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(54) Title: DYNAMIC COPOLYMERS FOR WORKABILITY RETENTION OF CEMENTITIOUS COMPOSITION

(57) Abstract: A process for the production of high early strength cementitious compositions includes mixing hydraulic cement, aggregate, water, and a slump retention admixture, wherein the slump retention admixture is a dynamic copolymer containing residues of at least the following monomers: A) an ethylenically unsaturated dicarboxylic acid, B) an ethylenically unsaturated alkenyl ether having an C₂₋₄ oxyalkylene chain of about 1 to 25 units, C) an ethylenically unsaturated alkenyl ether having an C₂₋₄ oxyalkylene chain of 26 to about 300 units, and D) an ethylenically unsaturated monomer comprising a moiety hydrolysable in the cementitious composition, wherein the monomer residue when hydrolyzed comprises an active binding site for a component of the cementitious composition. The present method is useful in the production of precast, ready mix, and/or highly filled cementitious compositions.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
 EPO-Internal, WPI Data, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2006/028252 A1 (NIPPON CATALYTIC CHEM IND [JP]; HAYASHIYA TOSHIO [JP]) 16 March 2006 (2006-03-16) page 5, line 30 - page 13, line 21; claims	1-30
X	WO 2005/075529 A2 (CONSTR RES & TECH GMBH [DE]; MORARU BOGDAN [DE]; HUEBSCH CHRISTIAN [DE]) 18 August 2005 (2005-08-18) page 1, last paragraph - page 2, paragraph 2 page 4, line 5 - page 6, last line; claims 1,12,13; examples 1,9,16	1-30
A	DE 10 2005 061153 A1 (CONSTR RES & TECH GMBH [DE]) 28 June 2007 (2007-06-28) paragraphs [0010], [0013] - [0023]	1-30
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Further documents are listed in the continuation of Box C. See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Theodoridou, K
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2004/087602 A1 (CONSTR RES & TECH GMBH [DE]; MATSUMOTO TOSHIMI [JP]; ASMUS SVEN [JP];) 14 October 2004 (2004-10-14) page 12, paragraph 31-33; examples -----	1-30
E	WO 2009/153202 A1 (LORENZ KLAUS K [DE] ET AL) 23 December 2009 (2009-12-23) figure 10; examples 33-35 -----	1-30

INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/EP2009/061728

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2006028252 A1	16-03-2006	CN 101014636 A	08-08-2007
		JP 2008512541 T	24-04-2008
WO 2005075529 A2	18-08-2005	AT 411344 T	15-10-2008
		AU 2005209997 A1	18-08-2005
		BR PI0507444 A	10-07-2007
		CA 2554763 A1	18-08-2005
		CN 1997679 A	11-07-2007
		DE 102004005434 A1	25-08-2005
		EP 1711544 A2	18-10-2006
		ES 2311210 T3	01-02-2009
		JP 2007523235 T	16-08-2007
		KR 20070028310 A	12-03-2007
		US 2007161724 A1	12-07-2007
DE 102005061153 A1	28-06-2007	AU 2006332146 A1	12-07-2007
		CA 2628740 A1	12-07-2007
		CN 101341180 A	07-01-2009
		EP 1966258 A1	10-09-2008
		WO 2007076941 A1	12-07-2007
		JP 2009520843 T	28-05-2009
		KR 20080084973 A	22-09-2008
		US 2009163622 A1	25-06-2009
WO 2004087602 A1	14-10-2004	BR PI0408974 A	04-04-2006
		CA 2521173 A1	14-10-2004
		EP 1608601 A1	28-12-2005
		JP 2004307590 A	04-11-2004
		MX PA05010638 A	15-12-2005
		US 2006247402 A1	02-11-2006
WO 2009153202 A1	23-12-2009	WO 2009153203 A1	23-12-2009
		US 2009312504 A1	17-12-2009
		US 2009312460 A1	17-12-2009