



US005583163A

United States Patent [19][11] **Patent Number:** **5,583,163****Müller**[45] **Date of Patent:** **Dec. 10, 1996**[54] **PHOTOCROSSLINKED POLYMERS**

2263699 8/1993 United Kingdom C08F 8/30

[75] Inventor: **Beat Müller**, Marly, Switzerland**OTHER PUBLICATIONS**[73] Assignee: **Ciba Geigy Corporation**, Tarrytown, N.Y.

Optical or Electron Radiation Crosslinking Type Resin Composition, vol. 11 No. 398(C-466)(2345) Dec. 25, 1987. Photosensitive Resin, vol. 12 No. 312(C-523)(3159) Aug. 24, 1988.

[21] Appl. No.: **463,546***Primary Examiner*—Peter A. Szekely[22] Filed: **Jun. 5, 1995***Attorney, Agent, or Firm*—Edward McC. Roberts; R. Scott Meece; Michael U. Lee**Related U.S. Application Data**

[62] Division of Ser. No. 286,035, Aug. 4, 1994, Pat. No. 5,508,317.

[30] **Foreign Application Priority Data**

Aug. 6, 1993 [CH] Switzerland 2350/93

[51] **Int. Cl.**⁶ **C08F 2/48**; C08F 216/38; C08J 7/18; C08J 5/00[52] **U.S. Cl.** **522/152**; 522/154; 523/106; 523/108; 525/58; 525/59; 525/60; 525/61[58] **Field of Search** 522/151, 152, 522/154; 523/106, 108; 525/58, 59, 60, 61[56] **References Cited****U.S. PATENT DOCUMENTS**

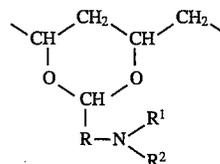
4,598,122	7/1986	Goldenberg	.....	525/61
4,663,410	5/1987	Pinschmidt	.....	526/263
4,670,506	6/1987	Goldenberg et al.	.....	525/59
4,691,026	9/1987	Pinschmidt, Jr.	.....	548/531
4,788,288	11/1988	Pinschmidt, Jr.	.....	544/212
4,864,055	9/1989	Pinschmidt	.....	560/160
5,326,669	7/1994	Curtis	.....	525/59
5,332,651	7/1994	Dickinson et al.	.....	522/154
5,360,864	11/1994	Curtis	.....	525/58

FOREIGN PATENT DOCUMENTS

216074	4/1987	European Pat. Off.	.....	C08F 261/04
321403	6/1989	European Pat. Off.	.....	G02B 1/04
050124608	10/1975	Japan	.	
161812	7/1987	Japan	.	
81101	4/1988	Japan	.	
12109742	4/1990	Japan	.	
0215269	9/1991	Japan	.....	523/106
0007302	1/1992	Japan	.....	525/59

[57] **ABSTRACT**

The invention relates to a novel process for the manufacture of mouldings, especially contact lenses, in which a soluble prepolymer comprising crosslinkable groups is cross-linked in solution, and also to mouldings, especially contact lenses, obtainable in accordance with that process. The present invention relates also to novel prepolymers that can be used in the process according to the invention, especially derivatives of a polyvinyl alcohol having a molecular weight of at least about 2000 that, based on the number of hydroxy groups of the polyvinyl alcohol, comprise from approximately 0.5 to approximately 80% of units of formula I



(I)

wherein

R is lower alkylene having up to 8 carbon atoms,

R¹ is hydrogen or lower alkyl and

R² is an olefinically unsaturated, electron-attracting, copolymerisable radical preferably having up to 25 carbon atoms, to crosslinked polymers, either homo- or co-polymers of those novel prepolymers and the processes for the preparation of the novel prepolymers and the homo- and co-polymers obtainable therefrom, to mouldings made from the said homo- or co-polymers, especially contact lenses made from those homo- or co-polymers, and to processes for the manufacture of contact lenses using the said homo- or co-polymers.

21 Claims, No Drawings