

[54] **IONOGENIC HYDROPHILIC WATER-INSOLUBLE GELS FROM PARTIALLY HYDROLYZED ACRYLONITRILE POLYMERS AND COPOLYMERS, AND A METHOD OF MANUFACTURING SAME**

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[57] **ABSTRACT**

The invention relates to new ionogenic hydrogels based on partially hydrolyzed polymers containing, in the starting material, at least 60, advantageously at least 80% (mol.) of acrylonitrile units, said hydrogels being characterized by a weakly ampholytic, character and by a multiblock structure of polymeric chains with continuous sequences of acrylonitrile units in an amount of from 2 to 95% (molar), alternating with continuous sequences of hydrophylic units consisting of a major amount of acrylic acid and a minor amount of acrylamide units, the sequences or blocks of acrylonitrile units forming together polyacrylonitrile domains detectable by X-ray analysis. In water-swelled condition the hydrogels consist of two distinct but inseparable phases, one of them said polyacrylonitrile, the other said amorphous hydrophilic, highly solvated chains with predominating acrylic acid units. Each macromolecular chain, containing, in average, several blocks or sequences of the said two sorts, (non-hydrolyzed polyacrylonitrile and hydrolyzed to acrylic acid and acrylamide units), takes part of several domains of the two phases. This structure is uniform and homogeneous in the whole cross-section of any article manufactured from the hydrogel.

5 Claims, No Drawings