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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* HIROYOSHI HAMANAKA

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Appeal 2018-007848  
Application 14/771,595  
Technology Center 1700

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Before JAMES C. HOUSEL, AVELYN M. ROSS, and  
JEFFREY R. SNAY, *Administrative Patent Judges*.

HOUSEL, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>1</sup>

Appellant<sup>2</sup> appeals under 35 U.S.C. § 134(a) from the Examiner’s decision finally rejecting claim 1 under 35 U.S.C. § 102(a)(1) as anticipated by Hamanaka.<sup>3</sup> We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM.

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<sup>1</sup> Our decision refers to the substitute Specification (“Spec.”) filed August 31, 2015, the Declaration under 37 C.F.R. § 1.132 of Hiroyoshi Hamanaka (“Hamanaka Declaration” or “Decl.”) filed November 6, 2017, Appellant’s Appeal Brief (“Br.”) filed February 23, 2018, and the Examiner’s Answer (“Ans.”) dated May 25, 2018.

<sup>2</sup> Appellant is the Applicant, Boron Laboratory Co., Ltd., which is identified in the Appeal Brief as the real party in interest (Br. 1).

<sup>3</sup> JP 2011-079918 A, published April 21, 2011.

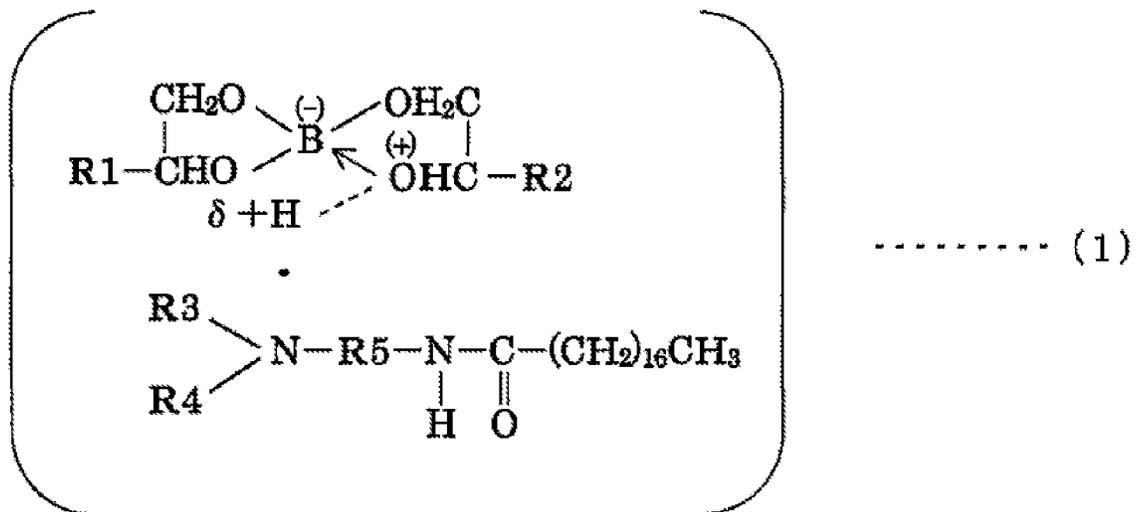
### STATEMENT OF THE CASE

The invention relates to antistatic agents for insulating polymer materials for molded articles (Spec. ¶ 1). According to Appellant, the antistatic agents include a donor-acceptor type molecular compound obtained by melt-mixing and reacting a semi-polar organoboron compound (donor component) with a basic nitrogen compound (acceptor component) (*id.* ¶ 10).

Claim 1, reproduced below from the Claims Appendix to the Appeal Brief, is the only claim before us and is illustrative of the subject matter on appeal. The limitation at issue is italicized.

1. An antistatic agent for insulating polymer materials, characterized in that the antistatic agent is composed of a donor-acceptor type molecular compound represented by the general formula (1) below and obtained by *mixing, melting and reacting* a donor component semi-polar organoboron compound of the upper part in the general formula (1) below with an acceptor component basic nitrogen compound of the lower part in the general formula (1) below,

