

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* KOOK J. BAE

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Appeal No. 1999-2808  
Application 08/772,351

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ON BRIEF

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Before OWENS, WALTZ and PAWLIKOWSKI, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

*DECISION ON APPEAL*

This is an appeal from the examiner's final rejection of claims 2-22, 25-28 and 30-33, which are all of the claims remaining in the application.

*THE INVENTION*

The appellant's claimed invention is directed toward a composition, useful for food contact or medical contact

applications, comprising a polyvinyl chloride resin and a specified low toxicity stabilizer for that resin. Claim 30 is illustrative:

30. A composition of matter comprising:

(i) a food contact or medical contact polyvinyl chloride resin; and

(ii) a low toxicity stabilizer suitable for use with food contact and medical applications, for providing heat stability to the polyvinyl chloride resin, wherein the stabilizer consists essentially of: (a) about 10 to about 40 parts by weight of a zinc carboxylate having the formula  $(RCO_2)_2Zn$ , wherein R is an aliphatic, cycloaliphatic or aromatic hydrocarbon containing from about 6 to about 22 carbon atoms; (b) about 40 to about 80 parts by weight of an alkyl ester of thiodipropionic acid having the formula  $S(CH_2CH_2CO_2R^1)_2$  wherein  $R^1$  is an alkyl having from about 6 to about 22 carbon atoms; and (c) about 5 to about 20 parts by weight of a phenolic antioxidant,

the composition of matter being essentially free of calcium fatty acid salts.

#### THE REFERENCES

Ackerman	3,262,896	Jul. 26, 1966
Rhodes	3,575,905	Apr. 20, 1971
Vijlbrieff	3,586,514	Jun. 22, 1971
Minagawa et al. (Minagawa)	4,221,700	Sep. 9, 1980
Penneck et al. (Penneck) (Great Britain patent specification)	1,001,344	Aug. 18, 1965

Jerzy Wypych, "Mechanism of Action of PVC Thermal Stabilizers", 23 *J. Appl. Polym. Sci.* 39-54 (1979).

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*THE REJECTION*

Claims 2-22, 25-28 and 30-33 stand rejected under 35 U.S.C. § 103 as being unpatentable over Penneck taken with Ackerman, Rhodes, Wypych, Minagawa and Vijlbrief.<sup>1</sup>

*OPINION*

We reverse the aforementioned rejection.

Penneck discloses polyvinyl chloride stabilized with a mixture of an organometallic compound, a sulfur-containing organic or organometallic compound, and an organic antioxidant (page 1, lines 43-79; page 2, lines 12-13 and 34-35). In an example (12), a mixture of zinc stearate and calcium stearate is used as the organometallic component. The disclosed sulfur-containing organic compounds include dilauryl  $\text{S,S}'$ thiodipropionate (page 3, line 39), and the disclosed

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<sup>1</sup> The examiner's reliance upon an article to Stapfer et al. is withdrawn in the examiner's answer (page 4).

organic antioxidants include phenols (page 3, lines 51-55).

Ackerman teaches that zinc stabilizers for halogen-containing resins, within a very short time, blacken and char the resin to be stabilized (col. 1, lines 43-47). Ackerman teaches that this blackening and charring can be delayed by using zinc stearate in combination with stearates of alkali or alkaline earth metals, but that mixtures of zinc stearate and barium stearate, which produce by far the best results, undesirably yellow and discolor the resin (col. 1, line 48 - col. 2, line 9). Ackerman uses zinc soaps in combination with potassium soaps, each soap preferably being a salt of a fatty acid containing 6-12 carbon atoms (col. 2, lines 10-14 and 41-48). The examiner does not rely upon any evidence that potassium soaps were considered in the art at the time of the appellant's claimed invention to be suitable for use in food contact or medical contact applications.

Rhodes teaches that "even the addition [to zinc-containing stabilizers] of substantial amounts of alkaline earth or alkali metal salts, such as salts of calcium, barium or potassium, or other conventional plastics additives, such

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as organic phosphites, hindered phenols, epoxidized oils and the like, will not prevent sudden degradation" (col. 1, lines 68-72). Rhodes' stabilizer contains a large amount of an aryl alkyl phosphite and a small amount of a zinc salt or soap, and is substantially free of metals which form colored sulfides (col. 2, lines 32-42; col. 3, lines 7-10). The appellant states that the claimed invention excludes phosphite stabilizers (specification, page 5, lines 23-26). Thus, when we give "consisting essentially of" in the appellant's claims its broadest reasonable interpretation in view of the specification, see *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); *In re Sneed*, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983), we consider it to exclude phosphite stabilizers. Rhodes also teaches that including an epoxidized soya oil in his resin composition significantly retards thermal discoloration and somewhat increases the concentration of zinc which can be used without causing sudden degradation (col. 3, lines 28-35).

