

Title (en)
PHOSPHONIC ACID-CONTAINING BLENDS AND PHOSPHONIC ACID-CONTAINING POLYMERS

Title (de)
PHOSPHONSÄURE-HALTIGE BLENDS UND PHOSPHONSÄURE-HALTIGE POLYMERE

Title (fr)
MÉLANGES CONTENANT DE L'ACIDE PHOSPHONIQUE ET POLYMÈRES CONTENANT DE L'ACIDE PHOSPHONIQUE

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Abstract (en)
[origin: WO2007101415A2] The invention relates to blends and blend membranes from low-molecular hydroxymethylene-oligo-phosphonic acids $R-C(PO₃H₂)_x(OH)_y$ and polymers, the group R representing any organic group and the polymers containing the following functional groups: cation exchanger groups or their nonionic precursors of the type $SO₂X$, $X = Hal, OH, OMe, NR₁R₂, OR₁$ with $Me =$ any metal cation or ammonium cation, $R₁$, $R₂ = H$ or any aryl- or alkyl group, $POX₂$, COX and/or basic groups such as primary, secondary or tertiary amino groups, imidazole groups, pyridine groups, pyrazole groups etc. and/or OH groups. Low molecular hydroxymethylene-oligo-phosphonic acids $R-C(PO₃H₂)_x(OH)_y$ are preferred in which $x = 2$ and $y = 1$. The invention also relates to low-molecular hydroxymethylene-oligo-phosphonic acids $R-C(PO₃H₂)₂(OH)₁$ and polymers, wherein the group R of the hydroxymethylene-oligophosphonic acid contains an aliphatic or aromatic basic group which ionically interacts with the acidic groups of the polymer or of the polymer mixture. The invention further relates to blends and blend membranes from low-molecular hydroxymethylene-oligo-phosphonic acids $R-C(PO₃H₂)₂(OH)₁$ and polymers, wherein the OH groups of the low-molecular hydroxymethylene-1,1-bisphosphonic acid are covalently cross-linked with each other or optionally with OH groups of the polymer. The invention also relates to polymers that are modified with the 1-hydroxymethylene-1,1-bisphosphonic acid group. The polymers are produced by reacting polymers which contain carboxylic acid groups or carboxylic halide groups $-COHal$ ($Hal = F, Cl, Br, I$) with phosphite compounds or by reacting polymeric aldehydes or polymeric keto compounds with phosphite esters while carrying out an amine catalysis, an oxidation of the intermediary hydroxyphosphonic acid with $MnO₂$ or any other oxidant. The invention finally relates to methods for producing the aforementioned materials and to the use of membranes of the aforementioned materials in membrane processes and especially in fuel cells, even at temperatures of $>100^{\circ}C$.

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