

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 34

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte TAKASHIGE YONEDA  
and  
FUMIAKI GUNJI

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Appeal No. 2003-1684  
Application No. 09/508,080

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HEARD: January 8, 2004

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Before WARREN, WALTZ, 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 (2003) from the examiner's final rejection of claims 17 through 41, which are all the claims pending in the above-identified application.

The subject matter on appeal relates to a surface treatment composition comprising a partial hydrolysate of a fluorine-containing reactive silane having the recited formula (1)

(claims 17-22 and 34-41), a method of surface treatment of glass (claims 23-29), a treated substrate (claims 30 and 31), an article comprising the treated substrate (claim 32), and an equipment for "transports" comprising the article (claim 33). According to the appellants (specification, page 3, line 13 to page 4, line 22), conventional surface treatment compositions suffer from various drawbacks (e.g., uneven application, unsatisfactory adhesiveness to a substrate, and "unenduring antifouling property"), which "are attributed to inappropriately selected partial hydrolysis conditions which lead to a high proportion of molecules with low- or high-molecular weights in the resulting partial hydrolysate and a composition having large acid and water contents." The claimed invention, by contrast, is described as being "excellent in water repellency, antifouling property, waterdrop rolling property, adhesiveness (durability), abrasion resistance, chemical resistance and storage stability." Further details of this appealed subject matter are recited in representative claim 17 reproduced below:

17. A surface treatment composition, comprising:  
a partial hydrolysate of a fluorine-containing  
reactive silane represented by Formula (1):



wherein  
 $R^f$  is a monovalent fluorine-containing  $C_{1-30}$   
organic group;

Q is a single bond or a bivalent linking group;  
R<sup>1</sup> is a hydrogen atom or a monovalent C<sub>1-16</sub> organic group;

a is 1 or 2;

b is 0 or 1, and (a+b) is 1 or 2; and

X<sup>1</sup> is a hydrolysable group;

wherein a proportion (T<sub>1</sub>) of a molecule with a molecular weight of at most 2M in the partial hydrolysate is less than 70% as calculated from Formula (A), wherein M is a molecular weight of the fluorine-containing reactive silane measured by gel permeation chromatography:

$$T_1(\%) = [W_2/W_1] \times 100 \quad \text{Formula (A);}$$

wherein

W<sub>1</sub> is a total peak area within a molecular weight range of from 300 to 100000 on a gel permeation chromatogram of the partial hydrolysate of the fluorine-containing reactive silane; and

W<sub>2</sub> is a total peak area within a molecular weight range of from 300 to 2M on a gel permeation chromatogram of the partial hydrolysate of the fluorine-containing reactive silane;

wherein a proportion (T<sub>2</sub>) of a molecule with a molecular weight of at least 6M in the partial hydrolysate is less than 10% as calculated from Formula (B):

$$T_2(\%) = [W_3/W_1] \times 100 \quad \text{Formula (B);}$$

wherein

W<sub>1</sub> is a total peak area within a molecular weight range of from 300 to 100000 on a gel permeation chromatogram of the partial hydrolysate of the fluorine-containing reactive silane; and

W<sub>3</sub> is a total peak area within a molecular weight range of from 6M to 100000 on a gel permeation chromatogram of the partial hydrolysate of the fluorine-containing reactive silane; and

wherein the partial hydrolysate is obtained by partial hydrolysis of the fluorine-containing reactive silane in the presence of water and nitric acid.

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

Bank et al. (Bank)	5,225,510	Jul. 6, 1993
Sawada et al. (Sawada)	5,288,891	Feb. 22, 1994
Horino et al. (Horino)	5,458,976	Oct. 17, 1995
Asai et al. (Asai)	5,599,893	Feb. 4, 1997

Claims 17 through 24 and 26 through 41 on appeal stand rejected under 35 U.S.C. § 103(a) as unpatentable over Bank in view of Sawada and Asai. (Examiner's answer mailed Feb. 25, 2003, paper 27, pages 4-10.) In a similar fashion, appealed claim 25 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Bank in view of Sawada and Asai, as applied to claims 17 through 24, and further in view of Horino. (Id. at page 10.)

We reverse both rejections because, in our judgment, the examiner has failed to establish a prima facie case of obviousness within the meaning of 35 U.S.C. § 103(a). In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

As recited in representative claim 17, all the appealed claims require the specified partial hydrolysate of a fluorine-

containing reactive silane to possess a specific molecular weight distribution defined by proportions  $T_1$  and  $T_2$ . Regarding this limitation, the examiner alleges that the principal prior art reference, namely Bank, describes this limitation.<sup>1</sup> (Answer, page 4.)

We note, however, that the examiner has failed to identify sufficient evidence or scientific reasoning to support the theory that Bank discloses, or would have suggested to one of ordinary skill in the art, a partial hydrolysate satisfying the recited molecular weight distribution. While the examiner does refer to Bank's Table 1, column 3, lines 25-41 and 56-66, and column 7, lines 16-38, there is no accompanying explanation on how these disclosures in fact support the examiner's theory. (Answer, pages 4 and 11.)

The examiner also appears to rely on a theory of optimization of result-effective variables by routine experimentation. (Answer, page 8.) The problem with this approach in this case is that the examiner has not pointed to any evidence establishing that optimizing the prior art in accordance with the prior art teachings would necessarily result in a partial hydrolysate having the recited molecular weight

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<sup>1</sup> The appellants, on the other hand, dispute the examiner's determination. (Appeal brief filed Jan. 15, 2003, paper 26, p.

distribution. As stated by a predecessor of our reviewing court, "[o]bviousness cannot be predicated on what is unknown.'" In re Shetty, 566 F.2d 81, 86, 195 USPQ 753, 756-57 (CCPA 1977) (quoting In re Spormann, 363 F.2d 444, 448, 150 USPQ 449, 452 (CCPA 1966)).

The other applied prior art references have been cited for reasons unrelated to the basic deficiency in the examiner's analysis. Accordingly, we see no need to discuss them.

For these reasons and those set forth in the appellants' briefs, we reverse the examiner's rejections under 35 U.S.C. § 103(a) of: (i) claims 17 through 24 and 26 through 41 as unpatentable over Bank in view of Sawada and Asai; and (ii) claim 25 as unpatentable over Bank in view of Sawada and Asai, as applied to claims 17 through 24, and further in view of Horino.

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The decision of the examiner is reversed.

REVERSED

Charles F. Warren	)	
Administrative Patent Judge	)	
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	)	
	)	BOARD OF PATENT
Thomas A. Waltz	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
	)	
Romulo H. Delmendo	)	
Administrative Patent Judge	)	

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