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ARKEMA INC. 900 First Avenue Bldg 4-2 King of Prussia, PA 19406			BLACKWELL, GWENDOLYN	
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* ANTHONY BONNET and MICHAEL WERTH

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Appeal 2015-002777  
Application 11/445,598  
Technology Center 1700

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Before MICHAEL P. COLAIANNI, N. WHITNEY WILSON and  
AVELYN M. ROSS, *Administrative Patent Judges*.

WILSON, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants<sup>1</sup> appeal under 35 U.S.C. § 134(a) from the Examiner's February 3, 2014 decision finally rejecting claims 1, 5, 6, 12, 13, 17, 22–27, and 30–32 (“Final Act.”). We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We reverse.

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<sup>1</sup> Appellants identify the real party in interest as Arkema France (Br. 3).

CLAIMED SUBJECT MATTER

Appellants' invention is directed to a multilayer pipe, which comprises a number of layers (Abstract). Details of the claimed invention may be seen in independent claim 1, which is reproduced below from the Claims Appendix of the Appeal Brief (*emphasis added*):

1. A coextruded multilayer pipe consisting (in the following order, from the inside of the pipe outwards):
  - a layer C<sub>1</sub> of a vinylidene fluoride homopolymer or copolymer having at least 75% by weight of vinylidene fluoride (VDF);
  - layer C<sub>2</sub> a radiation grafted vinylidene fluoride homopolymer or copolymer onto which maleic anhydride has been radiation-grafted by melt-blending said vinylidene fluoride homopolymer or copolymer and said maleic anhydride, forming granules of said blend, followed by irradiation grafting of said granules in the solid state – said grafting taking place when the polymer is not in the melt state, wherein said grafting occurs throughout the mass and not just on the surface of a powder, and wherein the level of grafting is from 0.9 to 5%;
  - an adhesion tie layer C<sub>3</sub>, this layer C<sub>3</sub> being directly attached to the layer C<sub>2</sub> containing the radiation-grafted fluoropolymer;
  - a layer C<sub>4</sub> selected from the group consisting of a polyethylene and a polyolefin blended with a functionalized polyolefin, directly attached to the layer C<sub>3</sub>;
  - a *polymer barrier layer C<sub>5</sub> to prevent diffusion of chemical compounds*; and
  - a polyethylene layer C<sub>6</sub>.

## REJECTIONS

I. Claims 1, 5, 6, 12, 13, 22–27, 30, and 31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Baumert<sup>2</sup> and Nishi.<sup>3</sup>

II. Claim 17 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Baumert and Nishi, and further in view of Babrowicz.<sup>4</sup>

III. Claim 32 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Baumert, Nishi, and Egret.<sup>5</sup>

Appellants do not offer separate arguments in support of any of the claims (*See*, generally Br. 5–8). Accordingly, our discussion will focus on the rejection of claim 1 over Baumert in view of Nishi (Rejection I).

## DISCUSSION

The Examiner finds that Baumert teaches a laminate structure which can be used for pipes which has the following layers: (1) a fluoropolymer, (2) a tie layer, (3) and a polyolefin layer, (4) a tie layer, and (5) a polyolefin layer (Final Act. 2, citing Baumert, ¶¶ 22–28, 30). The Examiner also finds that Baumert does not disclose a layer of maleic anhydride grafted vinylidene fluoride polymer between the fluoropolymer layer and the first tie layer (Final Act. 3). The Examiner further finds that Nishi teaches that fluorine containing polymers generally have poor adhesive properties and that “in many cases no adequate adhesive strength can be obtained if a film of fluorine containing polymer is laminated directly onto a substrate” (*id.*,

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<sup>2</sup> Baumert et al., U.S. Patent Pub. 2004/0023037 A1, published February 5, 2004.

<sup>3</sup> Nishi et al., U.S. Patent No. 5,736,610, issued April 7, 1998.

<sup>4</sup> Babrowicz et al., U.S. Patent No. 5,993,922, issued November 30, 1999.

<sup>5</sup> Egret et al., U.S. Patent No. 6,528,135 B1, issued March 4, 2003.

citing Nishi, 1:18–22), and that Nishi further discloses a fluorine-containing adhesive which falls within the scope of the claimed maleic anhydride containing layer C<sub>2</sub> (Final Act. 3–4, citing Nishi 1:6–9, 55–64, 3:24–28, 6:5–8, 13–18, 29–37, 7:27–35).

