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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* NORBERT LÖW,  
VINCENT COOK, and JORN LAVALAYE

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Appeal 2019–005025  
Application 13/265,742  
Technology Center 1700

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Before MICHAEL P. COLAIANNI, GEORGE C. BEST, and  
DEBRA L. DENNETT, *Administrative Patent Judges*.

DENNETT, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>1</sup>

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>2</sup> appeals from the  
Examiner’s decision to reject claims 1, 4, 6, 8, 9, and 17–21 of Application

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<sup>1</sup> In our Decision, we refer to the Specification filed October 21, 2011 (“Spec.”) of Application 13/265,742 (“the ’742 Application”); the Final Office Action dated August 2, 2018 (“Final Act.”); the Appeal Brief filed March 1, 2019 (“Appeal Br.”); the Examiner’s Answer dated April 17, 2019 (“Ans.”); and the Reply Brief filed June 17, 2019 (“Reply Br.”).

<sup>2</sup> We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies BASF Coatings GMBH as the real party in interest. Appeal Br. 4.

13/265,742. *See* Appeal Br. 1; Final Act. 1. We have jurisdiction under 35 U.S.C. § 6.

For the reasons set forth below, we AFFIRM.

## BACKGROUND

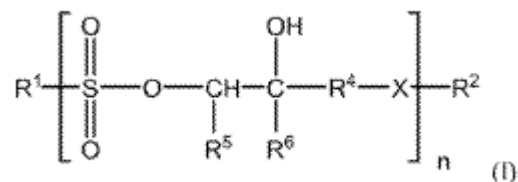
The subject matter of the '742 Application relates to multicoat paint systems. Spec. 1:5. The '742 Application describes that the multicoat paint systems feature lower yellowing, particularly on overbaking, in conjunction with good storage stability of the high-solids basecoat and clearcoat materials. *Id.* at 6:7–9.

Claim 1 is representative of the claims and is reproduced below from the Claims Appendix of the Appeal Brief with key limitations emphasized.

1. A multicoat paint system for spray application to a substrate, the multicoat paint system comprising:
  - i. at least one basecoat of a nonaqueous basecoat material having a solids fraction of at least 35% by weight, based on the total weight of the basecoat material; and
  - ii. at least one clearcoat of a nonaqueous clearcoat material having a solids fraction of at least 50% by weight, based on the total weight of the clearcoat material;

wherein the basecoat material and the clearcoat material each comprise independently 1.5% to 3.0% by weight, based on the total weight of the respective coating material, of at least one of

- A. an epoxy-sulfonic acid compound of formula (I)



wherein

n is from 1 to 5,

R<sup>1</sup> is at least one of the group consisting of a monovalent or divalent C<sub>1</sub>-C<sub>18</sub> alkyl radical, a monovalent or divalent C<sub>1</sub>-C<sub>18</sub> alkylene radical, a monoalkylated or dialkylated C<sub>1</sub>-C<sub>18</sub> phenyl radical, and a monoalkylated or dialkylated C<sub>1</sub>-C<sub>18</sub> naphthyl radical,

R<sup>5</sup> and R<sup>6</sup> independently are a hydrogen atom or a C<sub>1</sub>-C<sub>12</sub> alkyl radical, or R<sup>5</sup> and R<sup>6</sup> together are a C<sub>6</sub>-C<sub>12</sub> cycloalkyl radical,

and either

- a. R<sub>4</sub> is a hydrogen atom and the radicals R<sup>2</sup> and X are absent, or
- b. R<sub>4</sub> is a methylene radical,

R<sup>2</sup> is at least one of the group consisting of a hydrogen atom, a monovalent or polyvalent C<sub>1</sub>-C<sub>18</sub> alkyl radical, an unsubstituted or substituted bisphenol A radical, and an unsubstituted or substituted bisphenol F radical, and

