



US006844073B1

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

(10) **Patent No.:** **US 6,844,073 B1**
(45) **Date of Patent:** **Jan. 18, 2005**

(54) **HOT MELT MOISTURE CURE
POLYURETHANE ADHESIVE WITH WIDE
RANGE OF OPEN TIME**

5,869,593 A 2/1999 Helmeke et al.
6,136,136 A * 10/2000 Heider 156/331.4
6,207,248 B1 3/2001 Yang et al.
6,221,978 B1 4/2001 Li et al.

(75) Inventors: **Marietta B. Helmeke**, Little Canada,
MN (US); **Jorge A. Lavieri**,
Minneapolis, MN (US)

FOREIGN PATENT DOCUMENTS

WO WO 97/30100 8/1997

(73) Assignee: **H. B. Fuller Licensing & Financing
Inc.**, St. Paul, MN (US)

OTHER PUBLICATIONS

Joachim Julia and Daniel Selvatell, "Thermoplastic Poly-
urethanes: Chemistry Opens Up New Opportunities"; Dec.
1997/Jan. 1998; pp. 24 and 26.

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 292 days.

* cited by examiner

(21) Appl. No.: **09/965,769**

Primary Examiner—Patricia A. Short
(74) *Attorney, Agent, or Firm*—Bin Su

(22) Filed: **Sep. 27, 2001**

(51) **Int. Cl.**⁷ **C09J 175/06**

(57) **ABSTRACT**

(52) **U.S. Cl.** **428/423.1**; 428/425.8;
156/331.4; 525/130; 525/131; 525/440;
528/83

A hot melt moisture cure polyurethane adhesive composition
includes at least one polyurethane prepolymer. The prepoly-
mer includes the reaction product of a polyol component and
a polyisocyanate component. The polyol component
includes a) at least one amorphous polyester polyol com-
prising the reaction product of neopentyl glycol, hexanediol
and at least one of phthalic anhydride and phthalic acid; b)
at least one liquid polyester polyol having a viscosity of
greater than about 10,000 cps at 80° C.; c) at least one
crystalline polyester polyol having a melting point of from
about 40° C. to about 120° C.; and d) at least one thermo-
plastic polyurethane.

(58) **Field of Search** 525/440, 130;
528/83; 156/331.4; 428/423.1, 425.8

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,775,719 A 10/1988 Marhevka et al.
4,808,255 A 2/1989 Marhevka et al.
4,820,368 A 4/1989 Marhevka et al.
4,889,915 A * 12/1989 Brauer 525/458
5,441,808 A 8/1995 Anderson et al.

29 Claims, 4 Drawing Sheets