The Examiner determines that it would have been obvious to use Nishi’s grafted fluoropolymer adhesive material as a layer between the fluoropolymer layer and the tie layer of Baumert to increase the adhesion between the fluoropolymer layer and the rest of the structure (Final Act. 4).

Appellants offer three arguments seeking reversal of the rejection: (1) there was no motivation to combine Nishi and Baumert in the manner set forth in the rejection, (2) the Nishi grafted fluoropolymer is patentably different from the claimed grafted fluoropolymer, and (3) the second tie layer of Baumert’s composition does not correspond to the claimed barrier layer. We focus on arguments (1) and (3), as they are dispositive of the appeal.

**Argument (1).** Appellants contend that Baumert discloses the use of a novel tie layer, which is said to “do a good job of adhering” the layers of the Baumert composition to each other (Br. 5). Therefore, according to Appellants, a person of ordinary skill in the art would have no reason to use the additional tie layer taught by Nishi (Br. 5–6) as would be required in order to arrive at the claimed invention. Appellants’ argument is persuasive. Although Nishi discloses that its fluorine-containing adhesive provides good adhesion properties, the Examiner has not provided a persuasive explanation of why a person of skill in the art would have added the Nishi adhesive to the Baumert structure and not remove Baumert’s tie layer (which has the same function as the adhesive compound taught by Nishi). That is, even if a

person of skill in the art would have been motivated by Nishi to use its grafted copolymer as the adhesive in Baumert to achieve a greater layer of adhesion, the evidence of record does not support the Examiner's finding that this combination would have been an addition of a layer to Baumert's structure, rather than a substitution of Nishi's compound for Baumert's tie layer, since Baumert suggests that its tie layer provides adequate adhesion (Baumert, ¶ 20).

**Argument (3).** The Examiner finds that the Baumert's fourth layer (which would correspond with the claimed barrier layer) is a "tie" layer (Final Act. 2). The Examiner also finds that the tie layer is based on a graft copolymer resulting from the polymerization of at least one alkyl(meth)acrylate directly attached to a polyolefin, and may also comprise additional functionalized polyolefins (*id.*). The Examiner finds that Baumert's tie layer corresponds to the claimed barrier layer because it comprises a polymer and would prevent diffusion of chemical compounds (Final Act. 5).

However, Appellants have explained that a person of skill in the art would not have considered Baumert's tie layer to be able to function as both a tie layer (layer C<sub>3</sub>) and as a barrier layer (layer C<sub>5</sub>), as would be required for the rejection. The Examiner states that the claims do not specifically recite "the chemically different features which applicant insists distinguish the claimed tie layer and barrier layer" (Ans. 12). However, claim 1 explicitly recites that the claimed barrier layer C<sub>5</sub> "prevent[s] diffusion of chemical compounds." This property is further elucidated in the Specification, which states that layer C<sub>5</sub> prevents diffusion of chemical compounds from outside the pipe into the pipe, or vice versa, and provides examples of the types of

compounds whose diffusion is prevented, such as oxygen, hydrocarbons, and moisture (Spec. 15–16). Thus, the plain language of the claim, as well as the Specification, requires that layer C<sub>5</sub> have the ability to prevent diffusion of chemicals. The Examiner does not specifically refute Appellants’ argument that a person of skill in the art would not consider Baumert’s tie layer to function as a barrier layer (see, Ans. 12), and has not provided persuasive evidence that Baumert’s tie layer would have this ability. Thus, the preponderance of the evidence of record, including the information set forth in Appellants’ Specification on pages 16–18, does not support the Examiner’s finding that Baumert’s tie layer has the capability of functioning as a barrier layer.

#### CONCLUSION

We REVERSE the rejection of claims 1, 5, 6, 12, 13, 22–27, 30, and 31 under 35 U.S.C. § 103(a) as being unpatentable over Baumert and Nishi.

We REVERSE the rejection of claim 17 under 35 U.S.C. § 103(a) as being unpatentable over Baumert and Nishi, and further in view of Babrowicz.

We REVERSE the rejection of claim 32 under 35 U.S.C. § 103(a) as being unpatentable over Baumert, Nishi, and Egret.

REVERSED