Chemical Formula 1

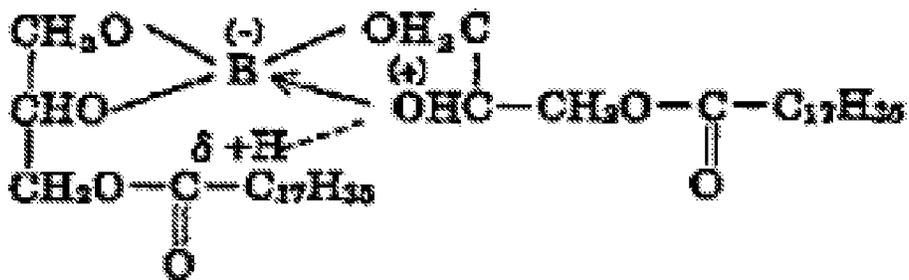


wherein R1 and R2 are each independently CH<sub>3</sub>(CH<sub>2</sub>)<sub>16</sub>-CO-OCH<sub>2</sub> or HOCH<sub>2</sub> and at least one thereof is CH<sub>3</sub>(CH<sub>2</sub>)<sub>16</sub>-CO-OCH<sub>2</sub>; R3 and R4 are each independently CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub>, HOCH<sub>2</sub>, HOC<sub>2</sub>H<sub>4</sub>, or HOCH<sub>2</sub>CH(CH<sub>3</sub>); and R5 is C<sub>2</sub>H<sub>4</sub> or C<sub>3</sub>H<sub>6</sub>.

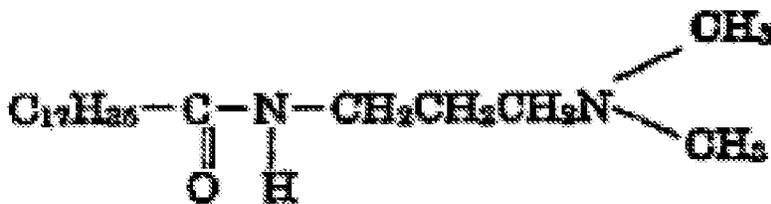
### ANALYSIS

After review of the opposing positions articulated by Appellant and the Examiner, the applied prior art, and Appellant's claims and Specification disclosures, we determine that Appellant's arguments are insufficient to identify reversible error in the Examiner's anticipation rejection. *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011). Accordingly, we affirm the stated rejection for substantially the fact findings and the reasons set forth by the Examiner in the Examiner's Answer. We offer the following for emphasis only.

The Examiner finds Hamanaka discloses an antistatic agent for non-conductive or insulating polymer materials comprising a donor-acceptor hybrid system obtained by mixing, melting and reacting a half-polarity organic compound, i.e., a semi-polar organoboron compound having the structure as shown in formula (2):



and a basic organic nitrogen compound having the structure as shown in formula 17:



wherein the resulting antistatic agent is within the scope of the antistatic agent recited in claim 1 (Ans. 3–4).

Appellant argues that, although both Hamanaka and claim 1 use a semi-polar organoboron compound as a donor component and a basic nitrogen compound as an acceptor component, the antistatic agents of Hamanaka and claim 1 are different (Br. 4–5). Appellant urges that Hamanaka’s agent is not a reaction product of these two components whereas claim 1 recites that these components are reacted (*id.*). In particular, Appellant contends that Hamanaka simply separately mixes these two components into the insulating polymer material without reacting them in advance (*id.* at 5, 7). Appellant states that a reaction leading to the formation of the claimed compound does not occur just by melting the two components separately and mixing them (*id.* at 5). Appellant cites, for the first time, an article published by the Inventor which Appellant contends proves that after the two components are melted, mixed at 70–100 °C, immediately cooled and solidified, a molecular compound results, not a mixture of the two components (Br. 9–10). As a result, Appellant argues that the agent of formula (1) of claim 1 will not be formed in Hamanaka (*id.*).

Appellant asserts that this position is also supported by Specification paragraph 32, which relates to Hamanaka's Example 17, and paragraphs 58–63 for Appellant's Comparative Example 19, which again corresponds to Hamanaka's Example 17 (Br. 5). Specifically, Appellant asserts that comparing Figures 2 and 3 shows that the mixed composition is not a donor-acceptor molecular compound (*id.* at 6). Also, Appellant asserts that Comparative Example 19 clearly shows that the specific surface resistance is significantly higher than for the present invention and the charge attenuation rate is extremely low (*id.*). Appellant further asserts that the claimed antistatic agent is a reaction product, not a mixed composition, obtained by stirring and mixing while heating, and heating and stirring are stopped when they have dissolved in each other, followed by cooling and solidification (*id.* at 5–6, citing Spec. ¶¶ 38–57).

In addition, though Appellant concedes that Hamanaka discloses that it is possible to melt-mix the two components, Appellant asserts that the resulting product is a mixed crystal in which the two components exist separately and do not react together (Br. 6–7). Appellant argues that while Hamanaka's antistatic agent cannot be crystallized, the donor-acceptor type molecular compound of claim 1 can be crystallized to maintain the structure stably (*id.*). Appellant asserts that the Inventor declares this to be true (*id.* at 11).

