ll. 18-21; col. 5, ll. 33-34.

*Analysis*

Corning contends that claims 1-7, 12-17, and 19 would have been obvious over Bishop's Example 4.4 modified by Trapasso's disclosure of high-purity transesterified phenoxyethyl acrylate. Pet. 32. We address the challenged claims in turn.

*a. Claim 1*

Corning argues that Bishop's Example 4.4 inherently possesses all the material properties required by claim 1, as demonstrated by Kouzmina's testing. *Id.* at 28-29. According to Corning, Trapasso suggests the desirability of using high-purity transesterified phenoxyethyl acrylate esters, which have known commercial uses as *e.g.* reactive diluents for radiation curable oligomers, due to their lower color and improved cure rate. Pet. 30-31 (citing *inter alia* Trapasso col. 3, ll. 18-30). Corning concludes that one of ordinary skill in the art would have found it obvious to use Trapasso's high-purity esters in Bishop's optical coating compositions to obtain these benefits. Pet. 31.

With regard to the requirement in claim 1 that the composition when cured



have “a  $\Delta E$  value of less than 20 when exposed to low intensity fluorescent light for a period of ten weeks,” Corning acknowledges that the references do not disclose this property and instead argues that Kouzmina’s evidence demonstrates it to be inherent in Bishop’s Example 4.4. Pet. 28-29. Kouzmina states that she prepared Example 4.4 “pursuant to the instructions contained in Bishop.” Kouzmina Decl. ¶ 5. We note that Kouzmina prepared the phenoxyethyl acrylate monomer by direct esterification without organotin catalyst, not by transesterification, and that the resulting monomer had a purity of about 90.4%. Kouzmina Decl. ¶ 7, note 3. Kouzmina states that color change tests were conducted on the Example 4.4 composition “in accordance with the procedures set forth in the ’255 patent at 16:16–38.” Kouzmina Decl. ¶ 18. The procedure is summarized in paragraph 19 of the Kouzmina Declaration. Results are presented in Table A and show that Example 4.4 had a  $\Delta E$  value of 8.3 (average of three samples). Kouzmina Decl. ¶ 20.

Corning acknowledges that the Example 4.4 composition as made and tested does not satisfy the claim limitation that the monomer have a purity level of greater than 95%. Pet. 29. Corning contends, however, that because the resulting composition already satisfies the  $\Delta E$  limitation, and because Trapasso’s high-purity monomer has a lower color than that used in Example 4.4, the composition that would result from modifying Example 4.4 to include Trapasso’s high-purity monomer would be expected to continue to satisfy the  $\Delta E$  limitation. Pet. 31. Corning supports this argument with evidence from Winningham that “[s]killed scientists would have recognized that the beneficial properties Trapasso sets forth with regard to its esterified products have a clear benefit in coatings for optical

fibers.” Winningham Decl. ¶ 107.<sup>5</sup>

DSM does not dispute Corning’s arguments and supporting evidence concerning the structural or material property limitations of claim 1. Rather, DSM argues that Corning has inappropriately relied upon *ex post facto* testing to show inherency. Prelim. Resp. 10-15. DSM also argues that Corning has not shown evidence of “motivation” to combine the references to reach the claimed subject matter. Prelim. Resp. 16-20. DSM further argues that Corning has not shown that a person of ordinary skill would have had a reasonable expectation of success in making the combination. Prelim. Resp. 20-22. We address each argument in turn.

*(1) Ex post facto Evidence*

DSM argues that Corning has not established obviousness over any reference or combination of references because the contentions rely on *ex post facto* testing. Prelim. Resp. 7-8, 10-15. DSM contends that “[a]ny obviousness assertion based on inherency necessarily requires that the inherent property would have been obvious to a person of ordinary skill in the art in view of the teachings of the prior art, not based on information developed after the time of the invention.” Prelim. Resp. 8. DSM cites a number of cases in support of its argument, including *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993) (quoting *In re Spormann*, 363 F.2d 444, 448 (C.C.P.A. 1966)), *Kloster Speedsteel AB v. Crucible, Inc.*, 793 F.2d 1565, 1576 (Fed. Cir. 1986), *overruled on other grounds by Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.*, 383 F.3d 1337, 1343 (Fed. Cir. 2004) (en banc), *In re Grasselli*, 713 F.2d 731, 739 (Fed.

