

[54] **PROCESS FOR PREPARING LOW MOLECULAR WEIGHT WATER-SOLUBLE POLYMERS**

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[21] Appl. No.: **152,011**

[22] Filed: **May 21, 1980**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 4,974, Jan. 22, 1979, abandoned.

[51] Int. Cl.³ **C08F 4/40; C08F 2/16**

[52] U.S. Cl. **260/29.6 M; 526/91; 526/303.1; 526/317**

[58] Field of Search **526/91**

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[57] **ABSTRACT**

A process for preparing a low molecular weight water-soluble polymer comprises reacting, in an aqueous solution system, a water-soluble monomer selected from the class consisting of (a) acrylic acid, methacrylic acid, acrylamide, acrolein, methacrolein, methacrylamide, N-vinyl pyrrolidone, acryloxypionic acid and mixtures thereof, and (b) water-soluble comonomers of one or more of the monomers of (a) with from about 5-50% of the total monomers present, of a comonomer selected from the class consisting of itaconic acid, fumaric acid, maleic acid, hydroxypropylmethacrylate, hydroxyethylacrylate, hydroxypropylacrylate, hydroxyethylmethacrylate, acrylonitrile, methacrylonitrile, dimethylaminoethyl acrylate, dimethylaminoethyl methacrylate, t-butylaminoethyl acrylate, 4-vinyl pyridine, beta-hydroxyethyl dimethylaminoethyl methacrylate salt, t-butylaminoethyl methacrylate, and mixtures thereof in the presence of a catalyst system which comprises an initiator and a metal salt wherein the molar ratio of the initiator to the metal ion is from about 10:1 to about 150:1 and the initiator is present in an amount of from about 0.5 weight percent to about 35 weight percent based on the weight of the monomers present. An aqueous polymer solution has terminal hydroxyl groups, substantially all of the water which was present during the preparation of the polymer, a solids content of from about 40% to about 60% by weight of the entire composition and said polymer has an average molecular weight of up to 50,000. The polymer is prepared from the monomers set forth above.

16 Claims, No Drawings