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(54) Title: PAPER PRODUCTS CONTAINING A BIODEGRADABLE CHEMICAL SOFTENING COMPOSITION

(57) Abstract

Fibrous cellulose materials useful in the manufacture of soft, absorbent paper products such as paper towels, facial tissues, and toilet tissue are disclosed. The paper products contain a biodegradable chemical softening composition comprising a mixture of a biodegradable quaternized ester-amine compound and a polyhydroxy compound. Preferred biodegradable quaternized ester-amine compounds include diester dialkyldimethylammonium salts such as the diester ditallow dimethyl ammonium chloride, diester di(touch hydrogenated) tallow dimethyl ammonium chloride and diester di(hydrogenated) tallow dimethyl ammonium chloride. Preferred polyhydroxy compounds are selected from the group consisting of glycerol, and polyethylene glycols and polypropylene glycols having a weight average molecular weight from about 200 to 4000. The biodegradable chemical softening compositions are prepared by first mixing the biodegradable quaternized ester-amine compound into the polyhydroxy compound at a specific temperature range wherein the polyhydroxy compound is miscible with the biodegradable quaternized ester-amine compound and then diluting the mixture with water at a specific temperature and pH range to form an aqueous vesicle dispersion suitable for treating the fibrous cellulose material.

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