---

<sup>5</sup> Winningham states that a “skilled scientist in the art of fiber optic coatings is a person with at least a masters degree in chemistry or material science and engineering, and 5 years of experience in the research, development, or manufacture of optical fiber coatings.” Winningham Decl. ¶ 8.

Cir. 1983)), and *In re Gruskin*, 234 F.2d 493, 498 (C.C.P.A. 1956). Prelim Resp. 8, 13-15.

DSM's position overstates the limits on the use of inherent disclosure in establishing obviousness. Ample case law establishes that inherent disclosure may be relied upon in finding that subject matter would have been obvious at the time of its invention. *E.g.*, *In re Napier*, 55 F.3d 610, 613 (Fed. Cir. 1995). It is not a requirement that the inherent properties were known at the time of invention. *E.g.*, *In re Huai-Hung Kao*, 639 F.3d 1057, 1072 (Fed. Cir. 2011) (affirming holding of obviousness even where "the only claim element not expressly disclosed in the prior art was the previously-unknown, yet inherent, ... property."); *In re Kubin*, 561 F.3d 1351, 1357-58 (Fed. Cir. 2009) (quoting *In re Wiseman*, 596 F.2d 1019, 1023 (C.C.P.A. 1979) as "rejecting the notion that 'a structure suggested by the prior art, and, hence, potentially in the possession of the public, is patentable... because it also possesses an inherent, but hitherto unknown, function which [patentees] claim to have discovered.'"). Unknown properties of the prior art may not, however, be relied upon to provide the rationale for modifying or combining the prior art to reach the claimed subject matter. *See In re Newell*, 891 F.2d 899, 901, (Fed.Cir.1989) ("a retrospective view of inherency is not a substitute for some teaching or suggestion which supports the ... combination"). This is what is meant by the passage "obviousness cannot be predicated on what is unknown" that DSM quotes from *In re Rijckaert*, 9 F.3d at 1534 quoting *In re Spormann*, 363 F.2d at 448). Prelim. Resp. 11-12.

The other cases DSM cites do not support its argument. In *Kloster*, the finding of non-obviousness was affirmed because the inherent property was "particularly essential" to obtaining the benefit of the claimed invention, and the challenger failed to show that the essential nature was known at the time of

invention. *Kloster*, 793 F.2d at 1575-76 (citing *In re Spormann*, 363 F.2d at 448). That is not the case here. In *Grasselli*, the court reversed a finding of obviousness because the evidence of record failed to establish inherency in the first place, not because the supposedly inherent property was unknown at the time of invention. *Grasselli*, 713 F.2d at 739. *Gruskin* is inapposite; the court there reversed an obviousness rejection not for being premised on an unknown inherent property but rather for failure of the prior art to “suggest[] or disclose[]” the appellant’s “unobvious and unexpected results.” *In re Gruskin*, 234 F.2d at 499.

Here, Corning does not *predicate* its obviousness challenges on the undisclosed latent properties. That is, Corning does not argue that the latent properties *themselves provide the rationale* for combining prior-art references to reach the claimed subject matter. Corning instead predicates the obviousness of combination upon express teachings in the cited references as well as expert testimony. While Corning acknowledges that the latent properties are recited in the challenged claims and must be accounted for, they do this with evidence purporting to show that the properties were necessarily present in prior-art compositions or would have reasonably been expected to be present in compositions resulting from the asserted prior-art combinations.

We are not persuaded that DSM’s claims are patentable simply because they are limited by latent properties. Because the *ex post facto* testing presented by Corning relates to limitations reciting properties of the claimed composition, we conclude that this evidence may be considered in the obviousness analysis.

(2) *Reason to Combine*

DSM also argues that Corning has provided “no evidence” that one having ordinary skill “would have known or been motivated to combine the Bishop and Trapasso references to achieve the subject matter claimed in the ’255 Patent.”

Pet. 16-20 (quotation at 16).

