

terminated, maintaining the pH below 4 to cause said acetaldehyde to react with the starch until the cross-linked starch acylate has an alkaline fluidity of from about 60 cc. to 90 cc. and then separating the granular cross-linked cereal starch acylate from the reaction mixture.

10. The process of preparing a cereal starch thickening agent, which comprises acylating cereal starch in suspension with a vinyl ester of an aliphatic monocarboxylic acid having from 1 to 18 carbon atoms, treating said cereal starch acylate with a polyfunctional cross-linking agent selected from the group consisting of polyfunctional etherifying agents and polyfunctional esterifying agents to react with the hydroxyl groups of the cereal starch and separating a granular cereal starch acylate having an alkaline fluidity of from 50 cc. to 90 cc. from the reaction mixture.

11. A granular cross-linked cereal starch acylate of an aliphatic monocarboxylic acid having from 2 to 3 carbon atoms and having an alkaline fluidity of from about 50 cc. to 90 cc., a CIV viscosity at pH 3.5 of at least 700 gm.-cm. after 15 minutes and a CIV viscosity at pH 3.5 of at least 600 gm.-cm. after 40 minutes, said cereal starch acylate having from 1.5 to 3.5% by weight acylate groups and being cross-linked through the hydroxyl groups of the starch with a cross-linking agent selected from the group consisting of polyfunctional etherifying agents and polyfunctional cross-linking esterifying agents.

12. The product of claim 11 where the polyfunctional cross-linking agent is acrolein.

13. The product of claim 11 where the polyfunctional cross-linking agent is phosphorous oxychloride.

14. The product of claim 11 where the polyfunctional cross-linking agent is epichlorohydrin.

15. A granular cross-linked cereal starch acylate of an aliphatic monocarboxylic acid having from 2 to 3 carbon atoms and having an alkaline fluidity of from

about 50 cc. to 90 cc., a CIV viscosity at pH 3.5 of at least 700 gm.-cm. after 15 minutes and a CIV viscosity at pH 3.5 of at least 600 gm.-cm. after 40 minutes, said cereal starch acylate having from 1.5 to 3.5% by weight acylate groups and being cross-linked through the hydroxyl groups of the starch with acetaldehyde and a polyfunctional cross-linking agent selected from the group consisting of polyfunctional etherifying agents and polyfunctional cross-linking esterifying agents.

16. A granular cross-linked cereal starch acetate having an alkaline fluidity of from about 60 cc. to 90 cc., a CIV viscosity at pH 3.5 of at least 700 gm.-cm. after 15 minutes and a CIV viscosity at pH 3.5 of at least 600 gm.-cm. after 40 minutes, said cereal starch acetate having from 1.5 to 3.5% by weight acetate groups and being cross-linked through the hydroxyl groups of the starch with a polyfunctional cross-linking agent selected from the group consisting of polyfunctional cross-linking etherifying agents and polyfunctional esterifying agents.

References Cited by the Examiner

UNITED STATES PATENTS

Re. 23,443	12/1951	Lolkema	260—233.3
2,588,463	3/1952	Balassa	260—233.3
2,732,309	1/1956	Kerr	260—233.5 XR
2,853,484	9/1958	Lolkema et al.	260—233.3
2,935,510	5/1960	Wurzberg	260—233.3

OTHER REFERENCES

Kerr, Ralph W.: *Chemistry and Industry of Starch*, Academic Press Inc., New York (1950) (page 471, lines 1-3).

WILLIAM H. SHORT, *Primary Examiner*.

A. H. WINKELSTEIN, *Examiner*.