

Title (en)

N-CARBOXYALKANE-AMINOALKANE-DIPHOSPHONIC ACIDS, N-CARBOXYALKANE-AZACYCLOALKANE-DIPHOSPHONIC ACIDS AND N-CARBOXYALKANE-AMINOARYLKANE DIPHOSPHONIC ACIDS, PROCESS FOR THEIR PREPARATION AND THEIR USE AS SEQUESTERING AGENTS

Publication

EP 0000930 B1 19810701 (DE)

Application

EP 78100697 A 19780817

Priority

DE 2737259 A 19770818

Abstract (en)

[origin: EP0000930A1] 1. Process for the production of N-carboxyalkane-aminoalkane diphosphonic acids, N-carboxy-alkane-azacycloalkane-diphosphonic acids and N-carboxyalkane-aminoaryl-diphosphonic acids of the general Formula I see diagramm : EP0000930,P8,F1 wherein R**1 is a hydrogen atom, or an alkyl radical of formula $-(CH_2)_xCH_3$ with $x = 0$ to 10 , or a hydroxy ethyl radical, or a carboxy methyl radical, or a phenyl radical, or an N,N-bis-(carboxyalkyl)-aminoalkyl radical, or a methyl- or ethyl-phosphonic acid radical, or R**1 together with R**2 is an alkylene group with 3 to 5 C-atoms and forms an azacycloalkane ring with the grouping see diagramm : EP0000930,P8,F2 R**2 is a hydrogen atom, or a methyl radical, or the same radical as R**3, or R**2 together with R**1 is an alkylene group with 3 to 5 C-atoms and forms an azacycloalkane ring with the grouping see diagramm : EP0000930,P8,F3 R**3 is a carboxy-substituted unbranched alkyl radical with the formula $(CH_2)_mCOOH$ in which $m = 1$ to 12 , or a 2-carboxy-2,2-dimethyl ethyl radical, or a 1,2-dicarboxy-ethyl radical, characterised in that an amino alkane, azacyclo alkane or aminoaryl alkane diphosphonic acid of the general Formula II see diagramm : EP0000930,P8,F4 wherein R**1 is defined as stated in Formula I and R**4 is a hydrogen atom, or a methyl radical, or R**4 together with R**1 is an alkylene group with 3 to 5 C-atoms and forms an azacyclo alkane ring with the grouping see diagramm : EP0000930,P8,F5 is heated with a corresponding unbranched or branched halogen alkane carboxylic acid or halogen succinic acid, its alkali salts, earth alkali salts or alkali-heavy metal salts or its esters in a molar ratio of 1:1 to 1:3 in aqueous medium at a temperature between 50 and 160 degrees C and at a pH value between 4.0 and 12.0 until the reaction is concluded.

IPC 1-7

C07F 9/38; C11D 3/36

IPC 8 full level

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CPC (source: EP)

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