We find this argument unpersuasive. Corning has indeed pointed to evidence that would underpin a rationale to combine: Trapasso discloses a method of making exactly the same compound as Bishop (*i.e.*, phenoxyethyl acrylate) for exactly the same purpose as Bishop (*i.e.*, as a reactive diluent for radiation-curable oligomers) but with a higher purity that offers several benefits, including lower color, faster curing, and less contamination by catalyst. Corning also relies on Wunningham's statement that a "skilled scientist" would have recognized the relevance of these benefits to the making of optical fiber coatings. Further the test for obviousness is not so constrained as to require evidence of "motivation to combine." *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (rejecting the rigid requirement of a teaching, suggestion or motivation to combine known elements in order to show obviousness).

*(3) Reasonable Expectation of Success*

DSM additionally argues that Corning has provided "no evidence showing that a person of ordinary skill in the art would have reasonably expected that combining the teachings of Bishop and Trapasso would have successfully resulted in the claimed subject matter as a whole." Prelim. Resp. 20-22 (quotation at 20). In particular, DSM argues that Corning has not explained how one having ordinary skill would have expected that the modified composition would still have had the claimed material properties, namely, the  $\Delta E$  value. *Id.* at 21.

We find this argument unconvincing. Substituting a 95% pure monomer for a 90.4% pure monomer does not strike us, on the record currently before us, as a change so drastic that it would raise significant doubt in the mind of the skilled artisan as to the properties of the resulting composition. Moreover, the lower color Trapasso's transesterified phenoxyethyl acrylate supposedly possesses tends to

suggest that the  $\Delta E$  value would decrease, if it were to change at all, and so remain within the claimed range.

DSM also argues that there is “no evidence in the record that would have led a person of ordinary skill in the art to select Example 4 of Bishop with the teachings of Trapasso.” *Id.* at 22. We disagree for the reasons given above in response to the “no motivation” argument.

We have considered Corning’s arguments and evidence, as well as DSM’s arguments and evidence in opposition, and conclude that Corning has demonstrated a reasonable likelihood that claim 1 is unpatentable.

*b. Claim 17*

Corning’s argument concerning claim 17 parallels its argument for claim 1: that Bishop’s Example 4.4 possesses all limitations of claim 17 except the purity of the monomer, and that Trapasso’s disclosure of the benefits of high-purity monomers would have made the combination obvious. Pet. 28-32. DSM does not direct any of its arguments specifically to claim 17. We have studied the arguments and evidence presented by Corning and DSM and conclude that Corning has demonstrated a reasonable likelihood that claim 17 is unpatentable, for the reasons given above with respect to claim 1.

*c. Claims 2, 3, 12, 13, and 14*

These dependent claims each further specify chemical components of the composition of claim 1. Claim 2 specifies that the oligomer is a urethane (meth)acrylate oligomer, and claim 3 further specifies that the (meth)acrylate oligomer of claim 2 comprises at least one polyether, polycarbonate, hydrocarbon, or polyester group. Claim 12 specifies that the monomer is phenoxyethyl acrylate, claim 13 specifies that the silane adhesion promoter is a mercapto functional silane adhesion promoter, and claim 14 specifies that the composition further includes a

mixture of photoinitiators.

Corning argues that the “urethane acrylate oligomer” in Bishop’s Example 4.4 meets the limitations of claims 2 and 3. Pet. 32. As noted above, we interpret “(meth)acrylate” to mean “methacrylate or acrylate.” Bishop’s urethane acrylate oligomer therefore satisfies this limitation. As to claim 3, Bishop discloses that the urethane acrylate monomer is constituted by polypropylene glycol (col. 3, ll. 16), which contains a polyether group. Winningham Decl. ¶ 110. We find that the polypropylene glycol in Bishop’s urethane acrylate monomer contains at least one polyether group and therefore would satisfy the limitation of claim 3.

As to claim 12, Corning argues that both Bishop Example 4.4 and Trapasso disclose the use of phenoxyethyl acrylate as the monomer. Pet. 33. As to claim 13, Corning argues that Bishop Example 4.4 includes mercaptopropyl trimethoxy silane, which is a mercapto functional silane. *Id.*<sup>6</sup> The limitations of both claims appear to be met.

