



US009181460B2

(12) **United States Patent**
Eklund et al.

(10) **Patent No.:** **US 9,181,460 B2**
(45) **Date of Patent:** **Nov. 10, 2015**

(54) **GAS TRANSMITTING POLYURETHANE ADHESIVE**

(71) Applicant: **H.B. FULLER COMPANY**, St. Paul, MN (US)

(72) Inventors: **Wayne G. Eklund**, Scandia, MN (US);
Stephen G. Rippe, White Bear Lake, MN (US)

(73) Assignee: **H.B. Fuller Company**, St. Paul, MN (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 318 days.

(21) Appl. No.: **13/787,154**

(22) Filed: **Mar. 6, 2013**

(65) **Prior Publication Data**

US 2014/0255560 A1 Sep. 11, 2014

(51) **Int. Cl.**
C09J 9/00 (2006.01)
B65D 75/26 (2006.01)
B32B 7/12 (2006.01)
B65D 65/40 (2006.01)
C08G 18/62 (2006.01)
C08G 18/79 (2006.01)
C08G 18/10 (2006.01)
C08G 18/12 (2006.01)
C08G 18/40 (2006.01)
C09J 175/04 (2006.01)

(52) **U.S. Cl.**
CPC ... **C09J 9/00** (2013.01); **B32B 7/12** (2013.01);
B65D 65/40 (2013.01); **B65D 75/26** (2013.01);
C08G 18/10 (2013.01); **C08G 18/12** (2013.01);
C08G 18/4063 (2013.01); **C08G 18/6229**
(2013.01); **C08G 18/797** (2013.01); **C09J**
175/04 (2013.01); **B32B 2439/70** (2013.01);
Y10T 428/31551 (2015.04); **Y10T 428/31587**
(2015.04); **Y10T 428/31591** (2015.04)

(58) **Field of Classification Search**
CPC C09J 9/00; B65D 75/26
USPC 428/423.1, 424.8, 425.1; 156/331.7;
525/127
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,443,590 A * 4/1984 Kamatani et al. 528/51
5,763,527 A 6/1998 Chen et al.
5,783,270 A 7/1998 Fischer et al.
6,358,357 B1 3/2002 Lamber et al.
2003/0036604 A1 2/2003 Meisenburg et al.
2006/0233987 A1 10/2006 Mumpower
2007/0179254 A1* 8/2007 Wang et al. 525/440
2007/0232764 A1* 10/2007 Minamida et al. 525/453
2010/0178502 A1* 7/2010 Spilman et al. 428/355 R

FOREIGN PATENT DOCUMENTS

EP 0 849 343 6/1998
WO WO 93/05099 3/1993

OTHER PUBLICATIONS

BASE, Safety Data Sheet: JONCRYL 960, Sep. 8, 2010.
Polymer Products From Aldrich Thermal, "Thermal Transitions of Homopolymers: Glass Transition & Melting Point", Oct. 24, 2008.

* cited by examiner

Primary Examiner — Thao T Tran
(74) *Attorney, Agent, or Firm* — Kirsten Stone; Bin Su

(57) **ABSTRACT**

A two-part, solvent-free laminating adhesive including a Part A that is a liquid mixture of a first polyol and a hydroxyl functional acrylic polymer having a molecular weight of no greater than 15,000 g/mole, and a Part B that is an isocyanate-terminated polyurethane prepolymer. The adhesive is especially suited for making flexible laminates for use in food packaging. When adhered two polymeric film materials and in cured form, the adhesive provides substantially no contribution to the oxygen barrier properties of the laminate.

20 Claims, No Drawings