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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte CLAUS GABRIEL, MANORANJAN PRUSTY, MARTIN BAUMERT, and NORBERT GÜNTERBERG

Appeal 2018-001333
Application 14/359,355
Technology Center 1700


GAUDETTE, Administrative Patent Judge.

DECISION ON APPEAL 1

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner’s decision finally rejecting claims 1–5, 7–9, 11–15, and 17–27, which constitute all the claims pending in this application. Claims 6, 10, and 16 have been cancelled. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

The invention relates to thermoplastic, blow-moldable, polyamide molding compositions which are said to have improved heat-aging resistance (HAR) and good mechanical properties, e.g., melt stability during blow molding. Spec. 2:27–30. Of the appealed claims, claims 1, 20, and 21 are independent. See generally Appeal Br. A-1–A-7. Claim 1 is representative of the claims on appeal, and is reproduced below:

1. A thermoplastic molding composition comprising
   A) from 10 to 94% by weight of a polyamide,
   B) from 10 to 25% by weight of an impact modifier made of a copolymer I of
      B₁) from 35 to 89.9% by weight of ethylene
      B₂) from 10 to 60% by weight of 1-octene or 1-butene or propylene or a mixture of these and
      B₃) from 0.05 to 5% by weight of functional monomers, wherein the functional monomers are selected from the group consisting of carboxylic acid groups, carboxylic anhydride groups, carboxylic ester groups, carboxamidine groups, carboximide groups, amino groups, hydroxy groups, epoxy groups, urethane groups, oxazoline groups, and mixtures of these,

or made of a copolymer II of

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² The Applicant under 37 C.F.R. § 1.46, and, therefore, the Appellant under 35 U.S.C. § 134, is BASF SE, also identified by Appellant as the real party in interest. Appeal Br. 4.
B₁) from 50 to 98% by weight of ethylene

B₄) from 2 to 50% by weight of acrylic acid or methacrylic acid or a (meth)acrylate having from 1 to 18 carbon atoms, or

B₅) from 0 to 20% by weight of functional monomers selected from the group consisting of carboxylic anhydride groups, epoxy groups, and mixtures of these,

or a mixture of these,

C) from 0.1 to 10% by weight of a copolymer of

C₁) from 50 to 95% by weight of styrene or substituted styrenes of the general formula I or a mixture of these

![Chemical Structure](image)

in which R is an alkyl radical having from 1 to 8 carbon atoms or a hydrogen atom and R¹ is an alkyl radical having from 1 to 8 carbon atoms and n has the value 0, 1, 2, or 3, and

C₂) from 5 to 50% by weight of structural units derived from one or more dicarboxylic anhydrides,

D) from 0.001 to 20% by weight of iron powder wherein the C content of component D) is from 0.01 to 1.2 g/100 g when measured by a method based on ASTM E1019,

E) from 0.05 to 3% by weight of a copper-containing stabilizer,

F) from 100 ppm to 5% by weight of alkali metal salts or alkaline earth metal salts of oxo acids of phosphorus or a mixture of these,

G) from 0 to 2% by weight of a polyethyleneimine homo- or copolymer,
H) from 0 to 60% by weight of further additives selected from the group consisting of a fibrous filler, a particulate filler, a lubricant, a nigrosin, oxidation retarders, UV stabilizers, dyes, pigments, nucleating agents, heat stabilizers, flame retardants, mold release agents, and plasticizers,

where the total of the percentages by weight of A) to H) is 100%, and where the molding composition exhibits a surface roughness of class 3 or class 4.

Id. at A-1–A-2

The Examiner relies on the following references as evidence of unpatentability:

<table>
<thead>
<tr>
<th>Reference</th>
<th>Publication Date</th>
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<tbody>
<tr>
<td>Kelmchuk</td>
<td>US 3,691,131</td>
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<tr>
<td>Subramanian</td>
<td>US 5,122,570</td>
</tr>
<tr>
<td>Gittinger et al. (“Gittinger”)</td>
<td>US 6,737,462 B2</td>
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</table>

CAS Record for SMA-3000, September 30, 2015. 

The claims stand finally rejected under 35 U.S.C. § 103(a) as follows: (1) claims 1–5, 7–9, 11–15, and 17–24 over Warner, Subramanian, Kelmchuk, and Prusty, as evidenced by CAS Record for SMA-3000; (2) claims 1–5, 7–9, 11–15, and 17–24 over Warner, Subramanian, Kelmchuk, and Prusty, as evidenced by CAS Record for SMA-3000 and Heat Stabilizers (p. 24); and (3) claims 1–5, 7–9, 11–15, and 17–27 over Warner, Subramanian, Gittinger, and Prusty, as evidenced by CAS Record for SMA-3000.

The Examiner finds Warner discloses a blow-moldable composition comprising claim 1 components A, B (copolymer II), and F—polyamide,
ethylene/acrylic ester copolymer, and sodium hypophosphite—in amounts that
overlap those recited in claim 1. Ans. 3–5 (citing Warner Table VI, Blend 1341).
The Examiner finds Warner discloses a composition comprising claim 1
components A, B (copolymer II), and C—polyamide, ethylene/acrylic ester
copolymer, and styrene/maleic anhydride resin (SMA)— in amounts that overlap
those recited in claim 1. See id. at 4 (citing Warner Table VI, Blend 1413). The
Examiner finds Warner does not disclose the function of SMA in the composition.
See id.