Appellant also urges that the Hamanaka Declaration conclusively proves that the donor-acceptor type compound cannot be obtained by merely melt-mixing the two components together (Br. 13). Instead, Appellant contends that “[t]he special heating and treating conditions in order to cause

a reaction must be present . . . for the donor-acceptor type molecular compound to be formed” (*id.*).

Appellant’s arguments are not persuasive of reversible error in the Examiner’s finding of anticipation by Hamanaka. As the Examiner notes (Ans. 6), claim 1 fails to recite any special heating and treating conditions different from those taught in Hamanaka that would produce an antistatic agent that is different from Hamanaka. Nor does claim 1 recite any specific surface resistance or charge attenuation rate for the recited antistatic agent (*id.* at 7). Also, claim 1 does not recite that the antistatic agent is crystalline. Further, even if Hamanaka’s product is a mixed crystal, as the Examiner also notes (Ans. 7–8), Appellant fails to evince that a mixed crystal is distinct from the claimed antistatic agent either by an evidentiary showing or by persuasive technical reasoning. Therefore, Appellant fails to distinguish the claimed antistatic agent from Hamanaka’s on the basis of these features because they are simply not limitations of the claimed agent. *See In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993) (rejecting appellants’ nonobviousness argument as based on limitation not recited in claim); *In re Self*, 671 F.2d 1344, 1348 (CCPA 1982) (“Many of appellant’s arguments fail from the outset because, as the solicitor has pointed out, they are not based on limitations appearing in the claims.”).

Appellant also fails to rebut the Examiner’s findings that Hamanaka would necessarily produce at least some of the reaction product between the donor and acceptor components. The Examiner responds, “given that the components are melt-mixed, there will necessarily be a reaction leading to at least some formation of the donor-acceptor type molecular compound” absent evidence to the contrary (Ans. 5). The Examiner finds, because

Appellant argues that the “molecular compound will be almost nonexistent” and discloses that “there is almost no formation of the donor-acceptor type molecular compound,” that Appellant supports the Examiner’s position (*id.*). In addition, the Examiner finds that Appellant fails to show that Hamanaka has no formation of the molecular compound (*id.*). Though the Examiner notes Appellant compares IR spectrum of the present invention, i.e., Figures 1 and 2, with Hamanaka’s Example 17, i.e., Figure 3, the Examiner finds such evidence insufficient to establish that there is no formation of the molecular compound in Hamanaka (*id.* at 5–6).

Hamanaka teaches that the antistatic agent may be obtained by “melt mixing” the donor and acceptor components before they are added to the insulating polymer material (Hamanaka ¶¶ 20, 31, 35, 45, 71). Thus, Hamanaka supports the Examiner’s findings. Further, as we previously noted, although claim 1 recites “mixing, melting and reacting,” this claim fails to recite any specific conditions that distinguish the claimed process from Hamanaka’s melt mixing process. Nor has Appellant directed our attention to any disclosure providing a clear distinction between “mixing, melting and reacting” of claim 1 and Hamanaka’s “melt mixing.”

Turning to Appellant’s IR absorption spectra of Figures 1–3, Appellant contends that the Specification and Declaration confirm that the molecular compound represents, and Comparative Example 19 does not represent, the reaction of the donor and acceptor compounds (Br. 5–6). The Specification discloses the absence of a peak at  $835\text{ cm}^{-1}$  in the IR spectrum for the molecular compound (Fig. 2) and the presence of this peak in the IR spectrum for Comparative Example 19 (Spec. ¶28).

However, this evidence is not persuasive that Hamanaka fails to teach a molecular compound within the scope of claim 1. First, Comparative Example 19 is disclosed to correspond to Hamanaka's Example 17, wherein the donor and acceptor components are melt-mixed into a low-density polyethylene (*compare* Spec. ¶ 46 *with* Hamanaka ¶ 63). This comparison does not address the previously discussed alternative teaching in Hamanaka of melt-mixing the donor and acceptor components prior to mixing into the insulating polymer material.

Second, the IR spectra of Figure 3 represents the product of melt mixing the donor compound, the acceptor compound, and the low-density polyethylene (Spec. ¶¶ 12, 46). On the other hand, the IR spectra of Figure 2 represents the product of melt mixing only the donor and acceptor compounds (*id.* ¶ 12, 27–28). Appellant and Declarant fail to direct our attention to any explanation as to what affect the low-density polyethylene has on the IR spectra. Thus, any differences between Figures 2 and 3 cannot be reliably parsed between the presence of a molecular reaction product between the donor and acceptor compounds and the low-density polyethylene.

