The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PETER QUIS,
COLIN LIDDIARD,
and
MANFRED BRAUM

Appeal No. 2005-0359
Application No. 09/333,917

HEARD: Feb. 22, 2005

Before PAK, TIMM, and DELMENDO, Administrative Patent Judges.

DELMENDO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 (2004) from the examiner's rejection of claims 1 through 4 and 7 through 18 (Office action mailed Jan. 28, 2004), which are all of the claims pending in the above-identified application.

The subject matter on appeal relates to a low-odor, cold-curing (meth)acrylate reaction resin for a floor coating.

Further details of this appealed subject matter are recited in representative claims 1, 3, 4, 7, 8, 10, 13, 17, and 18 reproduced below:

1. A low-odor, cold-curing (meth)acrylate reaction resin for a floor coating, consisting of:
(A) (a) 50-100 wt% of a (meth)acrylate consisting of
0-5 wt% of a methyl (meth)acrylate;
0-5 wt% of an ethyl (meth)acrylate;
0-97 wt% of a C_3-C_6 (meth)acrylate;
0-50 wt% of $\geq C_7$ (meth)acrylate;
3-10 wt% of a multifunctional (meth)acrylate; and
(b) 0-50 wt% of a comonomer, consisting of
0-30 wt% of a vinyl aromatic; and
0-30 wt% of a vinyl ester
wherein the sum of all components of (a) and (b) in (A) is 100 wt%;
(B) 0-2 parts by weight per 1 part by weight of Component (A) of a pre-polymer that dissolves or swells in (A); and wherein the proportion of methyl (meth)acrylate or ethyl (meth)acrylate is less than 5 wt%, based on Component (B);
(C) 2-5 parts by weight per 100 parts by weight based on Components (A) + (B) of at least one paraffin and/or wax;
(D) a redox system, containing an accelerator and a peroxide catalyst or initiator in an amount that is adequate for cold-curing of Component (A); and
(E) optionally, at least one conventional additive,
wherein the multifunctional (meth)acrylate and component (C) are together present in an amount effective for the reaction resin, when applied to concrete at a thickness of approximately 1 cm and set at ambient temperature for 90 minutes, to be non-tacky.

3. The reaction resin according to Claim 1, wherein Component (A) contains at least one (meth)acrylate ester selected from the group

consisting of n-butyl methacrylate, isobutyl methacrylate, hexyl methacrylate, cyclohexyl methacrylate, benzyl methacrylate, and 1,4-butanediol dimethacrylate.

4. The reaction resin according to Claim 1, wherein Component (A) contains n-butyl methacrylate and 1,4-butanediol dimethacrylate.

7. The reaction resin according to Claim 1, wherein said multifunctional (meth)acrylate is selected from the group consisting [of] trimethyloylpropane trimethacrylate (TRIM), 2,2-bis-(4-(3-methacryloxy-2-hydroxypropoxy)phenylpropane (bis-GMA), 3,6-dioxaoctamethylene dimethacrylate (TEDMA), 7,7,9-trimethyl-4,13-dioxo-3,14-dioxa-5,12-diazahexadecane-1,16-dioxydimethacrylate (UDMA), 1,4-butanediol dimethacrylate (1,4-BDMA) and a mixture thereof.

8. The reaction resin according to Claim 1, wherein said multifunctional (meth)acrylate is 1,4-butanediol dimethacrylate.

10. The reaction resin according to Claim 1, wherein the proportion of Component (C) is 2.5 to 3.5 parts by weight per 100 parts by weight of the sum of Components (A) + (B).

13. The reaction resin according to Claim 1, wherein both Component (A) as well as Component (B) are in the absence of methyl methacrylate or ethyl methacrylate.

17. A low-odor, cold-curing (meth)acrylate reaction resin for a floor coating, consisting of:

(A) at least one methacrylate selected from the group consisting of n-butyl methacrylate, isobutyl methacrylate, hexyl methacrylate, cyclohexyl methacrylate, and benzyl methacrylate; and 3-10 wt% of a multifunctional (meth)acrylate;

wherein the sum of all components in (A) is 100 wt%;

(B) 0-2 parts by weight per 1 part by weight of Component (A) of a pre-polymer that dissolves or swells in (A);

(C) 2-5 parts by weight per 100 parts by weight based on Components (A) + (B) of at least one paraffin and/or wax;

(D) a redox system, containing an accelerator and a peroxide catalyst or initiator in an amount that is adequate for cold-curing of Component (A); and

(E) optionally, at least one conventional additive,

wherein the multifunctional (meth)acrylate and component (C) are together present in an amount effective for the reaction resin, when applied to concrete at a thickness of approximately 1 cm and set at ambient temperature for 90 minutes, to be non-tacky.

