

Title (en)

CLEANING FORMULATIONS FOR MACHINE DISHWASHING COMPRISING HYRDOPHILICALLY MODIFIED POLYCARBOXYLATES

Title (de)

REINIGUNGSFORMULIERUNGEN FÜR DIE MASCHINELLE GESCHIRRREINIGUNG ENTHALTEND HYDROPHIL MODIFIZIERTE POLYCARBOXYLATE

Title (fr)

PREPARATIONS DETERGENTES POUR LAVAGE EN LAVE-VAISSELLE CONTENANT DES POLYCARBOXYLATES A MODIFICATION HYDROPHILE

Publication

EP 1924676 A1 20080528 (DE)

Application

EP 06793039 A 20060829

Priority

- EP 2006065751 W 20060829
- DE 102005041349 A 20050831

Abstract (en)

[origin: DE102005041349A1] Phosphate-free cleaning formulation for dishwasher, comprises: (a) copolymers from monoethylenic unsaturated monocarboxylic acids; (b) a complexing agent from e.g. nitrilotriacetic acid; (C) weak foaming nonionic surfactant, (D) a bleaching agent and optionally a bleach activator; (e) a further builder; (f) enzyme; and (g) a further additives e.g. anionic or zwitterionic surfactant and bleaching catalyst. Phosphate-free cleaning formulation for dishwasher, comprises: (a) 1-20 wt.% of copolymers from (a1) 50-99.5 mol.% of a monoethylenic unsaturated monocarboxylic acid and/or its salt, (a2) 0.5-20 mol.% of an alkoxyated monoethylenic unsaturated monomer (I) of formula (CH₂=C(R1)-R2-[R3-O] n-R4), (a3) 0-50 mol.% of a monoethylenic unsaturated dicarboxylic acid, an anhydride and/or its salt and (a4) 0-20 mol.% of an another copolymerizable monoethylenic unsaturated monomer, where the copolymer exhibits an average molecular weight of 30000-500000 g/mol and a K-value of 40-150, measured at the pH of 7 in 1 wt.% aqueous solution at 25[deg]C; (b) 1-50 wt.% of complexing agent from nitrilotriacetic acid, ethyl diaminetetra acetic acid, diethylethylaminepentaacetic acid, hydroxyethylethyldiaminetriacetic acid and glycine-N, N-diacetic acid and its derivative, glutamic acid-N,N-diacetic acid, iminodisuccinate, hydroxyiminodisuccinate, S,S-ethyldiaminedisuccinate and asparaginic acid diacetic acid and the salts of the aforementioned substances; (C) 1-15 wt.% of weak foaming nonionic surfactant, (D) 0.1-30 wt.% of a bleaching agent and optionally a bleach activator; (e) 0-60 wt.% of a further builder; (f) 0-8 wt.% of enzyme; and (g) 0-50 wt.% of a further additives like anionic or zwitterionic surfactant, bleaching catalyst, alkali carrier, corrosion inhibitors, antifoaming agents, coloring materials, perfumes, fillers, organic solvents and water. An independent claim is included for a powder mixture or a granulate mixture for the cleaning formulations of the dishwasher, comprising: 30-95 wt.% of the copolymers from (a1), (a2) and optionally (a3) and (a4); (b) 5-70 wt.% of complexing agent; and (C) 0-20 wt.% of polyethylene glycol and/or nonionic surfactant. R1 : H or CH 3; R2 : -(CH 2) x-O-, -CH 2-NR5, -CH 2-O-CH 2-CR6R7-CH 2-O or -CONH; R3 : 2-4C-alkylene that can be arranged as block wise or static manner, where the portion of ethylene amounts to at least 50 mol.%; R4 : H, 1-4C-alkyl, -SO 3M or -PO 3M 2; R5 : H or -CH 2-CR1=CH 2; R6 : -O-[R3-O] n-R4, where the -[R3-O] n of the R6 is different compared to the [R3-O] n of (I); R7 : H or ethyl; M : alkali metal or H; n : 4-250; and x : 0 or 1.

IPC 8 full level

C11D 3/33 (2006.01); **C11D 3/37** (2006.01)

CPC (source: EP KR US)

C11D 3/33 (2013.01 - EP KR US); **C11D 3/37** (2013.01 - KR); **C11D 3/3757** (2013.01 - EP US)

Citation (search report)

See references of WO 2007025955A1

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR

DOCDB simple family (publication)

DE 102005041349 A1 20070301; AT E428765 T1 20090515; BR PI0615333 A2 20121211; CA 2620475 A1 20070308; CA 2620475 C 20141118; CN 101300334 A 20081105; CN 101300334 B 20120516; DE 502006003477 D1 20090528; EP 1924676 A1 20080528; EP 1924676 B1 20090415; ES 2324239 T3 20090803; JP 2009506184 A 20090212; JP 5345394 B2 20131120; KR 101363124 B1 20140213; KR 20080041274 A 20080509; US 2008188391 A1 20080807; US 2010227787 A1 20100909; US 2010249010 A1 20100930; US 2012010117 A1 20120112; US 2012196784 A1 20120802; US 8093196 B2 20120110; WO 2007025955 A1 20070308

DOCDB simple family (application)

DE 102005041349 A 20050831; AT 06793039 T 20060829; BR PI0615333 A 20060829; CA 2620475 A 20060829; CN 200680040342 A 20060829; DE 502006003477 T 20060829; EP 06793039 A 20060829; EP 2006065751 W 20060829; ES 06793039 T 20060829; JP 2008528496 A 20060829; KR 20087007168 A 20060829; US 201113239625 A 20110922; US 201213444933 A 20120412; US 6501106 A 20060829; US 78372610 A 20100520; US 78380410 A 20100520