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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte XINYU ZHAO and KE FENG¹

Appeal 2018-008634
Application 13/643,393
Technology Center 1700

Before BRADLEY R. GARRIS, LINDA M. GAUDETTE, and JEFFREY T. SMITH, *Administrative Patent Judges*.

GARRIS, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134, Appellants appeal from the Examiner's rejections under pre-AIA 35 U.S.C. § 103(a) of sole independent claim 1 as unpatentable over Miyazaki (US 6,010,760, iss. Jan. 4, 2000) in view of Saito (US 6,280,668 B1, iss. Aug. 28, 2001), Calundann (US 4,067,852, iss. Jan. 10, 1978), and Miyata (US 5,384,391, iss. Jan. 24, 1995) as evidenced by Jiang Shicheng et al. (THE RELATIONSHIP BETWEEN NUMBER AVERAGE MOLECULAR WEIGHT AND VISCOSITY OF POLY (P-PHENYLENE SULFIDE),

¹ Ticona, LLC is identified as the real party in interest (Br. 3).

Gaofenzi Tongxun, No. 3, 185 (Abstract) (1981)) (“Shicheng”) or alternatively over Saito in view of Calundann and Miyata as evidenced by Shicheng and Adeka (ADK STAB PEP-36—PHOSPHITE ANTIOXIDANT (2009)) and of remaining dependent claims 2–11, 13, 14, and 21 as unpatentable over these references alone or in combination with additional prior art.² We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM.

Appellants claim a resin composition comprising a polymer mixture of an aromatic polyester polymer and a polyarylene sulfide polymer, wherein the polyarylene sulfide polymer has a melt viscosity of less than about 80 Pa.s, and reinforcing fibers in an amount from about 10% to about 70% by weight based on the total weight of the resin composition (claim 1).

A copy of representative claim 1, taken from the Claims Appendix of the Appeal Brief, appears below.

1. A resin composition comprising:
a polymer mixture comprising:
an aromatic polyester polymer and a polyarylene sulfide polymer at a weight ratio up to 1:3, wherein the polyarylene sulfide polymer is present in an amount greater than the aromatic polyester polymer and has a melt viscosity of less than about 80 Pa.s, and wherein the repeating structure of the polyarylene sulfide polymer consists of $-(C_6H_4-S)_n-$ wherein n is an integer of 1 or more, wherein the aromatic polyester has a melting point of from about 320°C to about 400°C;
at least a first stabilizer comprising a phosphite comprising tris(2,4-di-tert-butylphenyl) phosphite, bis(2,4-

² Though listed in the Claims Appendix of the Appeal Brief, dependent claim 22 has been canceled (*see, e.g.,* Answer 29).

dicumylphenyl) pentaerythritol diphosphite, distearyl pentaerythritol diphosphite, or a combination thereof; and reinforcing fibers in an amount ranging from about 10% to about 70% by weight based on the total weight of the resin composition, wherein the composition exhibits a color L reduction of less than 1 and a gloss reduction of less than 5%.

Appellants do not present separate arguments specifically directed to the dependent claims under rejection (*see generally* Br.). Accordingly, the dependent claims will stand or fall with their parent independent claim 1.

We sustain the § 103(a) rejections based on the findings of fact, conclusions of law, and rebuttals to arguments well stated by the Examiner in the Examiner's Answer. We add the following comments for emphasis.

Concerning the rejection of claim 1 over Miyazaki in view of Saito, Miyata and other references, the Examiner finds that Miyazaki discloses a resin composition comprising a mixture of an aromatic polyester polymer and a polyarylene sulfide polymer in combination with reinforcing fibers but does not disclose the claimed melt viscosities of the polyarylene sulfide polymer or the claimed amounts of the reinforcing fibers (Answer 3, 5, 7). The Examiner concludes that it would have been obvious to add Miyazaki's reinforcing fibers in the amounts claimed in view of Saito (*id.* at 5–7) and to use as Miyazaki's polyarylene sulfide polymer one of Miyata's polyarylene sulfide polymers which possess melt viscosities (e.g., 10.1 Pa.s) within the claimed range of less than about 80 Pa.s (*id.* at 7–8).

