



US007344619B2

(12) **United States Patent**
Helmeke

(10) **Patent No.:** **US 7,344,619 B2**
(45) **Date of Patent:** **Mar. 18, 2008**

(54) **METHOD OF MAKING WATER REPELLENT LAMINATES**

(75) Inventor: **Marietta B. Helmeke**, Little Canada, MN (US)

(73) Assignee: **H.B. Fuller Licensing & Financing, Inc.**, 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 0 days.

(21) Appl. No.: **11/438,449**

(22) Filed: **May 22, 2006**

(65) **Prior Publication Data**

US 2006/0269758 A1 Nov. 30, 2006

(51) **Int. Cl.**
B32B 27/40 (2006.01)

(52) **U.S. Cl.** **156/331.7; 528/83; 428/423.1**

(58) **Field of Classification Search** **156/331.7; 528/83; 428/423.1**

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,194,041 A	3/1980	Gore et al.	
4,775,719 A	10/1988	Markevka et al.	
4,808,255 A	2/1989	Markevka et al.	
4,820,368 A	4/1989	Markevka et al.	
5,115,073 A *	5/1992	Meckel et al. 528/83
5,166,300 A	11/1992	Rumon et al.	
5,851,661 A	12/1998	Werenicz et al.	

5,869,593 A	2/1999	Helmeke et al.	
6,133,400 A	10/2000	Helmeke	
6,136,136 A *	10/2000	Heider 156/331.4
6,221,978 B1	4/2001	Li et al.	
2003/0215617 A1	11/2003	Shehata et al.	

FOREIGN PATENT DOCUMENTS

EP	0 288 214 B1	7/1992
EP	1 114 854 A1	7/2001
EP	1 433 394 A1	6/2004
WO	WO 00/50529	8/2000

OTHER PUBLICATIONS

"Product Range Copolyesters" Dynacoll 2007.*

* cited by examiner

Primary Examiner—John L Goff

(57) **ABSTRACT**

The invention relates to a method of making a water repellent laminate including applying a hot melt moisture cure adhesive to a primary substrate and bonding the primary substrate with a secondary substrate that has been treated with a water repellent material prior to the lamination. The adhesive composition includes a hot melt moisture cure polyurethane prepolymer formed from a polyol component and a polyisocyanate component. The polyol component includes a first polyether polyol having a number average molecular weight of from about 500 to about 8,000, a first polyester polyol having a melting point of less than about 40° C. or a second polyether polyol having a molecular weight of from about 200 to about 1,000, and a crystalline polyester polyol having a melting point of from about 40° C. to about 120° C.

11 Claims, No Drawings