

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 KIM TUTIN,
AUGIE RODRIGUEZ, JOHN HINES,
KURT GABRIELSON, CORNEL HAGIOPOL,
RAMJI SRNINIVASAN AND RANDY WHITE

Appeal 2007-0106
Application 10/453,932
Technology Center 1700

Decided: May 14, 2007

Before EDWARD C. KIMLIN, CHUNG K. PAK, and PETER F. KRATZ,
Administrative Patent Judges.

KIMLIN, *Administrative Patent Judge.*

DECISION ON APPEAL

This is an appeal from the final rejection of claims 4-27. Claims 1 and 11 are illustrative:

1. An aqueous binder composition for making glass fiber products comprising a substantially infinitely water-dilutable or dispersible thermosetting esterification reaction adduct of a monomeric polycarboxylic

acid component and a monomeric polyol component, wherein at least one of the monomeric polycarboxylic acid component and the monomeric polyol component has an average functionality of at least 2.2 and wherein said adduct has residual carboxylic and hydroxyl groups and an acid number of 100 or above.

11. A method for binding together a loosely associated mat of glass fibers comprising (1) contacting said glass fibers with an aqueous binder composition comprising a substantially infinitely water-dilutable or dispersible thermosetting esterification reaction adduct of a monomeric polycarboxylic acid component and a monomeric polyol component, wherein at least one of the monomeric polycarboxylic acid component and the monomeric polyol component has an average functionality of at least 2.2 and wherein said adduct has residual carboxylic and hydroxyl groups and an acid number of 100 or above, and (2) heating said aqueous binder composition at an elevated temperature sufficient to effect cure.

The Examiner relies upon the following reference as evidence of obviousness:

Arkens US 6,221,973 B1 Apr. 24, 2001

Appellants' claimed invention is directed to an aqueous binder composition for making glass fiber products, and a method for binding together glass fibers using the binder composition. The binder composition comprises a reaction adduct of a monomeric polycarboxylic acid component and a monomeric polyol component. The method entails contacting the glass fibers with the adduct and then heating the binder composition at a sufficient temperature to cure it.

The appealed claims 1 and 4-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Arkens.

Appellants do not set forth a separate argument for any particular claim on appeal. Accordingly, all of the appealed claims stand or fall together with claims 1 and 11.

We have thoroughly reviewed each of Appellants' arguments for patentability. However, we fully concur with the Examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will sustain the Examiner's rejection for essentially those reasons expressed in the Answer, and we add the following primarily for emphasis.

Arkens, like Appellants, discloses an aqueous binder composition for making glass fiber products by curing a monomeric polycarboxylic acid component and a monomeric polyol component while in contact with the glass fibers. Also like Appellants, Arkens may use acetic acid, butane tricarboxylic acid and citric acid as the monomeric polycarboxylic acid component, and 1,4-cyclohexane diol, catechol, diethanolamine, ethylene glycol, pentaerythritol, sorbitol, triethanolamine and trimethylol propane as the monomeric polyol component (*See* Arkens at col. 3, ll. 49 *et seq.* and col. 6, ll. 1-6). While Appellants contend that Arkens does not disclose contacting an *adduct* of the components with the glass fibers, but only the individual components in composition, the Examiner correctly points out that Arkens specifically teaches that "the composition may be first heated at a temperature and for a time sufficient to substantially dry but not substantially cure the composition and then heated for a second time at a higher temperature and/or for a longer period of time to effect curing" (col. 8, ll. 51-55). Hence, it is clear to us that Arkens contemplates a partial

condensation reaction between the components before the final curing, and the present claims on appeal do not require a full curing of the composition before application to the glass fibers. Indeed, the claims specifically call for curing the composition after application to the fibers. Hence, we perceive no meaningful distinction between Appellants' formation of an esterification reaction adduct that is then applied to the fibers and Arkens' partial reaction of the very same components before a final cure after application. We agree with the Examiner that it is reasonable to conclude that the initial heating or "B-staging" performed by Arkens results in the formation of some esterification adduct in the composition that is subsequently applied to the glass fibers. Appellants have not demonstrated otherwise on this record. Also, in our view, it would have been a matter of obvious, routine experimentation for one of ordinary skill in the art to determine the specific degree of partial reaction via drying of the composition before application to the fibers to optimize handling, contingent upon the specific composition selected for application.

We are not persuaded by Appellants' argument that "[n]othing in **Arkens** suggests that both the polyacid and polyol should be replaced in the binder by the product (adduct) of an esterification reaction" (page 5 of Brief, second para.). As explained above, Arkens, in fact, suggests a partial reaction before application to the fibers which would necessarily form some adduct. The Examiner correctly points out that Arkens discloses that "[t]he polyacid must be sufficiently nonvolatile that it will substantially remain available for reaction with the polyol in the composition during heating and *curing* and operations" (col. 3, ll. 46-49, emphases added). It is reasonable to

conclude that the heating step taught by Arkens before curing necessarily forms some esterification adduct, and Appellants have not demonstrated otherwise. Consequently, we do not subscribe to Appellants' position that "[t]he reaction between these separate components [of Arkens] does not take place until the binder is cured on the substrate" (page 5 of Brief, third para.). As for Appellants' argument that "[n]owhere does **Arkens** disclose or even suggest using an esterification adduct with an acid number above 100 (preferably above 300) as the binder" (*id.*), it logically follows that the ultimate curing of both Appellants' and Arkens' composition comprising the same components will result in the same cured binder.

Also, since Appellants and Arkens react the same components to form a cured binder for glass fibers, we agree with the Examiner that it would have been *prima facie* obvious to form the adduct before or after the composition is applied to the glass fibers, taking into account the particular handling properties of the composition before and after partial and full reaction. In general, it is a matter of obviousness for one of ordinary skill in the art to reverse the order of steps in a known process in the absence of unexpected results.

As a final point, we note that Appellants base no argument upon objective evidence of nonobviousness, such as unexpected results, which would serve to rebut the inference of obviousness established by the Arkens reference.

In conclusion, based on the foregoing and the reasons well-stated by the Examiner, the Examiner's decision rejecting the appealed claims is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(iv)(effective Sept. 13, 2004).

AFFIRMED

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