The Examiner finds Subramanian discloses that addition of small amounts of
an anhydride rich polymer substantially increases the melt viscosity of polyamides
and makes polyamides readily processible by blow molding. Ans. 4 (citing
Subramanian 1:45–60). Subramanian explicitly identifies SMA 3000 as a suitable
anhydride rich polymer. Subramanian 3:8–10. The Examiner finds one of ordinary
skill in the art would have included SMA 3000 in Warner’s Blend 1341 to achieve
the benefits described in Subramanian, including high melt strength, which Warner
discloses is a property that renders its polyamide blends useful in blow-molding
applications. Ans. 4 (citing Warner 7:1–3). The Examiner cites CAS Record as
evidence that SMA 3000 is the same as SMA-3000P, the SMA compound used in
Appellant’s examples (see Spec. 21:22–23). Ans. 5.

The Examiner finds Warner discloses that other additives can be added to
the composition, including antioxidants. Id. (citing Warner 5:65–6:10); see Warner
6:2–4. The Examiner finds “Kelmchuk teaches heat stabilized polyamide
compositions comprising a phenolic antioxidant, copper compound, metal halide
and sodium hypophosphite.” Ans. 5; see Kelmchuk Abstract. Prusty discloses a
thermoplastic molding composition comprising a polyamide, 0.05 to 5 wt%
polyethyleneimine, 0.01 to 20 wt% iron powder, and other additives, including a
copper stabilizer in combination with a hindered phenol. Prusty ¶ 104, Abstract. The Examiner finds Kelmchuk teaches 0.001 to 0.03 wt% of copper compound and Prusty teaches 0.05 to 3 wt% of copper compound. Ans. 6. The Examiner finds that, based on these teachings, one of ordinary skill in the art would have added Kelmchuk’s copper-containing stabilizer composition to Warner’s composition in an amount of 0.05 to 3 wt% as recited for claim 1, component E, to provide improved oxidative stability. Id. at 5–6. The Examiner finds the additional components in Kelmchuk’s stabilizer composition are capable of acting as heat stabilizers—claim 1, component H. Id. at 6. In the second ground of rejection, the Examiner relies on page 24 of Heat Stabilizers as evidence that Kelmchuk’s hindered phenols are heat stabilizers/antioxidants which provide stability during processing and resistance to thermal breakdown. Id. at 15.

In the third ground of rejection, the Examiner relies on Gittinger, rather than Kelmchuk for a teaching that a “stabilizer mixture of copper compound, metal halide and sodium hyphosphite leads to polyamide compositions which are highly stable to thermo-oxidative and photo-oxidative aging” and have improved impact properties. Id. at 23 (citing Gittinger 1:65–67, 3:15–17, and 5:1–5). The Examiner finds the additional components in Gittinger’s stabilizer composition are capable of acting as heat stabilizers—claim 1, component H. Id. at 24.

As to components D and G, the Examiner finds the ordinary artisan would have included iron powder and polyethyleneimine in Warner’s composition based on Prusty’s teaching that compositions comprising these components in combination with a polyamide exhibit improved heat aging resistance. Id. at 6–7 (citing Prusty ¶¶ 8, 13). The Examiner finds “[t]he data present in Appellant’s specification and the Gabriel declarations submitted throughout prosecution demonstrates the addition of polyethyleneimine and/or Components D, E and G
always result[s] in the surface roughness being a 3 or 4.” Ans. 8. The Examiner thus determines Warner’s composition, as modified based on the teachings of (1) Subramanian, Kelmchuk, and Prusty, or (2) Subramanian, Gittinger, and Prusty, inherently would exhibit a surface roughness of class 3 or class 4. Id. at 8, 25.

Appellant argues (1) the Examiner failed to identify evidence to support a finding that one of ordinary skill in the art would have included both sodium hypophosphite and SMA in Warner’s composition (Appeal Br. 18–19), (2) there would not have been a reason to include a hypophosphite in a composition containing a metal halide, hindered phenol, and copper, because the examples in Kelmchuk show no benefit to adding a hypophosphite (id. at 19–20), (3) Specification pages 24 and 25 evidence that sagging ratio is not an inherent property (Appeal Br. 24–25), and (4) the data and discussion in the Gabriel Declarations provide evidence of unexpected results (id. at 20–22).

We have considered Appellant’s arguments, but are not persuaded of reversible error in the Examiner’s conclusion of obviousness. The Examiner has provided detailed findings of fact and fully explained the reasons why the ordinary artisan would have modified Warner’s composition in view of the secondary references. See Ans. 3–31. The Examiner has identified persuasive evidence to support these findings and reasons, and has explained in detail why Appellant’s arguments are not convincing of nonobviousness. See id. at 31–49. The Examiner has also provided detailed explanations throughout the Answer as to why the Declarations are not persuasive of unexpected results. See, e.g., Ans. 31–33, 40. We add the following comments to address arguments made in the Reply Brief.

Appellant argues the references fail to disclose a reason to include sodium hypophosphite in the polyamide composition. Reply Br. 2. There is no need for the Examiner to provide a reason, however, because Warner’s Blend 1341, the
composition that forms the basis of the Examiner’s rejection, already includes sodium hypophosphite (see Warner Table VI), and Warner does not limit the number of “other additives” (see id.) that may be present in the inventive compositions (see id. at 5:65–66).

Appellant also argues the Examiner improperly refers to three patents which are not included in the stated grounds of rejection. Reply Br. 2. We have not considered these references or the Examiner’s findings with respect to these references in reaching our decision.

As indicated above, all remaining arguments advanced by Appellant, including those not identified explicitly herein, have been fully addressed by the Examiner and are unpersuasive for the reasons stated in the Answer.
### Order

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**Summary**

1–5, 7–9, 11–15, and 17–27

*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**