

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHN W. REISCH
RICHARD J. FEEGEL,
and CURTIS P. SMITH

Appeal No. 1997-1991
Application No. 08/376,270

ON BRIEF

Before WARREN, OWENS, and KRATZ, Administrative Patent Judges.
KRATZ, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1 through 6 and 8 through 21, which are all of the claims pending in this application.

BACKGROUND

At the outset, we note that the present application was filed as a continuation-in-part of U.S. application No. 08/265,369, which parent application was filed on June 24,

1994. Also, copending and related application No. 08/430,083 was filed on April 27, 1995 as a divisional of the above-noted parent application. Both of the above-noted related and copending applications are also before us on appeal (Appeals No. 1997-1907 and 1997-2384, respectively)¹.

Appellants' invention relates to a method of coating a substrate using a composition comprising a dispersion of polyurethane in water, the coating composition, and a method of preparing the coating composition. Claims 1, 8 and 15, all of the independent claims on appeal, are reproduced below.

1. A composition being an aqueous dispersion of polyurethane in water, said composition comprising water and the reaction product of:

(a) a water-dispersible isocyanate-terminated polyurethane prepolymer having an NCO content of between about 1.5 and 10% by weight, said prepolymer having incorporated therein uretdione moieties and isocyanurate moieties, and

(b) an amine chain extender, in an amount sufficient to provide an NCO/NH₂ index for the composition of between 40 and 150.

¹ We observe that appellants refer to parent application No. 08/265,369 at page 2 of the brief submitted on October 17, 1996 without acknowledging the existence of the other related copending application No. 08/430,083 and without setting forth the appealed status of all of the above-noted applications. See 37 C.F.R. § 1.192(c)(2) (1995).

8. A process for preparing an aqueous dispersion of a polyurethane which comprises reacting, in an aqueous medium, a reaction mixture comprising:

(a) a water-dispersible isocyanate-terminated polyurethane prepolymer having an NCO content of between about 1.5 and 10% by weight, said prepolymer having incorporated therein uretdione moieties and isocyanurate moieties, and

(b) an amine chain extender, in an amount sufficient to provide an NCO/NH₂ index for the composition of between 40 and 150.

15. A method for coating a substrate which comprises contacting the substrate with a coating composition comprising a dispersion in water of the reaction product of:

(a) a water-dispersible isocyanate-terminated polyurethane prepolymer having an NCO content of between about 1.5 and 10% by weight, said prepolymer having incorporated therein uretdione moieties and isocyanurate moieties, and

(b) an amine chain extender, in an amount sufficient to provide an NCO/NH₂ index of between 40 and 150.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Mosbach et al. (Mosbach)	5,098,983	Mar.
24, 1992		
Coogan et al. (Coogan)	5,169,895	Dec. 08,
1992		

Claims 1-6 and 8-21 stand rejected under 35 U.S.C. § 103 as being unpatentable over Mosbach in view of Coogan.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by the appellants and the examiner. In so doing, we find ourselves in agreement with appellants that the examiner fails to establish a *prima facie* case of obviousness² for the claimed subject matter. Accordingly, we will not sustain the examiner's rejection, as stated.

Mosbach discloses polyisocyanate mixtures useful as coating compositions and a process of preparing the compositions. Mosbach teaches that the mixtures may contain (cyclo)-aliphatically bound isocyanate groups, carboxyl groups and (cyclo)aliphatically bound uretdione groups. See column 1, line 65 through column 2, line 53 of Mosbach.

Coogan discloses a composition comprising an aqueous dispersion of polyurethane that may be used as a coating

² We note that it is the examiner who bears the initial burden of presenting a *prima facie* case of obviousness in rejecting claims under 35 U.S.C. § 103. See *In re Rijckaert*, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993).

material and a method of preparing the composition. The composition³ is a product of the reaction of:

- (a) a water-dispersible isocyanate-terminated polyurethane prepolymer having an NCO content of 2.1 to 10% percent by weight,
- (b) an organic polyisocyanate having an average isocyanate functionality of 2.1 to 4.0, and
- (c) an active hydrogen-containing chain extender.

The chain extender of Coogan may comprise an amine (column 5, line 60 through column 7, line 40). The prepolymer reactant of Coogan is disclosed as being made from an organic diisocyanate, a polyol having a specified molecular weight range and a specified compound having a hydrophillic center (column 2, lines 12-19). Coogan (column 2, lines 31-35) further teaches that mixtures of polyisocyanates may be used and a variety of modified polyisocyanates that have "... urethane, allophanate, urea, biuret, carbodiimide, uretonimine or isocyanurate residues" introduced therein are useful in making the prepolymer.