Appellants emphasize that Miyazaki's polyarylene sulfide polymer in Example 3 has a melt viscosity of 140 Pa.s and argue that the low melt viscosities of Miyata's polyarylene sulfide polymers would be too low to provide the shear necessary for obtaining the fibrous form desired by Miyazaki (Br. 10–11).

In responding to this argument, the Examiner finds that Miyazaki teaches the necessary shear is achieved by a melt viscosity ratio (i.e., of a thermoplastic resin (polyarylene sulfide polymer) to LCP (aromatic polyester polymer)) (Answer 31). The Examiner applies this ratio to Miyazaki's Example 3 and finds that unsuitable melt viscosities of Miyazaki's polyarylene sulfide polymers are below 4 Pa.s (*id.*). These circumstances lead the Examiner to find that Miyata's polyarylene sulfide polymer melt viscosities of, for example, 10.1 Pa.s are suitable for Miyazaki (*id.*). We emphasize that Appellants do not contest the Examiner's findings in the record of this appeal (i.e., no Reply Brief has been filed).

The Examiner also considers Appellants' argument unpersuasive based on the finding that Miyazaki discloses alternative methods for obtaining the desired compositions (e.g., having the desired fibrous forms) (*id.* at 32). For example, the Examiner finds that Miyazaki teaches obtaining the compositions using a dispersion aid (e.g., the phosphites disclosed by Miyazaki and defined by the appealed claims) rather than a particular melt viscosity ratio (*id.*). According to the Examiner, "Appellant[s] ha[ve] not provided sufficient evidence that the melt viscosities of **Miyata's** PPS would be material to, or impact in any way, the ability to achieve **Miyazaki's** compositions should a phosphite dispersion aid be used" (*id.* at 32–33). As above, we emphasize that Appellants do not challenge the Examiner's position on this matter.

In addition, Appellants dispute the Examiner's proposed combination of Miyazaki and Saito by arguing that Miyazaki already solves the problem addressed by Saito (Br. 12–14).

The Examiner responds by explaining that Miyazaki teaches a composition containing reinforcing fibers but does not teach any concentrations or amounts for these fibers (Answer 34). The Examiner further explains that Saito addresses this deficiency of Miyazaki by teaching effective amounts of such fibers in compositions corresponding to those of Miyazaki (*id.*). For these reasons, the Examiner determines that an artisan would have been motivated to add the reinforcing fibers of Miyazaki in the amounts taught by Saito including amounts within the scope of claim 1 (*id.*). Appellants do not rebut this response by the Examiner.

For the reasons given by the Examiner including those emphasized above, Appellants' arguments fail to show reversible error in the Examiner's rejections based on Miyazaki in view of Saito, Miyata, and other references.

Concerning the rejection of claim 1 based on Saito in view of Miyata and other references, the Examiner finds that Saito discloses a resin composition comprising a polymer mixture of an aromatic polyester polymer and a polyarylene sulfide polymer but does not disclose a polyarylene sulfide polymer having a melt viscosity less than about 80 Pa.s as claimed (Answer 11, 14). The Examiner concludes that it would have been obvious to use as Saito's polyarylene sulfide polymer one of the polyarylene sulfide polymers of Miyata which possesses a melt viscosity (e.g., 10.1 Pa.s) within the claimed range (*id.* at 14).

Appellants emphasize that Saito discloses a polyarylene sulfide polymer having a melt viscosity of 150 Pa.s and argue that no reasonable expectation of success exists for replacing a high melt viscosity polyarylene sulfide polymer of Saito with Miyata's low melt viscosity polyarylene sulfide polymer (Br. 16–17).

The Examiner responds by finding that Saito discloses no restrictions concerning the melt viscosities of the polyarylene sulfide polymers used in Saito's compositions (Answer 35–36). Moreover, the Examiner finds no evidence (e.g., in Saito or Miyata) supporting Appellants' contention that an artisan would not have had a reasonable expectation of success in using Miyata's low melt viscosity polyarylene sulfide polymers in the compositions of Saito (*id.* at 36). The record contains no rebuttal by Appellants of the Examiner's above findings.

On the record before us, Appellants' arguments also fail to reveal harmful error in the Examiner's rejections based on Saito in view of Miyata and other references.

We affirm the Examiner's decision to reject claims 1, 2–11, 13, 14, and 21.

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