As to claim 14, Corning acknowledges that Bishop Example 4.4 contains only one photoinitiator— diethoxyacetophenone— but argues that Bishop elsewhere discloses that “photoinitiators may be used singly or in mixtures.” Pet. 34 (citing Bishop, col. 4, ll. 43-45). Corning argues that it would have been obvious to include a second photoinitiator in Example 4.4 in view of Winningham’s declaration evidence that it is “common to use multiple photoinitiators” having strong absorbances in different areas of the light spectrum in order to make efficient use of the curing radiation and “increase the cure rate or cure speed.” Pet. 34 (quotations from Winningham Decl. ¶ 26). We find that

---

<sup>6</sup> See n. 3, *supra*.

Corning has demonstrated a reasonable likelihood that claim 14 is unpatentable.

*d. Claims 4-7*

Claims 4-6 each depend from claim 1 and specify that the composition of claim 1 is “a fiber optic coating composition,” “an inner primary optical fiber coating composition,” or “an outer primary optical fiber coating composition,” respectively. Claim 7 is directed to “a coated fiber optic” having a cured coating formed from the composition of claim 1.

Corning argues that claims 4-6 state mere intended uses of the composition and therefore do not further limit claim 1. Alternatively, with respect to claims 4 and 5, and also as to claim 7, Corning argues that Bishop expressly discloses the use of Example 4.4 as an optical fiber coating that would be recognized as an “inner primary” coating because it directly contacts the glass fiber. Pet. 32-33.

The limitations of claims 4-6 do not appear to limit claim 1 in a meaningful way; it is not clear to us that labeling a composition as a “fiber optic coating” or a particular type of coating imparts any particular distinctive structural or chemical characteristic to the claimed composition. We also agree with Corning on its alternative argument that Bishop appears to meet the limitations of claims 4, 5, and 7 by disclosing the use of its compositions as fiber optic coatings and specifically as inner primary coatings.

*e. Claims 15, 16, and 19*

These claims specify further material properties. Claim 15 depends from claim 14 (which depends from claim 1) and requires that the composition have “an elongation at break of at least 110%.” Claim 16 depends from claim 1 and requires that the monomer have “an APHA value of less than 40.” Claim 19 depends from claim 17 and requires that the composition, after cure, have “a modulus in the range of 0.1 to 10 MPa.”



Regarding claims 15 and 19, Corning argues that its testing of Bishop Example 4.4 reveals it to have an elongation at break of 124% and a Young's modulus of 2.4 MPa. Pet. 34-36; Kouzmina Decl. ¶¶ 26-27. Corning argues that modifying Bishop Example 4.4 to have higher-purity phenoxyethyl acrylate would not be expected to affect these measurements. Pet. 34-36; Winningham Decl. ¶¶ 118, 119. We have reviewed Corning's testing and declaration evidence and hold that Corning has demonstrated a reasonable likelihood that that challenged claims are unpatentable.

Regarding claim 16, Corning points out that Trapasso discloses that its transesterified phenoxyethyl acrylate has an APHA value of 5. Pet. 35 (citing Trapasso, col. 16, ll. 14-35). We agree, on the present record, that the monomer of Bishop Example 4.4, if modified by Trapasso as Corning proposes, would possess an APHA value within the claimed limit.

For these reasons, we conclude that there is a reasonable likelihood that Corning will prevail in proving obviousness of claims 1-7, 12-17, and 19 over Bishop and Trapasso by a preponderance of the evidence.

*2. Obviousness of claim 6 over Bishop, Trapasso, and Szum*

Claim 6 specifies that the composition of claim 1 is "an outer primary optical fiber coating composition." Corning argues that this is merely a statement of intended use that does not limit the claim, and even if considered a limitation, claim 6 would have been obvious over Bishop and Trapasso in view of Szum's disclosure that when optical fibers have two coatings, the coatings may be the same. Pet. 37.

DSM argues that (a) Szum does not "cure the deficiencies" of Bishop and Trapasso in disclosing all limitations of claim 1, (b) "*ex post facto*" evidence may not be relied upon to show obviousness, (c) Corning's rationale to include Szum is

a “generic” one that would not have led the skilled artisan to the combination, and (d) Szum is directed to compounds unrelated to those of the ’255 patent.

Prelim. Resp. at 23-24.

