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(54) Title: WATER-SOLUBLE CATIONIC COPOLYMERS AND THEIR USE AS FLOCCULANTS AND DRAINAGE RETENTION AIDS

(57) Abstract

A water-soluble cationic copolymer comprising the reaction product of (I) and a cationic quaternary amine having formula (a), wherein Y is (b) and n is 1 to 5; R¹, R², R³ are independently H or C₁ to C₃ alkyl, R⁴, R⁵ and R⁶ are independently C₁ to C₃ alkyl, X is a halide, hydroxyl or C₁-C₃ alkylsulfate anion. A second water-soluble cationic copolymer having general formula (II), wherein Z represents (c), or residual groups of -CH₂N⁺(R⁴R⁵)CH₂CH-CH₂X⁻, or mixtures thereof, and n is 1 to 5; R¹, R² and R³ are independently selected from the group consisting of H or C₁ to C₃ alkyl; R⁴, R⁵ and R⁶ are independently C₁ to C₃ alkyl; and X is a halide, hydroxyl or alkylsulfate anion; and wherein x, y and q represent molar percents of monomeric units in the copolymer such that q is 1 to 99 mol %, and the molar ratio of x to y is from 0 to 10. The copolymers of this invention are useful as flocculating agents and as drainage/retention aids in pulp and papermaking operations.

