



US006610792B2

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

(10) **Patent No.:** **US 6,610,792 B2**
(45) **Date of Patent:** **Aug. 26, 2003**

(54) **POLYPROPYLENE COPOLYMERS AND METHOD OF PREPARING POLYPROPYLENE COPOLYMERS**

4,707,524 A 11/1987 Ehrig et al. 525/387
5,459,201 A * 10/1995 Shroff et al. 525/197
5,530,073 A * 6/1996 Schoenberg 525/333.8
6,015,854 A 1/2000 McCullough, Jr.

(75) Inventors: **Lisa K. Albe**,
Ophain-Bois-Seigneur-Isaac (BE);
William R. Wheat, Waterloo (BE); **Jeff Nairn**, Friendswood, TX (US); **Scott Cooper**, Humble, TX (US); **Philippe VanDeurzen**, Lennik (BE); **Michel Daumerie**, Houston, TX (US)

FOREIGN PATENT DOCUMENTS

EP 1186618 3/2002
WO WO 96/03444 2/1996
WO 0136502 5/2001

(73) Assignee: **Fina Technology, Inc.**, Houston, TX (US)

* cited by examiner

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

Primary Examiner—Bernard Lipman

(74) *Attorney, Agent, or Firm*—Grady K. Bergen; Bradley A. Misley

(21) Appl. No.: **09/917,310**

(22) Filed: **Jul. 26, 2001**

(65) **Prior Publication Data**

US 2003/0069367 A1 Apr. 10, 2003

(51) **Int. Cl.**⁷ **C08F 8/00**

(52) **U.S. Cl.** **525/387; 525/333.8**

(58) **Field of Search** **525/387**

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,705,818 A * 11/1987 Kawai et al. 523/200

(57) **ABSTRACT**

Polypropylene heterophasic copolymers are produced having increased impact strength through the use of controlled rheology techniques by the addition of a peroxide at conditions which increase the deactivation or half life of the peroxide. The increased half life slows down the vis-breaking process and allows better dispersion of rubber particles within the polymer. In this way, copolymers having a high melt flow can be prepared while obtaining high impact strength and lower stiffness values, without the need for additional elastomeric modifiers.

15 Claims, 4 Drawing Sheets