



US006103809A

United States Patent [19]

Ahmed et al.

[11] **Patent Number:** **6,103,809**

[45] **Date of Patent:** **Aug. 15, 2000**

[54] **THERMOPLASTIC COMPOSITIONS
COMPRISING CRYSTALLINE WATER
SOLUBLE POLYMERS AND AMORPHOUS
WATER SENSITIVE POLYMERS**

[75] Inventors: **Sharf U. Ahmed; Andualem Emiru,**
both of Woodbury; **Leslie J. Clapp,**
Wyoming; **Mark S. Kroll,** Arden Hills;
Greg J. VanLith, St. Paul, all of Minn.

[73] Assignee: **H.B. Fuller Licensing & Financing,
Inc.,** St. Paul, Minn.

[21] Appl. No.: **09/195,335**

[22] Filed: **Nov. 18, 1998**

Related U.S. Application Data

[63] Continuation-in-part of application No. 09/078,839, May 14, 1998, Pat. No. 5,869,596, which is a continuation-in-part of application No. 08/927,116, Aug. 29, 1997, Pat. No. 5,866,675, which is a continuation-in-part of application No. 08/555,524, Nov. 9, 1995, Pat. No. 5,663,286.

[51] **Int. Cl.⁷** **C08L 77/00**

[52] **U.S. Cl.** **524/489; 524/487; 525/58;**
525/179; 525/182; 525/425; 525/432

[58] **Field of Search** **525/58, 432, 425,**
525/179, 182, 487, 489

[56] References Cited

U.S. PATENT DOCUMENTS

3,882,090 5/1975 Fagerburg et al. .
4,217,389 8/1980 Peterson 428/383
5,053,484 10/1991 Speranza et al. 528/338

5,086,162 2/1992 Speranza et al. 528/339
5,118,785 6/1992 Speranza et al. 528/347
5,324,812 6/1994 Speranza et al. 528/338
5,393,849 2/1995 Srinivasan et al. 525/425
5,459,184 10/1995 Bunnelle et al. 524/221
5,663,286 9/1997 Ahmed et al. 528/339
5,866,675 2/1999 Ahmed et al. 528/339
5,869,596 2/1999 Ahmed et al. 528/339

FOREIGN PATENT DOCUMENTS

WO 96/08538 3/1996 WIPO .

Primary Examiner—Ana Woodward
Attorney, Agent, or Firm—Carolyn A. Fischer

[57] ABSTRACT

The present invention relates to a thermoplastic composition comprising at least one crystalline water sensitive polymer and at least one amorphous water sensitive polymer. The thermoplastic composition may optionally further comprise additional ingredients such as other polymers, tackifying resins, plasticizers, waxes, and mixtures thereof. The thermoplastic compositions are useful in a variety of applications wherein water or moisture sensitive thermoplastic materials are employed such as various packaging adhesive applications including case and carton sealing, remoistenable adhesives, repulpable/recyclable adhesives and multi-wall bag applications. The present invention is also useful for moisture activatable reinforcement strings and opening tapes for corrugated containers, as well as for a variety of nonwoven applications such as body fluid impermeable barriers, core stabilization adhesives, and construction adhesives.

16 Claims, No Drawings