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# United States Patent [19]

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## [54] POLYMER COMPOSITIONS CONTAINING DESTRUCTURIZED STARCH

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### Related U.S. Application Data

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### [30] Foreign Application Priority Data

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[52] U.S. Cl. .... **524/47; 524/52; 524/53; 264/328.14; 424/451; 427/2**

[58] Field of Search ..... **524/47, 52, 53; 264/328.14; 424/451; 427/2**

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## [57] ABSTRACT

A thermoplastic polymer composition comprising:

- (a) a destructurized starch, and either
- (b) an effective amount of at least one compound selected from the following: (1) a polymer which contains at least two different types of functional groups, one of said types of these groups being hydroxyl groups; (2) at least one polymer which does not contain hydroxyl groups and is selected from the group consisting of polymers which contain at least two types of functional groups bound to the same molecule one type of these groups being carboxylate groups; (3) at least one polymer selected from the group consisting of polymers which contain tertiary amino groups and/or salts thereof and/or quaternary ammonium groups; (4) at least one polymer selected from the group of polysaccharides which have been chemically modified to contain added hydroxyalkyl groups and/or contain alkyl ether groups, and/or contain ester groups; (5) at least one compound selected from the group consisting of copolymers of vinyl pyrrolidone; (6) at least one compound selected from the group consisting of cationically modified polysaccharides; (7) at least one compound selected from the group consisting of anionically modified polysaccharides; (8) at least one polymer selected from the group of copolymers containing vinyl alcohol units together with aliphatic chain units as are obtained by copolymerization of vinyl esters, preferably vinyl acetate, with unsaturated monomers containing no functional group with subsequent hydrolysis of the vinyl ester group; (9) at least one compound selected from the group consisting of polysaccharide graft copolymers and graft copolymers of polysaccharide derivatives; (10) at least one compound selected from the group consisting of polyalkyleneimine polymers and polyalkyleneimine copolymers; (11) at least one compound selected from the group consisting of styrene sulfonic acid polymers, styrene sulfonic acid copolymers, and salts thereof; and (12) at least one compound selected from the group consisting of polymers and copolymers which contain carboxylic groups which partially or wholly are present in the form of their salts and wherein said polymers or copolymers do not contain further functional groups; or

(c) At least one substantially water-insoluble thermoplastic polymer. combinations of (a), (b) and (c) are also disclosed.

**868 Claims, 4 Drawing Sheets**