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LyondellBasell Industries Legal IP Department 1221 McKinney Street, Suite 700 LyondellBasell Tower Houston, TX 77010			KAUCHER, MARK S	
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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* MAGED G. BOTROS and HARILAOS MAVRIDIS

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Appeal 2018-006782  
Application 12/803,541  
Technology Center 1700

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Before N. WHITNEY WILSON, BRIAN D. RANGE, and  
LILAN REN, *Administrative Patent Judges*.

WILSON, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant<sup>1</sup> appeals under 35 U.S.C. § 134(a) from the Examiner's May 5, 2017 decision finally rejecting claims 1, 15, and 17–22 (“Final Act.”). We have jurisdiction over the appeal under 35 U.S.C. § 6(b). An oral hearing was held on October 23, 2019, a transcript of which will be made part of the record.

We affirm.

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<sup>1</sup> We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies Equistar Chemicals, LP, as the real party in interest (Appeal Br. 2).

### CLAIMED SUBJECT MATTER

Appellant's disclosure relates to an adhesive and multilayer articles comprising the adhesive, where the adhesive comprises three components: (i) a high density polyethylene (HDPE) grafted with maleic anhydride, (ii) a linear low-density polyethylene (LLDPE) having an Mg/Ti ratio of at least 7, and (iii) an ethylene-propylene rubber (Appeal Br. 3). Details of the claimed invention are set forth in representative claim 1, which is reproduced below from the Claims Appendix to the Brief:

1. An adhesive comprising:

(i) 0.5-25% by weight maleated high density polyethylene having a density of 0.942-0.965 g/cm<sup>3</sup> comprising less than 5% by weight of C<sub>3</sub>-C<sub>10</sub> alpha-olefins and 0.1-10% by weight grafted maleic anhydride;

(ii) 30-65% by weight linear low density polyethylene (LLDPE) having an Mg/Ti molar ratio of greater than or equal to 7, wherein the source of the Mg/Ti molar ratio is a Ziegler-Natta catalyst supported on MgCl<sub>2</sub> comprising TiCl<sub>4</sub> and an electron donor,

wherein the LLDPE is a copolymer of ethylene and 1-butene comprising a 1-butene concentration of 2-20% by weight, has a density of 0.912-0.925 g/cm<sup>3</sup> and a melt index (MI<sub>2</sub>) of 0.5-15 dg/min; and

(iii) 15-65% by weight of an elastomer comprising ethylene-propylene rubber comprising 35-75% by weight ethylene and 25-65% by weight propylene.

## REJECTIONS

Claims 1, 15 and 17–22 are rejected under 35 U.S.C. § 103(a) as unpatentable over Botros<sup>2</sup> in view of Brita.<sup>3</sup>

## DISCUSSION

The Examiner finds that Botros discloses an adhesive comprising (1) a maleated HDPE having the claimed density and maleic anhydride concentration, (2) an LLDPE comprising units derived from ethylene and 1-butene, having the claimed density, melt flow index and butane concentration, and (3) an ethylene propylene rubber having the claimed ethylene and propylene contents (Final Act. 2–3, citing Botros ¶¶ 21, 26, 29–31, and 49). The Examiner further finds that Botros is silent as to the Mg/Ti ratio in the LLDPE, as well as to whether the source of those elements is the catalyst used to prepare the LLDPE (Final Act. 4).

The Examiner further finds that Brita discloses methods of preparing LLDPE, including methods which would produce and LLDPE containing the claimed Mg/Ti ratio (Final Act. 4, citing Brita ¶¶14–18). The Examiner also finds that Brita teaches that its methods of preparing LLDPE are advantageous because they produce a homogeneous comonomer distribution, high quality ethylene copolymers, and low xylene soluble fractions that worsen the properties of the polymer (Final Act. 4, citing Brita ¶ 5).

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<sup>2</sup> Botros et al, US 2007/0167569 A1, published July 19, 2007.

<sup>3</sup> Brita et al. U.S. 2006/0089251 A1, published April 27, 2006.

The Examiner determines that it would have been obvious to prepare the LLDPE component of Botros using the method disclosed by Brita for the improved properties disclosed by Brita, yielding the claimed composition (Final Act. 4–5).