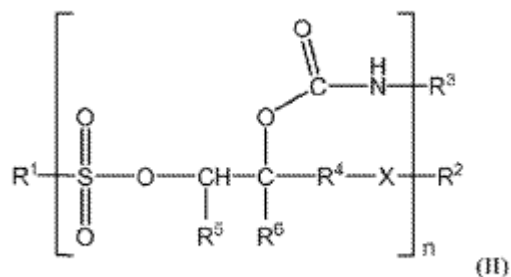
X is a carbonyl group or an oxygen atom, X being optional,

wherein the compound according to the formula (I)

comprises a number-average molecular weight of about 500 to 1800 g/mol, and, wherein if n > 1, at least one of the radicals R<sup>1</sup> or R<sup>2</sup> is at least divalent,

or

B. an epoxy-isocyanate-blocked sulfonic acid compound of formula (II)



wherein

n is from 1 to 5,

R<sup>1</sup>, R<sup>2</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, X, and n have the same definition as in the compound of the formula (I) above and

R<sup>3</sup> is at least one of the group consisting of a C<sub>1</sub>-C<sub>18</sub> alkyl radical, a C<sub>1</sub>-C<sub>18</sub> alkenyl radical, a C<sub>1</sub>-C<sub>18</sub> cycloalkyl radical, a C<sub>1</sub>-C<sub>18</sub> aryl radical, and a substituted or unsubstituted polymer radical, wherein if n > 1, at least one of the radicals R<sup>1</sup>, R<sup>2</sup> or R<sup>3</sup> is at least divalent, and

the compound according to the formula (II) comprises a number-average molecular weight of about 1000 to 3000 g/mol,

wherein, *when the at least one basecoat and the at least one clearcoat are applied to a substrate via spraying, the multicoat paint system exhibits less yellowing upon overbaking than a multicoat paint system having a basecoat and a clearcoat that do not comprise the epoxy-sulfonic acid compound of the formula (I) or the epoxy-isocyanate-block[ed] sulfonic acid compound of the formula (II),*

wherein the basecoat material further comprises

- a. 15% – 50% by weight of *at least one binder comprising at least one (meth)acrylate copolymer, which has a number-average molecular weight of about 400 to 5000 g/mol,*
- b. 5% – 30% by weight of at least one melamine resin derivative as crosslinking agent,

- c. 0.5% to 49% by weight of at least one colorant comprising a pigment,
- d. 30% – 65% by weight of at least one organic solvent,
- e. 0.05% – 40% by weight of at least one auxiliary or additive,

*based in each case on the total weight of the basecoat material, the weight fractions of the A and/or the B as present and the a to the e of the basecoat material adding to 100%, and*

wherein the clearcoat material further comprises

- a. 15% – 50% by weight of *at least one binder comprising at least one (meth)acrylate copolymer, which has a number-average molecular weight of about 400 to 5000 g/mol,*
- b. 5% – 30% by weight of at least one melamine resin derivative as crosslinking agent,
- c. 30% – 50% by weight of at least one organic solvent,
- d. 0.05% – 40% by weight of at least one auxiliary or additive,

*based in each case on the total weight of the clearcoat material, the weight fractions of the A and/or the B as present and the a to the d of the clearcoat material adding to 100%.*

Appeal Br. 22–25 (Claims App.).

#### REFERENCES

The Examiner relies on the following prior art in rejecting the claims on appeal:

Name	Reference	Date
Blank	US 5,102,961	April 7, 1992

Name	Reference	Date
Taniguchi et al. (“Taniguchi”)	US 5,719,246	Feb. 17, 1998
Choi et al. (“Choi”)	US 2006/0147745 A1	July 6, 2006
<i>Pigments</i> , BASF The Chemical Company, accessed May 17, 2014, <a href="https://www.dispersions-pigments.basf.com/portal/basf/ien/dt.jsp?setCursor=1_561069">https://www.dispersions-pigments.basf.com/portal/basf/ien/dt.jsp?setCursor=1_561069</a> (“BASF-Pigments”).		

## REJECTIONS

The Examiner maintains the following rejections:<sup>3</sup>

1. Claims 1, 4, 6, 8, 9, and 17–21 under 35 U.S.C. § 112, first paragraph, for failing to comply with the written description requirement. Final Act. 2–4.
2. Claims 1, 4, 6, 8, 9, and 17–21 under 35 U.S.C. § 103(a) as obvious over Choi, Taniguchi, and further in view of Blank, as evidenced by BASF-Pigments. Final Act. 5–18.

