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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte HIROAKI FUJIWARA, MASAO IMAI, and YUKI KITAI

Appeal 2019-005258
Application 14/831,235
Technology Center 2800

Before LINDA M. GAUDETTE, CHRISTOPHER L. OGDEN, and
DEBRA L. DENNETT, *Administrative Patent Judges*.

DENNETT, *Administrative Patent Judge*.

DECISION ON APPEAL¹

Pursuant to 35 U.S.C. § 134(a), Appellant² appeals from the
Examiner’s decision to reject claims 1 and 4–11 of Application 14/831,235,

¹ In our Decision, we refer to the Specification (“Spec.”) of Application No. 14/831,235 filed Aug. 20, 2015 (“235 App.”); the Final Office Action dated Mar. 27, 2018 (“Final Act.”); the Advisory Action dated June 28, 2018 (“Advisory Act.”); the Appeal Brief filed Jan. 2, 2019 (“Appeal Br.”); the Examiner’s Answer dated May 1, 2019 (“Ans.”); and the Reply Brief filed June 27, 2019 (“Reply Br.”).

² We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Panasonic Intellectual Property Management Co. Ltd. Appeal Br. 3.

which constitutes all the claims pending in this application.³ We have jurisdiction under 35 U.S.C. § 6(b).

For the reasons set forth below, we AFFIRM.

STATEMENT OF THE CASE

The '235 Application relates to an epoxy resin composition to be used favorably for manufacturing (1) printed wiring boards having excellent heat resistance, (2) a prepreg using the epoxy composition, and (3) a metal-clad laminate. Spec. ¶ 1. The Specification describes a demand for printed wiring boards with good high-frequency characteristics that are adaptable to high levels of multilayering to allow for an increased number of interconnections. Spec. ¶ 2. Epoxy resin compositions having high heat resistance are also desirable. Spec. ¶ 4. An object of the '235 Application is to provide an epoxy resin composition having excellent dielectric characteristics and exhibiting high heat resistance while maintaining flame retardancy. Spec. ¶ 7. The epoxy resin composition comprises an epoxy compound, a low-molecular-weight phenol-modified polyphenylene ether and a cyanate compound as essential components. Spec. ¶ 7.

Claim 1, reproduced below from the Claims Appendix of the Appeal Brief, illustrates the claimed subject matter:

1. An epoxy resin composition which is a thermosetting resin composition composed of a resin varnish containing (A) an epoxy compound having a number-average molecular weight of 1000 or less and containing at least two epoxy groups in the molecule without containing any halogen atoms, (B) a polyphenylene ether having a number-average molecular

³ Cancellation of claim 3 moots the Examiner's rejection of the claim. *See* Advisory Act. 2.

weight of 5000 or less, (C) a cyanate ester compound, (D) a curing catalyst and (E) a halogen flame retardant,

wherein all of the components (A) to (C) are dissolved in the resin varnish, while the component (E) is dispersed without being dissolved in the resin varnish,

said halogen flame retardant (E) is at least one kind selected from the group consisting of ethylene bis(pentabromophenyl), and ethylene bistetrabromophthalimide, and

said epoxy compound (A) is a dicyclopentadiene epoxy compound.

REFERENCES

The Examiner relies on the following references in rejecting the claims:

Name	Reference	Date
Kinoshita et al. ("Kinoshita")	US 6,455,784 B1	Sept. 24, 2002
Mizuno et al. ("Mizuno")	US 2006/0167189 A1	July 27, 2006
Mori et al. ("Mori")	US 2007/0203308 A1	Aug. 30, 2007
Okumoto et al. ("Okumoto") ⁴	JP H10-279781 A	Oct. 20, 1998
Ishido et al. ("Ishido")	JP 2001-261791 A	Aug. 30, 2001

REJECTIONS

The Examiner rejects claims under 35 U.S.C. § 103⁵ as follows: (1) claims 1, 5-7, and 9-11 over Mizuno in view of Okumoto and Kinoshita; (2)

⁴ Although we typically refer to prior art patents by the first inventor's surname, here we follow the Examiner's use of "Okumoto" and "Ishido" for ease of reference to the record.

⁵ Because this application was filed after the March 16, 2013, effective date of the America Invents Act, we refer to the AIA version of the statute.

claim 4 over Mizuno in view of Okumoto, Kinoshita, and Ishido; and (3) claim 8 over Mizuno in view of Okumoto, Kinoshita, and Mori. Final Act. 3–10.

DISCUSSION

We review the appealed rejections for error based upon the issues identified by Appellant and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential), (cited with approval in *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011)) (“[I]t has long been the Board’s practice to require an applicant to identify the alleged error in the [E]xaminer’s rejections.”). After considering the evidence presented in this Appeal and each of Appellant’s arguments, we are not persuaded that Appellant identifies reversible error in the Examiner’s rejections.

Appellant argues for patentability of all of the claims as a group. Appeal Br. 8–13. We select independent claim 1 as representative of the claims subject to the first ground of rejection. 37 C.F.R. § 42.37(c)(1)(iv). We also consider these arguments to the extent applicable to the claims subject to the remaining grounds of rejection.

Of relevance to this appeal, the Examiner finds that Mizuno discloses claim 1’s limitation “said epoxy compound (A) is a dicyclopentadiene epoxy compound.” Final Act. 4. All of Appellant’s arguments for patentability of the claims over the cited references concern this limitation. *See* Appeal Br. 9–13.

Appellant argues that neither Okumoto nor Kinoshita disclose any dicyclopentadiene epoxy compound. *Id.* at 9, 10–11. These arguments are

unpersuasive, however, as the Examiner relies on Mizuno for the disclosure. Final Act. 4.