Third, the IR spectra of Figures 2 and 3 both differ significantly from the IR spectrum for the donor component alone of Figure 1. Yet both share a similar shift in the peak at  $3300\text{ cm}^{-1}$  which Appellant discloses is a confirmation “that intermolecular forces are acting between the semi-polar organoboron compound moiety and the tertiary amine moiety” (Spec. ¶ 28). Thus, at least based on the presence of a shift in the peak at  $3300\text{ cm}^{-1}$ , there is support for concluding that the molecular reaction product between the donor and acceptor compounds is present in Hamanaka's Example 17.

Turning to the Hamanaka Declaration,<sup>4</sup> we note the IR spectrum of Figure 4 (Decl. 7) also includes a shift in the peak at 3300  $\text{cm}^{-1}$ . Declarant notes that the Figure 4 shift, at 3312  $\text{cm}^{-1}$ , is nearly identical to that of Figure 2, representing the acceptor compound only, whereas the Figure 3 shift, at 3316  $\text{cm}^{-1}$ , differs slightly from that of Figure 2 (*id.* at 8). Declarant concludes that the reason for this difference in shift “is that there is a dipole-dipole interaction working between a bond formed through the formation of the molecular compound . . . and the amide bond of the acceptor component” (*id.*). However, Declarant fails to provide a persuasive explanation supporting this conclusion, especially considering that the shift is so slight and both Experiments 3 and 4 entail melt mixing of the two compounds alone. Further, Appellant fails to explain why the melt mixing conditions in each experiment were selected. For example, Declarant fails to explain why the melt-mixing for Experiment 3 involved mixing first, followed by melting at 70–80 °C, then stir-mixing for an hour at 80 °C, followed by cooling and solidification, while the melt-mixing for Experiment 4 involved separately melting the two compounds at different temperatures, then mixing (no time period given) without stir-mixing for an hour at 80 °C, followed by cooling and solidifying (*see* Decl. 2 and 3). Claim 1 does not recite any particular order for mixing, melting and reacting the two compounds, nor any particular conditions for these steps. In

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<sup>4</sup> We note that the Declaration improperly includes statements by two non-declarant individuals, Takeo Suzuki and Chisato Obana, regarding preparation of additional test data (Decl. 1, “I, Takeo SUZUKI and Chisato OBANA, both employed at Yokozeki Oil & Fat Industries Co., Ltd. have prepared additional test data . . .”). Notwithstanding this issue, we treat the declaration as if Declarant had direct knowledge of the experiments described in the Declaration.

addition, we note that Hamanaka appears, in one example (Hamanaka ¶ 63), to suggest melt mixing at 120 °C for four hours, which is higher than the 70–80 °C used in Experiment 3 and the 80–90 °C disclosed in Examples 2 and 3, paragraphs 29 and 30 of the Specification. Appellant does not direct our attention to any disclosure setting forth that the melt-mixing conditions are critical to the production of the antistatic agent of claim 1, nor do we find any. Therefore, the Hamanaka Declaration fails to distinguish the antistatic agent of claim 1 from that of Hamanaka.

Appellant next argues that Hamanaka does not suggest the donor and acceptor components of claim 1 (Br. 9). Appellant contends that Hamanaka's donor component is a linear saturated hydrocarbon group of 11 to 22 carbon atoms and is not limited to those having 17 carbon atoms (*id.*). Moreover, Appellant contends that Hamanaka fails to use a glycerol triester as the structural skeleton of the donor (sic, acceptor) component (*id.*). Appellant also contends that Hamanaka's acceptor component may be free of amide bonds, the linear saturated hydrocarbon groups may have 11 to 22 carbon atoms, and the carbon chains are not limited to those having 17 carbon atoms (*id.*).

This argument also is not persuasive of reversible error. Although Hamanaka's donor component has a linear saturated hydrocarbon group of 11 to 22 carbon atoms, Hamanaka specifically teaches that the donor component may be limited to a 17 carbon atom group as represented by formula (17), which is one of the species of the genus of donor components recited in claim 1 (Hamanaka ¶ 29). Moreover, Hamanaka teaches an acceptor component, formula (2), that is a species of the genus of acceptor components recited in claim 1 (*id.* ¶ 12). As such, Appellant fails to identify

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reversible error in the Examiner's finding that Hamanaka teaches donor and acceptor compounds within the scope of claim 1.

#### DECISION

Upon consideration of the record, and for the reasons given above and in the Examiner's Answer, the decision of the Examiner rejecting claim 1 under 35 U.S.C. § 102(a)(1) as anticipated by Hamanaka is *affirmed*.

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).

AFFIRMED