## DISCUSSION

*Ground 1: Rejection of claims 1, 4, 6, 8, 9, and 17–21 as lacking written description support*

The Examiner finds claims 1, 4, 6, 8, 9, and 17–21 lack written description of a “binder,” in each of the basecoat and the clearcoat materials, having “a number-average molecular weight of *about* 400 to 5000 g/mol.” Final Act. 2–3 (emphasis added). The Examiner notes that claim 1 has been amended to include the alleged new matter. *Id.* at 3.

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<sup>3</sup> Because this application was filed before the March 16, 2013, effective date of the America Invents Act, we refer to the pre-AIA version of the statutes.

The Examiner finds that the application describes “[s]uitable binders” having “a **number-average molecular weight of 400 to 5000**” g/mol. *Id.* (citing Spec. 17:14–15). The Examiner finds, however, that “there is no support in the originally filed disclosure for ‘the binder in each of the basecoat material and the clearcoat material having the number-average molecular weight of **about** 400 to 5000 g/mol,’ as presently claimed, and how ‘about’ is defined.” Final Act. 3.

Appellant argues that the Specification “does not have to disclose what is already known in the art.” Appeal Br. 10. Appellant argues that “the use of the term ‘about’ is supported” because “one of ordinary skill in the art would expect some deviation around a range when determining the number-average molecular weight of the binder.” *Id.*

As evidence of the skilled artisan’s expectations, Appellant directs us to the declarations of co-inventor Dr. Norbert Löw (“Löw Decl.”). Appeal Br. 10. In the declaration filed October 19, 2016, Dr. Löw avers that “[t]here is about a 10-% deviation possible when using . . . DIN method” 55672-1 to determine a binder’s number-average molecular weight. Löw Decl. ¶ 5. Appellant relies on Ritter et al., *Determination of molecular weights by size exclusion chromatography (SEC) - Results of round robin tests*, 29 Polymer Testing 945–52 (2010) (“Ritter”) for additional supportive evidence. *Id.* Ritter discloses that the standard deviation of reproducibility for the DIN 55672-1 method is approximately 11%. Ritter 48; Table 7.

The sufficiency of an application’s written description is a question of fact. *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (*en banc*). The absence of a claim element in the specification in *ipsis verbis* does not require a finding that a claim fails to comply with the written



description requirement. *In re Edwards*, 568 F.2d 1349, 1351–52 (Fed. Cir. 1978). At the same time, the appearance of the claim element in the specification as filed does not guarantee that the written description requirement is satisfied. *See, e.g., Enzo Biochem, Inc. v. Gen-Probe Inc.*, 323 F.3d 956, 968 (Fed. Cir. 2002). All that is required is that the specification demonstrate, with reasonable clarity, to a person of ordinary skill in the art that the inventor was in possession of the invention. *Carnegie Mellon Univ. v. Hoffmann-La Roche Inc.*, 541 F.3d 1115, 1122 (Fed. Cir. 2008).

A preponderance of the evidence supports Appellant’s argument that, when determining a binder’s number-average molecular weight, one of ordinary skill in the art would expect some deviation around the claimed range of 400 to 5000 g/mol. Appeal Br. 9; *see also* Ritter 48; Table 7. Appellant’s original disclosure thus reasonably conveys to those skilled in the art that, as of the application filing date, Appellant had possession of the binder subject matter, in each of the basecoat and the clearcoat materials, having “a number-average molecular weight of about 400 to 5000 g/mol.” For these reasons, we do not sustain the Examiner’s § 112, first paragraph/written description rejection of claim 1. For the same reasons, we likewise do not sustain the rejection of claims 4, 6, 8, 9, and 17–21.