Appellant contends that Mizuno includes an epoxy resin having a biphenyl structure as an essential component. Appeal Br. 9 (citing Mizuno claims). Appellant argues that “Mizuno . . . uses a dicyclopentadiene skeleton-containing epoxy resin as an exemplary epoxy resin only to be combined with the epoxy resin having a biphenyl structure.” *Id.* (citing Mizuno ¶ 43). Appellant argues that Mizuno teaches “use of the dicyclopentadiene skeleton-containing epoxy resin **in place of** the epoxy resin having a biphenyl structure in the molecule as the essential component (see Comparative Example 5) shows” undesirable effects compared with use of epoxy resin having a biphenyl structure. *Id.* at 9–10 (citing Mizuno Example 1 and Table 2); *see also* Reply Br. 4. Thus, Appellant concludes, one of skill in the art would not have selected and used the dicyclopentadiene skeleton-containing epoxy resin disclosed in Mizuno because it results in undesirably disadvantageous performance. Appeal Br. 10.

Appellant also argues that there would have been no expectation of success in selecting the dicyclopentadiene skeleton-containing epoxy resin of Mizuno because the reference teaches “only negative and undesirable effects associated with the use of dicyclopentadiene skeleton-containing epoxy resin *in place of* its inventive epoxy resin having a biphenyl structure in the molecule as the essential component.” *Id.* at 11 (emphasis added). Appellant argues that Mizuno teaches away from use of a dicyclopentadiene skeleton-containing epoxy resin. *Id.*; *see also* Reply Br. 5.

Appellant’s arguments are unpersuasive of reversible error in the rejection because they rely on *replacing* Mizuno’s epoxy resin containing a

biphenyl structure with a dicyclopentadiene skeleton-containing epoxy resin. In contrast, the Examiner's rejection is based on *combining* Mizuno's epoxy resin containing a biphenyl structure *and* a dicyclopentadiene skeleton-containing epoxy resin. *See* Ans. 10. Our construction of claim 1 does not limit the epoxy resin composition to inclusion of *only* a dicyclopentadiene epoxy compound *or* a biphenyl epoxy compound. *See* Appeal Br. 15 (Claims App.).

During prosecution, we give the language of the proposed claims "the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification." *In re Morris*, 127 F.3d 1048, 1054–55 (Fed. Cir. 1997); *see also In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004) ("The words used in a claim must be read in light of the specification, as it would have been interpreted by one of ordinary skill in the art at the time of the invention."). "Under a broadest reasonable interpretation, words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification and prosecution history." *Tri Vascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016).

Claim 1 recites "[a]n epoxy resin composition . . . containing (A) an epoxy compound . . . wherein . . . said epoxy compound (A) is a dicyclopentadiene epoxy compound." Appeal Br. 15 (Claims App.). "[L]ike the term 'comprising,' the claim term 'containing' is open-ended." *Mars, Inc. v. H.J. Heinz Co.*, 377 F.3d 1369, 1374 (Fed. Cir. 2004). Both words are terms of art used in claim language that mean the named elements are essential, but other elements may be added and still form a construct

within the scope of the claim. *See Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501 (Fed. Cir. 1997). “Containing” in claim 1 allows inclusion of elements in addition to those specified in claim 1.

Mizuno discloses, *inter alia*, that Component (B) of its invention may contain at least one epoxy resin containing a biphenyl structure *and* at least one epoxy resin other than the epoxy resin containing a biphenyl structure, and this other epoxy resin may be, e.g., a dicyclopentadiene skeleton-containing epoxy resin. Mizuno ¶ 43. Such combinations of epoxy resins disclosed by Mizuno would be expected to result in a resin composition having excellent dielectric characteristics. *See id.* ¶ 12. We find nothing in Mizuno to suggest that a *combination* of epoxy resins as disclosed would result in the disadvantageous performance alleged by Appellant. Indeed, Mizuno Examples 2, 7, 12, and 18 each comprise a Component (B) having a combination of an epoxy resin containing a biphenyl structure and another epoxy resin, and all are disclosed as having excellent dielectric characteristics. Mizuno ¶¶ 135, 153, 157, 169, 172, 185, 188, and 201.

The scope of claim 1 encompasses epoxy resin compositions containing both a dicyclopentadiene epoxy compound and an epoxy resin having a biphenyl structure. Mizuno teaches use of such combined epoxy resins in a resin composition. Mizuno ¶ 43, Abstract. Therefore, Appellant’s argument that Mizuno teaches away from use of a dicyclopentadiene skeleton-containing epoxy resin *in place of* an epoxy resin with a biphenyl structure fails to show reversible error in the rejection, as it fails to address the full scope of Mizuno’s disclosure (and the Examiner’s findings). The Comparative Examples in Mizuno to which Appellant directs us include *only* a dicyclopentadiene skeleton-containing epoxy resin, and not a combination of a dicyclopentadiene skeleton-containing epoxy resin and

an epoxy resin with a biphenyl structure. Mizuno ¶¶ 143, 166, 182, 197. The Comparative Examples do not teach away from using a combination of resins as proposed by the Examiner.

On the record before us, we sustain the rejection of claim 1 as obvious over Mizuno in view of Okumoto and Kinoshita. We likewise determine that claims 5–7 and 9–11 are obvious over these references. Appellant makes no separate argument for patentability of claim 4 or claim 8 over these and additional references, thus we sustain the rejections of claims 4 and 8 as well.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 5–7, 9–11	103	Mizuno, Okumoto, Kinoshita	1, 5–7, 9–11	
4	103	Mizuno, Okumoto, Kinoshita, Ishido	4	
8	103	Mizuno, Okumoto, Kinoshita, Mori	8	
Overall Outcome			1, 4–11	

TIME PERIOD FOR RESPONSE

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

AFFIRMED