The examiner takes the position that Mosbach discloses "reaction products of dimer/trimer mixtures of hexane diisocyanate and isophorone diisocyanate (col. 3, lines 8-10)

³ Coogan, column 2, lines 6-11.

with dimethoyl propionic acid" (answer, page 2). Moreover, the examiner urges that Mosbach discloses "making these products at excess NCO/OH ratios", the product's usefulness as coatings and forming dispersions thereof in water (answer, page 2). The examiner acknowledges that Mosbach does not disclose the use of an amine chain extender in forming a coating composition as called for in the herein claimed subject matter (answer, page 2).

According to the examiner (answer, page 3),

It would have been obvious to one of ordinary skill in the art at the time of [sic] the invention was made to crosslink Mosbach's prepolymer with excess amine compounds rather than water because Coogan shows this to be well known in the art. It's known that amine chain extension takes place more rapidly than the water chain extension reaction, and no foaming (release of carbon dioxide) occurs with amine extension versus water chain extension.

The examiner further urges that the amount of amine chain extender disclosed by Coogan overlaps the claimed amount. Moreover, the examiner indicates that "Coogan teaches that amine chain extension can be used in lieu of water chain extension," and that motivation for the proposed modification such as "faster reactions" and "less foaming" would have been well known in the art (answer, page 3).

However, on this record, we disagree with the examiner's views on this matter. "Before the PTO may combine the disclosures of two or more references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art." *In re Jones*, 958 F.2d 347, 350, 21 USPQ2d 1941, 1943-44 (Fed. Cir. 1992); *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598-99 (Fed. Cir. 1988).

Here, the examiner makes reference to alleged well known faster reaction and less foaming (answer, page 3) when it is not clear where Mosbach discloses that such are necessary or desirable in forming their coating or where Coogan clearly discloses such advantages with respect to amine extenders used in the amounts called for in the present claims in forming a coating composition. Concerning the amine chain extender, the examiner has not clearly identified where Coogan teaches an amount of chain extender within the NCO/NH₂ index range as claimed herein (See page 5 of the brief).

From our perspective, the teachings of Mosbach regarding the use of an isocyanate dimer in a polyisocyanate mixture

that is dispersed in water and used as a coating film together with the teachings of Coogan regarding the formation of a water dispersible polyurethane made from a water-dispersible polyurethane prepolymer, an organic polyisocyanate and a chain extender together with the examiner's obviousness statements are not sufficient to establish the *prima facie* obviousness of appellants' methods or composition. This is so since the examiner has not particularly addressed how the teachings of Mosbach regarding particular polyisocyanate mixtures that contain uretdione isocyanate (dimer) which are generally disclosed as being useful in producing high molecular weight plastics would have suggested the herein claimed aqueous dispersion of polyurethane made from isocyanate polyurethane prepolymer and amine chain extender with or without the additional disclosure of Coogan. The examiner simply has not convincingly established how an artisan of ordinary skill would have been led to modify the method of making the self-curing water dispersions of polyisocyanates of Mosbach (column 5, lines 13-26 and the examples) to include reactive amounts of amine chain extenders and a water-dispersible polyurethane

prepolymer so as to arrive at the herein claimed subject matter with a reasonable expectation of success.

In order for a *prima facie* case of obviousness of appellants' claimed invention to be established, the prior art must be such that it would have provided one of ordinary skill in the art with both a suggestion to carry out appellants' claimed invention and a reasonable expectation of success in doing so. See *In re Dow Chemical Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988). "Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure." *Id.* The mere possibility that the prior art could be modified such that appellants' process is carried out is not a sufficient basis for a *prima facie* case of obviousness. See *In re Brouwer*, 77 F.3d 422, 425, 37 USPQ2d 1663, 1666 (Fed. Cir. 1996); *In re Ochiai*, 71 F.3d 1565, 1570, 37 USPQ2d 1127, 1131 (Fed. Cir. 1995).

For the foregoing reasons, we find that the examiner has not established a *prima facie* case of obviousness. Because we reverse on this basis, we need not reach the issue of the sufficiency of the asserted secondary evidence (brief, page

7). *See In re Geiger*, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278
(Fed. Cir. 1987).

CONCLUSION

The decision of the examiner is reversed.

REVERSED

CHARLES F. WARREN)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
TERRY J. OWENS)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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PETER F. KRATZ)	
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