18. The reaction resin according to Claim 17, wherein said multifunctional (meth)acrylate is 1,4-butanediol dimethacrylate; component (B) is a polymer based on butyl methacrylate and methyl methacrylate.

The examiner relies on the following prior art reference as evidence of unpatentability:

Hari et al. (Hari)	5,516,546	May 14, 1996

Claims 1 through 4 and 7 through 18 on appeal stand rejected under 35 U.S.C. § 103(a) as unpatentable over Hari. (Examiner's answer mailed Aug. 12, 2004 at 3-13.)[1]

[1] In the Jan. 28, 2004 Office action, claims 1-4 were rejected under 35 U.S.C. § 112, ¶2 (id. at 2) and claims 1-4 and 7-18 were rejected under 35 U.S.C. § 102(b) as anticipated by Hari (id. at 3). The examiner indicates in the answer at 2-3 that the §112, ¶2 rejection has been withdrawn. As to the §102(b) rejection, the examiner did not repeat the rejection in the answer. Accordingly, we presume that this rejection has

We affirm this rejection for the reasons well stated in the answer. Because we are in complete agreement with the examiner's factual findings and legal conclusions, we adopt them as our own and add the following comments primarily for emphasis.[2,3]

Hari describes a polymerizable, cold-setting, reactive (meth)acrylate system for conductive floor coatings, wherein the system contains:

(A) a monomeric component consisting essentially of (meth)acrylate and/or other monomers, >50-100% by wt.,

0-100% by wt. methyl (meth)acrylate
0-100% by wt. C_2-C_4 (meth)acrylate
0-50% by wt. $\geq C_5$ (meth)acrylate
0-100% by wt. polyhydric (meth)acrylates and comonomers including the following:

---

also been withdrawn. Ex parte Emm, 118 USPQ 180, 181 (Bd. App. 1957).

[2] The appellants submit that each of appealed claims 3, 4, 7, 8, 10, 13, 17, and 18 stands or falls separately from appealed claim 1. (Appeal brief at 4.) Accordingly, we group the appealed claims as follows: (i) claims 1, 2, 9, 11, 12, and 14-16; (ii) claim 3; (iii) claim 4; (iv) claim 7; (v) claim 8; (vi) claim 10; (vii) claim 13; (viii) claim 13; (ix) claim 17; and (x) claim 18. 37 CFR § 1.192(c)(7)(2003)(effective Apr. 21, 1995).

[3] We also incorporate by reference the relevant reasoning set forth in the prior decision by this Board. Ex parte Quis, Appeal No. 2002-1736 (Bd. of Pat. App. & Inter., Feb. 27, 2003), reh'g denied (Aug. 21, 2003)(unpublished).

0-30% by wt. vinyl aromatics
0-30% by wt. vinyl esters;

(B) 0-2 parts of a (pre)polymer which is soluble or capable of swelling in Component (A) for each part of (A);

(C) 0-7 parts of a plasticizer for each 10 parts of (A) + (B);

(D) a redox system to be kept apart from the polymerizable constituents of the system until polymerization is to be carried out, at least in respect of one component of the redox system, the redox system containing an accelerator and a peroxide catalyst or initiator in a quantity sufficient for the cold-setting of component (A);

(E) customary additives;

(F) conductive fillers based on the sum of (A)-(F), the conductive filler being 10-40% by wt. amorphous or spheroidal graphite, 1-10% by wt. carbon fiber with a thickness in the region of 5-30 μm and a length in the region of 30-5,000 μm, 2-40% by wt. of finely divided metal in the form of flakes, powder, or granules with a maximum particle length of ≤5 mm, or a mixture of two or all of said conductive fillers, the minimum quantity of each individual conductive filler in the mixture being reduced in accordance with its proportion in the mixture

of conductive fillers, and the sum of conductive fillers being limited to <50% by wt.;

(G) 0-92% by wt. of other fillers, based on the sum of (A)-(G), where the sum of (F) + (G) is limited to ≤93% by wt. and fillers between 20 and 50 μm are limited to ≤30% by wt. and those below 20 μm to ≤10% by wt,;

(H) ≤15% by wt., based on the sum of (A)-(E) and (H), of solvents. (Column 1, lines 6-8; column 2, line 31 to column 3, line 14.) Hari further teaches that suitable plasticizers include, inter alia, chlorinated paraffins and that paraffins may be added in an amount of 0.05-5% by wt. in the binder (A)-(E) as a customary or conventional additive. (Column 4, lines 58.)

Thus, the following table compares the subject matter of appealed claim 1 and the disclosure of Hari.