*Ground 2: Rejection of claims 1, 4, 6, 8, 9, and 17–21 as obvious over Choi, Taniguchi, and further in view of Blank, as evidenced by BASF-Pigments*

Appellant argues patentability of claims in this rejection on the basis of limitations recited in claim 1. *See* Appeal Br. 12–21; Reply Br. 2–4. We select claim 1 as representative. Claims 4, 6, 8, 9, and 17–21 stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner finds Choi teaches, *inter alia*, an embossed color steel sheet comprising a color base paint layer and a top coat clear paint layer. Final Act. 5. The Examiner finds that Choi does not disclose that the basecoat and clearcoat materials include an amount of at least one (meth)acrylate copolymer having a number-average molecular weight of about 400 to 5000 g/mol. *Id.* at 9. The Examiner, however, finds that Taniguchi teaches a paint comprising an acrylic copolymer having a number average molecular weight of 1,000–500,000. *Id.* The Examiner concludes that

it . . . would have been obvious to one of ordinary skill in the art to add the amount of [Taniguchi’s] acrylic copolymer having the number-average molecular weight in the clear paints and in the base paints in Choi, in order to provide [Taniguchi’s] long pot life, excellent abrasion resistance, chemical resistance, flexibility, strength desirable durability in the clear paint and in the base paint of Choi, while the acrylic copolymer prevents having viscosity becoming too high to worsen the workability.

*Id.* at 9–10.

The Examiner finds that Choi also does not disclose that the basecoat and clearcoat materials are comprised of “an epoxy-isocyanate-blocked sulfonic acid compound of formula (II),” as recited in claim 1. *Id.* at 9; *see also* Appeal Br. 23 (Claims App.). However, the Examiner finds that “Blank teaches a polymeric isocyanate modified epoxy blocked sulfonic acid ester as a catalyst.” Final Act. 10. The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to have used Blank’s epoxy-isocyanate-blocked sulfonic acid catalyst in Choi’s color base paint and top coat clear paint layer, as modified by Taniguchi, because doing so would have provided a catalyst with improved stability. *Id.* at 13. The Examiner determines that one of ordinary

skill in the art would have been further motivated to use Blank’s catalyst as this would have produced polymeric film coatings with superior hardness, impact resistance, adhesion, improved blister resistance, salt spray characteristics, and flexibility, while avoiding discoloration of the catalyst solutions on storage. *Id.*

Appellant argues that the claimed composition unexpectedly solved the problem that “overbaking of multicoat paint systems . . . is accompanied by the phenomenon of yellowing.” Appeal Br. 12. Appellant argues that the unexpected results are supported by the Specification and both Löw declarations, which demonstrate that the claimed multicoat paint system produces less yellowing upon overbaking than a multicoat paint system lacking an epoxy-sulfonic acid compound of formula (I) or an epoxy-isocyanate-blocked sulfonic acid compound of formula (II). *Id.* at 12–18. According to Appellant, “the obviousness rejection should be overcome on the basis of these surprising results.” *Id.* at 12.

The Examiner, however, finds that use of Blank’s epoxy-isocyanate-blocked sulfonic acid compound of formula (II) would have avoided discoloration of catalyst solutions on storage. Ans. 23; *see also* Final Act. 12. The Examiner concludes that Appellant’s evidence of unexpected results is neither “unexpected[,] nor surprising” because Blank similarly recognizes that the catalyst epoxy-isocyanate-blocked sulfonic acid compound of formula (II) reduces or prevents yellowing. Ans. 24.

Appellant responds by arguing, *inter alia*, that “mere discussion of ‘stability’ in Blank is not suggestive of the surprising advantages associated with Appellant’s claimed multicoat paint system.” Reply Br. 3; *see also* Appeal Br. 19. According to Appellant, the storage stability of Blank’s

catalyst was tested at low temperatures, which are distinguishable from the high temperatures encountered in overbaking. Reply Br. 4. Appellant contends that “like most compounds, catalysts may also decompose if kept at too high of a temperature for too long.” *Id.*

For unexpected results to be probative of non-obviousness, Appellant must establish that the difference actually obtained would not have been expected by one skilled in the art at the time of the invention. *In re Freeman*, 474 F.2d 1318, 1324 (CCPA 1973). Appellant has not provided persuasive evidence of unexpected results because Blank reasonably suggests that the catalyst epoxy-isocyanate-blocked sulfonic acid compound of formula (II) would have reduced or prevented yellowing.

For purposes of section 103, a reference stands for all of the specific teachings thereof as well as the inferences one of ordinary skill in the art would have reasonably been expected to draw therefrom. *In re Fritch*, 972 F.2d 1260, 1264–65 (Fed. Cir. 1992). The question under 35 U.S.C. § 103 is not merely what the references teach, but what they would have suggested to one of ordinary skill in the art at the time the invention was made. All disclosures of the prior art must be considered. *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976).