DSM’s arguments do not persuade us that Corning has failed to demonstrate a reasonable likelihood that claim 6 is unpatentable. As noted above, a mere labeling of the claimed composition as being a particular type of coating does not appear to us to limit the scope. As to argument (a), we find no deficiencies at this stage in Corning’s challenge to claim 1. Argument (b) is unpersuasive for reasons addressed *supra*. As to arguments (c) and (d), Corning relies on Szum for the narrow teaching that inner primary and outer primary coatings may be made from the same composition. It follows that an inner primary composition (*i.e.*, one that directly contacts the fiber) may also serve as an outer primary coating. That Szum supposedly focuses on other classes of coating compositions does not necessarily undermine its relevance to compositions such as Bishop Example 4.

For these reasons, we find that there is a reasonable likelihood that Corning will prevail in proving obviousness of claim 6 over Bishop, Trapasso, and Szum by a preponderance of the evidence.

*3. Obviousness of claims 8-11 over Bishop, Trapasso, Jackson, and Szum.*

Claims 8-11 relate to fiber optic ribbon assemblies in which the composition of claim 1 serves various roles. Corning argues that these claims recite non-limiting statements of intended use, and even if considered limitations, they would have been obvious over Bishop, Trapasso, and Szum in view of Jackson’s disclosure that optical fibers may be ribbonized. Pet. 38-40.

DSM’s arguments in response parallel those given with regard to claim 6 and are unpersuasive for reasons analogous to those given above. We find that

there is a reasonable likelihood that Corning will prevail in proving obviousness of claims 8-11 over Bishop, Trapasso, Jackson, and Szum by a preponderance of the evidence.

*C. Obviousness based on Szum*

*1. Obviousness of claims 1-8, 12-14, and 16-19 over Szum and Trapasso*

*Overview of Szum*

Szum discloses “improved curable coating compositions for glass substrates and to glass substrates, such as optical fibers, coated with the compositions.” Szum, col. 1, ll.11-13. Szum teaches several examples of compositions, some of which are described as inner primary fiber optic coatings, and others of which are described as outer primary fiber optic coatings. Szum, col. 10, l. 17 – col. 13, l. 45. Among them is “Example 1,” which includes a radiation-curable oligomer (formed from 2-hydroxy ethyl acrylate, toluene diisocyanate, and a polypropylene glycol diol), an esterified monomer (phenoxyethyl acrylate), a single photoinitiator (1-hydroxycyclohexyl phenyl ketone), and a mercapto functional silane adhesion promoter (gamma mercaptopropyl trimethoxy silane), among other things. col. 10, ll. 16-33. Szum’s Example 4 includes a radiation-curable oligomer (formed from 2-hydroxy ethyl acrylate, toluene diisocyanate, and a polytetramethylene glycol diol), an esterified monomer (phenoxyethyl acrylate), and two photoinitiators (1-hydroxycyclohexyl phenyl ketone and 2,4,6-trimethyl benzoyl diphenyl phosphine oxide), among other things. col. 11, ll. 11-29.

*Analysis*

Corning contends that claims 1-8, 12-14, and 16-19 would have been obvious over Szum’s example compositions modified by Trapasso’s disclosure of high-purity transesterified phenoxyethyl acrylate. Pet. 40-50. The argument is

largely analogous to that based upon Bishop Example 4.4 as modified by Trapasso. Kouzmina synthesized the Szum example compositions and subjected them to tests to determine their material properties, including  $\Delta E$  value (claim 1) and modulus. We address the challenged claims in turn.

*a. Claim 1*

We focus our analysis of claim 1 on the combination of Szum Example 1 with Trapasso.<sup>7</sup> Just as it argued in the Bishop/Trapasso challenge, Corning here argues that Szum Example 1 meets all chemical limitations of claim 1 except that of the monomer having a purity level of greater than 95%, and that it meets the  $\Delta E$  limitation as evidenced by Kouzmina's testing. Pet. 40-45. Kouzmina describes the preparation of Example 1 in paragraphs 9-11 of her Declaration and the testing for  $\Delta E$  in paragraphs 18-20. Kouzmina's results indicate a  $\Delta E$  value for Example 1 of 5.9, which is less than 20, as required by claim 1. Kouzmina Decl. ¶ 20. Corning argues that it would have been obvious to substitute Trapasso's high-purity phenoxyethyl acrylate for that used in Szum Example 1, for reasons analogous to those given in the Bishop/Trapasso challenge. Pet. 43-44. DSM's arguments opposing this challenge are similarly analogous to those given in response to the Bishop/Trapasso challenge. Prelim. Resp. 27-36. We have considered Corning's arguments and evidence, as well as DSM's arguments and evidence in opposition, and conclude that Corning has demonstrated a reasonable likelihood that claim 1 is unpatentable, for reasons analogous to those given above with respect to the challenge based on Bishop and Trapasso.