Appellant argues that:

“[O]ne of ordinary skill in the art would have assumed that the resins of Botros (having higher levels of 1-hexene extractables) would have functioned in the same manner as prior-known adhesive layers having high levels of low-molecular weight components, where such prior materials may include adhesive layers having a high maleic anhydride content, particularly in view of the properties of the claimed adhesive.”

(Appeal Br. 5, citing to 37 C.F.R. § 1.132 Declaration of Dr. Maged Botros).

Appellant appears to be arguing that a person of skill in the art would have assumed that Botros’s composition would have had poor adhesion and optical properties (Br. 5–6). While Appellant concedes that “Botros mentions that multilayer articles may be encompassed by [its] disclosure” (Appeal Br. 6), it argues that it would not have been obvious to use an LLDPE produced as described by Brita in an adhesive composition like that of Botros because “resins produced by catalysts disclosed in Brita generally have high levels of hexene extractables and low-molecular weight components as compared to resins using prior art catalysts, like those used by Botros (Appeal Br. 6, citing Botros Decl. ¶ 9). Therefore, according to Appellant, a person of skill in the art would have understood Brita as disclosing a catalyst which would produce resins not suitable for use in the Botros composition (Appeal Br. 7).

This argument is not persuasive because, as found by the Examiner, Brita suggests that its catalysts produce resins which have a low content of polymer fractions soluble in hexene (Ans. 6, citing Brita ¶ 5; see also, Brita ¶ 42<sup>4</sup>). Appellant has not challenged this finding and, therefore, has not shown error in it. Because Appellant’s argument outlined above relies on an assertion that Brita’s catalysts produce resins with high levels of hexene extractables, which is contradicted by the evidence of record, the argument is not persuasive.

Appellant also argues the claimed “amounts of maleated high density polyethylene, LLDPE derived from the requisite Ziegler-Natta catalyst, and EPR have not been demonstrated to be art-recognized result effective variables, and therefore optimization to obtain the claimed adhesive would not have been within the grasp of one of ordinary skill in the art” (Appeal Br. 7). This argument is not persuasive because the Examiner does not rely on an optimization of a result effective variable rationale to support the obviousness rejection (Ans. 7–8). Instead, the claimed amounts of the various components overlap with the amounts disclosed in Botros, detailed at page 3 of the Final Action. It is well established that a prima facie case of obviousness exists in situations where the claimed ranges overlap the ranges disclosed by the prior art. *See In re Geisler*, 116 F.3d 1465, 1469 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990).

Appellant also argues that it has shown that its compositions have unexpectedly improved adhesion and optical properties (Appeal Br. 8). This

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<sup>4</sup> “[C]opolymers [according to Brita’s disclosure] are generally characterized by low amount of xylene solubles fraction in respect of the extent of comonomer incorporation” (Brita ¶ 42).

argument is not persuasive both for the reasons outlined by the Examiner at pages 7–8 of the Answer, and because the showing is not commensurate in scope with the claims. Appellant has the burden of showing unexpected results. *In re Freeman*, 474 F.2d 1318, 1324 (CCPA 1973); *In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972). The burden requires Appellant to proffer factual evidence that actually shows unexpected results relative to the closest prior art, *see In re Baxter Travenol Labs.*, 952 F.2d 388, 392 (Fed. Cir. 1991), and that is reasonably commensurate in scope with the protection sought, *In re Grasselli*, 713 F.2d 731, 743 (Fed. Cir. 1983); *In re Clemens*, 622 F.2d 1029, 1035 (CCPA 1980); *In re Hyson*, 453 F.2d 764, 786 (CCPA 1972). The extent of the showing relied upon by Appellant must reasonably support the entire scope of the claims at issue. *See In re Harris*, 409 F.3d 1339, 1344 (Fed. Cir. 2005).

In this instance, the claims cover a very wide range of compositions in terms of both densities, amounts of components, and other properties of the components. Appellant has not made an adequate showing that the data relied upon covers more than a tiny fraction of the claimed compositions, and is plainly not commensurate in scope with the claims.

For the foregoing reasons, we sustain the rejections on appeal.

CONCLUSION

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1, 15, 17–22	103(a)	Botros, Brita	1, 15, 17–22	
<b>Overall Outcome</b>			1, 15, 17–22	

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

AFFIRMED