Appealed Claim 1	**Hari**
"low-odor, cold-curing (meth)acrylate reaction resin for a floor coating, consisting of"	polymerizable, cold-setting, reactive (meth)acrylate system for conductive floor coatings (col. 1, ll. 6-8); maximum amount of styrene preferably limited to 20% by wt. to avoid "considerable odor problems" (col. 3, ll. 36-38)
"(A) (a) 50-100 wt% of a (meth)acrylate consisting of 0-5 wt% of a methyl (meth)acrylate 0-5 wt% of an ethyl (meth)acrylate 0-97 wt% of a C_3-C_6 (meth)acrylate 0-50 wt% of $\geq C_7$ (meth)acrylate 3-10 wt% of a multifunctional (meth)acrylate; and (b) 0-50 wt% of a comonomer consisting of 0-30 wt% of a vinyl aromatic; and 0-30 wt% of a vinyl ester"	(A) >50-100% by wt. of a monomeric component consisting essentially of (meth)acrylate and/or other monomers, 0-100% by wt. methyl (meth)acrylate 0-100% by wt. C_2-C_4 (meth)acrylate 0-50% by wt. $\geq C_5$ (meth)acrylate 0-100% by wt. polyhydric (meth)acrylates and comonomers including the following: 0-30% by wt. vinyl aromatics 0-30% by wt. vinyl esters (col. 2, ll. 39-50)
"(B) 0-2 parts by weight per 1 part by weight of Component (A) of a pre-polymer that dissolves or swells in (A)"	(B) 0-2 parts of a (pre)polymer which is soluble or capable of swelling in Component (A) for each part of (A) (col. 2, ll. 52-53)
"wherein the proportion of methyl (meth)acrylate or ethyl (meth)acrylate is less than 5 wt% based on Component (B)"	0-100% by wt. methyl (meth)acrylate 0-100% by wt. C_2-C_4 (meth)acrylate (col. 3, ll. 29-30)
"(C) 2-5 parts by weight per 100 parts by weight based on Components (A) + (B) of at least one paraffin and/or wax"	0-7% by wt. of a plasticizer such as chlorinated paraffin; 0.05-5% by wt. of paraffin (col. 4, ll. 41-58)
"(D) a redox system, containing an accelerator and a peroxide catalyst or initiator in an amount that is adequate for cold-curing of Component (A)"	(D) a redox system to be kept apart from the polymerizable constituents of the system until polymerization is to be carried out, at least in respect of one component of the redox system, the redox system containing an accelerator and a peroxide catalyst or initiator in a quantity sufficient for the cold-setting of component (A) (col. 2, ll. 56-61)
"(E) optionally, at least one conventional additive"	(E) customary additives (col. 2, l. 62)
"wherein the multifunctional (meth)acrylate and component (C) are together present in an amount effective for the reaction resin, when applied to concrete at a thickness of approximately 1 cm and set at ambient temperature for 90 minutes, to be non-tacky"	most preferably 1-10% by wt. of polyfunctional (meth)acrylates (col. 4, ll. 10-13; col. 4, ll. 54-64; col. 5, ll. 64-66)

As seen from the table above, the appellants' recited relative amounts for each of the components including the monomeric constituents are either substantially identical or overlap significantly with those disclosed for Hari's

(meth)acrylate composition. Thus, we are in complete agreement with the examiner that Hari's disclosure would have led one of ordinary skill in the art to formulate a composition encompassed by appealed claim 1 or 10. In this regard, it is well settled that when ranges recited in a claim overlap with ranges disclosed in the prior art, a prima facie case of obviousness typically exists and the burden of proof is shifted to the applicants to show that the claimed invention would not have been obvious. In re Peterson, 315 F.3d 1325, 1329-30, 65 USPQ2d 1379, 1382-83 (Fed. Cir. 2003); In re Geisler, 116 F.3d 1465, 1469, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990).

The appellants argue that Hari places no carbon chain limits on the (meth)acrylate component, except that mono(meth)acrylates of 5 carbon atoms or more cannot be more than 50% by wt. (Appeal brief at 7.) This argument is not persuasive, because: (1) appealed claim 1 places no limits on the length of the carbon chain for the (meth)acrylate; and (2) the amount of C_5 or higher (meth)acrylates in Hari's composition may be as low as zero.

The appellants allege that Hari prefers methyl (meth)acrylate in "major amounts" because Hari's most preferred

amounts of C_2-C_4 (meth)acrylates, C_5 or higher (meth)acrylates, and polyfunctional (meth)acrylates are limited to 20% by wt., 15% by wt., and 10% by wt., respectively. (Id.) This position lacks merit. Our reviewing court has explained that the "case law does not require that a particular combination must be the preferred, or the most desirable, combination described in the prior art in order to provide the motivation for the current invention." In re Fulton, 391 F.3d 1995, 1200, 73 USPQ2d 1141, 1145 (Fed. Cir. 2004). Rather, the court has instructed:

> "[T]he question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination," not whether there is something in the prior art as a whole to suggest that the combination is the most desirable combination available.

Id. (quoting In re Beattie, 974 F.2d 1309, 1311, 21 USPQ2d 1040, 1042 (Fed. Cir. 1992); accord In re Gurley, 27 F.3d 551, 552-53, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994)("A known or obvious composition does not become patentable simply because it has been described as somewhat inferior.").

Relying on the data presented in Table 1 of the present specification (page 26), the appellants urge that compositions "containing less than the requisite total amount of paraffin and 1,4-butanediol dimethacrylate (1,4-BDMA) results in poor curing,

i.e., a tacky resin." (Appeal brief at 8; reply brief filed on Aug. 24, 2004 at 2.) We do not find the proffered evidence to be persuasive of nonobviousness. Hari suggests the effects of paraffin and curing on surface tack. (Column 4, lines 52-64; column 5, lines 64-66.) Hence, it is our judgment that one of ordinary skill in the art would have found it obvious to determine, through nothing more than routine experimentation, the optimum levels of paraffin and the multifunctional (i.e., curing) monomer to provide a tack-free surface.[4] In re Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980)("[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art."); In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)("[W]here the general conditions of a claim are

[4] The appellants admit: "[I]t is otherwise well-known that the polyfunctional (meth)acrylate, because it is polyfunctional, acts as a curing agent and therefore, its amount, relative to the other monomeric components, will affect so-called 'curing parameters.'" (Appeal brief at 11.)

disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.”).

Moreover, the proffered showing is insufficient to establish that the alleged criticality for the amounts of paraffin and crosslinking monomer exists for all compositions within the scope of the appealed claims. While the relied upon working examples are limited to a composition obtained by reacting 65.8 parts by weight of n-butyl methacrylate, 25 parts by weight of PLEXIGUM® PM 381 (ground bulk polymer based on butyl methacrylate and methyl methacrylate), 0.2 part by weight of 2-(2-hydroxy-5-methylphenyl)benzotriazol, 0.02 part by weight of 4-methyl-2,6-tert-butylphenol, 1.0 part by weight of N,N-bis-(2-hydroxyethyl)-p-toluidine, 0.2 part by weight of benzyl methacrylate, 1,4-butanediol methacrylate, paraffin, and BP-50-FT (50 wt.% dibenzoyl peroxide inhibited with dicyclohexyl phthalate), the appealed claims are not reasonably limited. There is no evidence to suggest that a monomeric composition based on, e.g., 5% by weight of methyl methacrylate, 5% of ethyl methacrylate, 80% by weight of hexyl acrylate, 3% by weight of triethylene glycol dimethacrylate, and 7% divinylbenzene would provide a tacky surface unless certain minimum amounts of the paraffin and multifunctional (meth)acrylate are selected.

As to separately argued appealed claims 3, 4, 7, 8, and 18, the appellants argue that Hari does not disclose the recited monomers. (Appeal brief at 13-14.) To the contrary, Hari discloses butyl methacrylate as well as 1,4-butanediol dimethacrylate. (Column 4, lines 7-9 and 18-21.)

As to appealed claim 13, the appellants allege that Hari does not teach components (A) and (B) to be free of methyl or ethyl (meth)acrylate. (Appeal brief at 14.) To the contrary, Hari discloses that the amount of methyl (meth)acrylate may be zero and that the prepolymer (B) may be one that is not based on methyl or ethyl (meth)acrylate. (Column 3, line 29; column 4, lines 22-36.)

As to appealed claim 17, the appellants argue that Hari does not disclose or suggest “at least 90 wt% of at least one” the recited monomers. (Appeal brief at 14.) The appellants are wrong. First, component (A) does not recite any amount for the methacrylate species recited as a Markush group. Second, and more importantly, Hari teaches that the amount of C_4 or higher (meth)acrylate may be as high as 100% by weight. (Column 3, lines 30-31.)

For these reasons and those set forth in the answer, we affirm the examiner’s rejection under 35 U.S.C. § 103(a) of

appealed claims 1 through 4 and 7 through 18 as unpatentable over Hari.

The decision of the examiner is affirmed.

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

AFFIRMED

Chung K. Pak Administrative Patent Judge	)	
Catherine Timm Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
Romulo H. Delmendo Administrative Patent Judge	)	

RHD/kis

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314