Although a “multicoat paint system exhibit[ing] less yellowing upon overbaking than a multicoat paint system having a basecoat and a clearcoat that do not comprise . . . the epoxy-isocyanate-blocked sulfonic acid compound of the formula (II),” as recited in claim 1, is not explicitly disclosed in Blank, the prior art would have suggested the compound’s claimed property. As the Examiner persuasively reasons, Blank’s formula (II) catalyst would have been chemically unaltered, unconsumed, and still

capable of improving “storage stability, and preventing discoloration,” even after an overbaking reaction. Ans. 24. The Examiner based this conclusion on definitions of a “catalyst” and “Appellant agrees with the definitions.” Reply Br. 4; *see also* Ans. 23. In our view, Blank’s teachings regarding discoloration prevention would have encompassed the reduction or prevention of yellowing upon overbaking. Appellant’s contention that Blank’s compound of formula (II) would have decomposed at high temperatures over a long duration is mere attorney argument outweighed by the preponderance of evidence. *See* Reply Br. 4. We note that Blank explicitly discloses a “[b]aking schedule [of] 30 min [at] 120 °C” for testing paint compositions comprising catalysts.<sup>4</sup> Blank 11:21–55. One of ordinary skill in the art at the time of the invention would have found it obvious that the catalyst epoxy-isocyanate-blocked sulfonic acid compound of formula (II) would have reduced or prevented yellowing.

Therefore, Blank’s suggestion of a suitable catalyst for a reasonably similar function would have suggested the disputed limitation recited in claim 1.

Appellant also argues that the Examiner’s “obviousness rejection is based on the **addition** of the acrylic copolymer of Taniguchi to the polyester-containing clear and base paints of Choi.” Appeal Br. 20.

Appellant contends that

the amount of acrylic copolymer of Taniguchi to include into the paints of Choi, the total of A and/or the B as present and the

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<sup>4</sup> *Compare with* Spec. 53:16–18 (describing that “the basecoat films and the clearcoat films were baked at a panel temperature of 140°C for 10 minutes” and that a “second series of test panels was overbaked at a panel temperature of 160°C for 10 minutes.”).

a to the e of the basecoat material simply cannot add to 100%. Likewise, the weight fractions of the A and/or the B as present and the a to the d of the clearcoat material simply cannot add to 100%.

*Id.* at 21. Appellant essentially argues that the Examiner has not established a prima facie case of obviousness as the combined prior art does not teach or suggest the limitations concerning the total weights of the basecoat and clearcoat materials. *Id.* at 20–21.

We find that the Examiner *has* met her initial burden in establishing a prima facie case of obviousness. Final Act. 5–15; Ans. 24–25. Appellant fails to address (and rebut) the Examiner’s finding that “it would have been within the skill level of one of ordinary skill in the art to adjust the amounts of the components in the base material and the clear material to add to 100%.” Ans. 25. Appellant, furthermore, merely asserts that the Examiner’s proposed combination “simply cannot add to 100%” without any explanation why the required sum total % cannot be met. Appeal Br. 21.

Claim 1 contains the open transitional term “comprising,” which permits elements in addition to those specified to be included in the composition of the claim. *In re Crish*, 393 F.3d 1253, 1257 (Fed. Cir. 2004). In the Answer, the Examiner explains that the claim language regarding components a. and d. of each the basecoat and clearcoat materials does not exclude combining Choi’s polyester with Taniguchi’s acrylic copolymer. Ans. 25.

On these bases, we are unpersuaded by Appellant’s argument for reversible error. We sustain the rejection of claim 1. For the same reasons, we likewise sustain the rejection of claims 4, 6, 8, 9, and 17–21.

CONCLUSION

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1, 4, 6, 8, 9, 17–21	112, 1 <sup>st</sup> ¶	Written Description		1, 4, 6, 8, 9, 17–21
1, 4, 6, 8, 9, 17–21	103(a)	Choi, Taniguchi, Blank, BASF- Pigments	1, 4, 6, 8, 9, 17–21	
<b>Overall Outcome</b>			<b>1, 4, 6, 8, 9, 17–21</b>	

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED