



US006706822B2

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

(10) **Patent No.:** **US 6,706,822 B2**  
(45) **Date of Patent:** **Mar. 16, 2004**

(54) **METHOD OF PRODUCING POLYETHYLENE RESINS FOR USE IN BLOW MOLDING**

5,486,575 A 1/1996 Shroff  
5,530,072 A 6/1996 Shirodkar  
5,728,335 A 3/1998 Neubauer  
5,962,598 A 10/1999 Mack et al.  
6,114,486 A 9/2000 Rowland et al.

(75) Inventors: **Gerhard K. Guenther**, Seabrook, TX (US); **Lea Ann Nairn**, Friendswood, TX (US); **Curt D. Clark**, League City, TX (US); **Ben W. Hicks**, Shoreacres, TX (US); **Ronald A. Tharappel**, Missouri City, TX (US); **Tim J. Coffy**, Houston, TX (US)

**OTHER PUBLICATIONS**

V.R. Kamath and L.H. Palys, Polyethylene Melt Flow Modification, RETEC Conference, 1990, pp. 1-7, Pocono Mountains, Pennsylvania.

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

K. Kirchner, Crosslinking of Plastics After Extrusion, pp. 489-497.

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 56 days.

\* cited by examiner

(21) Appl. No.: **10/170,753**

*Primary Examiner*—Bernard Lipman  
(74) *Attorney, Agent, or Firm*—Grady K. Bergen

(22) Filed: **Jun. 13, 2002**

(65) **Prior Publication Data**

(57) **ABSTRACT**

US 2003/0055170 A1 Mar. 20, 2003

A method of processing polyethylene for use as an extruded blow molding resin to improve the properties and processability thereof is accomplished by modifying a polyethylene resin having a molecular weight distribution (Mw/Mn) of less than about 10. The modification is carried out by the addition of a free radical initiator to the resin during extrusion of the resin to increase the rheological breadth of the polyethylene from about 10% to about 60% compared to unmodified polyethylene resin extruded under similar conditions. In another aspect of the invention, a polyethylene resin having higher melt index is processed to provide a desired final melt index by the addition of a free radical initiator where it would otherwise be necessary to utilize a resin having lower melt flow, and which is more difficult to process. Improvements in color can also be obtained.

**Related U.S. Application Data**

(62) Division of application No. 09/775,396, filed on Jan. 31, 2001.

(51) **Int. Cl.**<sup>7</sup> ..... **C08F 8/00**

(52) **U.S. Cl.** ..... **525/333.7; 525/333.8; 525/333.9; 525/374; 525/376; 525/387**

(58) **Field of Search** ..... **525/333.7, 333.8, 525/333.9, 374, 376, 387**

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

5,141,995 A \* 8/1992 Komori et al. .... 525/242

**15 Claims, No Drawings**