---

<sup>7</sup> Corning bases its arguments against the claims challenged on this ground on combinations of Trapasso with Szum Examples 1, 2, and 4. We need not address each of these combinations for purposes of this decision.

*b. Claims 2-8, 12-14, and 16*

Regarding claims 2 and 3, we agree with Corning that the oligomer in Example 1 is an acrylate and that it includes at least one polyether group by virtue of its containing polypropylene glycol. As to claims 4-8, we agree with Corning that these claims' recitations are non-limiting intended uses and/or disclosed by Szum. We agree with Corning that the phenoxyethyl acrylate in Example 1 appears to meet the recitation of claim 12 and that the gamma mercaptopropyl trimethoxy silane appears to meet the recitation of claim 13. We find Corning's argument regarding claim 14 that it would have been obvious to modify Example 1 to include a second photoinitiator sufficient to demonstrate a reasonable likelihood that this claim is unpatentable. As to claim 16, we agree with Corning that Example 1, if modified to include Trapasso's high-purity phenoxyethyl acrylate, would include a monomer that has an APHA value of less than 40.

*c. Claims 17-19*

As noted above, Kouzmina's testing shows that Example 1 has a  $\Delta E$  value within the limit recited in claim 1, which is the same as recited in claim 17. Example 1 otherwise meets the chemical limitations of claim 17 if modified to include Trapasso's high-purity phenoxyethyl acrylate. Kouzmina also tested Example 1 for the Young's modulus. Kouzmina Decl. ¶¶ 21-27. Kouzmina's testing indicated a modulus of 4.6 MPa, which is within the limit recited in claim 19. Kouzmina also prepared Szum Example 4 (Kouzmina Decl. ¶¶ 15-17) and tested it for  $\Delta E$  (¶¶ 18-20) and for modulus (¶¶ 21-27). Kouzmina's testing shows that Example 4 has a  $\Delta E$  value within the limit recited in claim 17 and a modulus of 677 MPa, which is within the range recited in claim 18. We therefore find that Corning has demonstrated a reasonable likelihood that claims 17-19 are unpatentable on this ground.

### III. CONCLUSION

Corning has demonstrated that there is a reasonable likelihood of its prevailing on at least one of the challenged claims in the '255 patent.

The Petition is granted as to all grounds proposed.

### IV. ORDER

For the reasons given, it is

**ORDERED** that the Petition is *granted* as to claims 1-19.

**FURTHER ORDERED** that pursuant to 35 U.S.C. § 314(a), *inter partes* review of the '255 patent is hereby *instituted* commencing on the entry date of this Order, and pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial.

**FURTHER ORDERED** that the trial is limited to the grounds proposed in the Petition as to claims 1-19. No other grounds are authorized.

**FURTHER ORDERED** that an initial conference call with the Board is scheduled for 1 PM Eastern Time on June 13, 2013. The parties are directed to the Office Trial Practice Guide, 77 Fed. Reg. 48756, 48765-66 (Aug. 14, 2012) for guidance in preparing for the initial conference call, and should come prepared to discuss any proposed changes to the Scheduling Order entered herewith and any motions the parties anticipate filing during the trial.

Case IPR2013-00050  
Patent 6,323,255 B1

For PETITIONER:  
Michael L. Goldman  
Jeffrey Townes  
LeClairRyan, A Professional Corporation  
Michael.Goldman@leclairryan.com  
Jeffrey.Townes@leclairryan.com

For PATENT OWNER:  
Sharon A. Israel  
Joseph Mahoney  
Mayer Brown, LLP  
SIsrael@mayerbrown.com  
JMahoney@mayerbrown.com