Wypych teaches that epoxy stabilizers, when used in combination with zinc stearate, decrease the rate of polyvinyl

chloride thermal degradation (pages 49 and 53).

The examiner relies upon Vijlbrief for a teaching that zinc stearate, dilauryl thiodipropionate and phenolic antioxidants were known to be suitable for use in polyvinyl chloride containers which contact food (col. 2, lines 44-45 and 57; col. 3, lines 1-7), and relies upon Minagawa for an example (5-2) in which the use of stabilizers increased the time before yellowing and blackening of polyvinyl chloride (answer, pages 5 and 8).

The examiner argues that in view of Wypych, it would have been obvious to one of ordinary skill in the art to use an epoxy stabilizer instead of a calcium soap to offset a zinc soap's deleterious effects (answer, page 8). Wypych, however, does not disclose the relative effect of epoxy stabilizers versus that of calcium soaps. Thus, he does not indicate that epoxy stabilizers are suitable substitutes for calcium soaps for offsetting the negative effects of zinc soaps used to stabilize polyvinyl chloride.

Moreover, Rhodes teaches that calcium salts or epoxidized soya oils, when used in combination with zinc-containing stabilizers, will not prevent sudden degradation of polyvinyl

chloride (col. 1, lines 67-72). Rhodes uses a large amount of an aryl alkyl phosphite in combination with a small amount of a zinc salt or soap to retard polyvinyl chloride thermal degradation, and optionally uses an epoxidized soya oil to increase the effectiveness of the zinc-phosphite combination (col. 2, lines 32-44; col. 3, lines 23-40). Ackerman also teaches that combinations of zinc salts or soaps with stearates of alkali or alkaline earth metals are not suitable thermal stabilizers for polyvinyl chloride (col. 1, line 39 - col. 2, line 9). Ackerman uses combinations of zinc soaps and potassium soaps, optionally containing additional stabilizers, one of which can be an epoxide, to stabilize polyvinyl chloride (col. 2, lines 10-14; col. 3, lines 6-8 and 31-32).

Thus, the applied prior art teaches that alkaline earth metal stearates or epoxy stabilizers, in combination with zinc stearate, reduce the rate of thermal degradation of polyvinyl chloride compared to the rate of thermal degradation when zinc stearate is used alone, but that a combination of a zinc-containing stabilizer and either a calcium salt or an epoxidized oil will not prevent sudden degradation of

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polyvinyl chloride. Rhodes would have suggested using zinc stearate in combination with epoxidized soya oil and an aryl alkyl phosphite, with no calcium soap present, but phosphites are excluded from the appellant's claims. Ackerman would have suggested using zinc soaps with an epoxy stabilizer and a potassium soap, in the absence of a calcium soap, but the examiner has not established that such potassium soaps were considered in the art to be suitable for use in food contact or medical contact resins.

The examiner has not explained why the applied prior art would have fairly suggested, to one of ordinary skill in the art, using a zinc soap in combination with an epoxy stabilizer without also including in the stabilizer composition a component which renders the stabilizer composition unsuitable for use in food contact or medical contact resins. Consequently, the examiner's argument in support of the rejection is not persuasive. Accordingly, we conclude that the examiner has not carried the burden of establishing a *prima facie* case of obviousness of the invention recited in any of the appellant's claims.

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Since no *prima facie* case of obviousness has been established, we need not address the experimental results. See *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); *In re Rinehart*, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976).

*DECISION*

The rejection of claims 2-22, 25-28 and 30-33 under 35 U.S.C. § 103 over Penneck taken with Ackerman, Rhodes, Wypych, Minagawa and Vijlbrief, is reversed.

*REVERSED*

TERRY J. OWENS )  
Administrative Patent Judge )  
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) BOARD OF PATENT  
THOMAS A. WALTZ )  
Administrative Patent Judge ) APPEALS AND  
)  
) INTERFERENCES  
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BEVERLY A. PAWLIKOWSKI )  
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