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(54) Title: ACRYLAMIDE REMOVAL FROM AQUEOUS FLUID BODIES

(57) Abstract: This invention is a method for removing acrylamide from large bodies of water or from other acrylamide-containing aqueous fluids. The acrylamide-containing water or aqueous fluid is treated with a peroxygen that is preferably persulfate, hydrogen peroxide or activated peracetic acid. The invention is particularly useful for treatment of acrylamide-containing aqueous fluids associated with oil and gas drilling and recovery applications and includes aqueous well treatment fluid compositions comprising an acrylamide-derived polymer and a peroxygen compound capable of generating free radicals, useful in slickwater well treatment applications.

**A. CLASSIFICATION OF SUBJECT MATTER***C02F 1/72(2006.01)i, C02F 1/58(2006.01)i*

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

C02F 1/72; C09K 3/00; E21B 43/12; E21B 43/26

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) &amp; Keywords: polyacrylamide, hydraulic, friction, reducer

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2007-0284101 A1 (OSCAR L. VALERIANO et al.) 13 December 2007 See abstract and claims 1-10, Example 1	1-3, 8, 10-11, 14 , 16-18, 23, 25-26 , 29-32 4-7, 9, 12-13, 15 , 19-22, 24, 27-28
X A	US 4591443 A1 (BROWN; RICHARD A. et al.) 27 May 1986 See abstract and claims 1-18, Examples 1, 2, 8	1-5, 8, 10, 16-20, 23 , 25, 29-31 6-7, 9, 11-15, 21-22 , 24, 26-28, 32
A	US 4610795 A1 (NORRIS; ROBERT D. et al.) 09 September 1986 See abstract and claims 1-4	1-32
A	US 4552674 A1 (BROWN; RICHARD A. et al.) 12 November 1985 See abstract and claims 1-39	1-32
A	US 2006-0054570 A1 (PHILIP BLOCK et al.) 16 March 2006 See abstract and claims 1-31	1-32

 Further documents are listed in the continuation of Box C. See patent family annex.

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007-0284101 A1	13.12.2007	None	
US 4591443 A1	27.05.1986	EP 0181211 B1 JP 04-052151 B KR 10-1989-0002278 B1	27.03.1991 21.08.1992 27.06.1989
US 4610795 A1	09.09.1986	EP 0213095 B1 JP 04-044677 B JP 1760221 C JP 62-033995 A	18.07.1990 22.07.1992 20.05.1993 13.02.1987
US 4552674 A1	12.11.1985	JP 03-063598 B JP 1695501 C JP 60-065087 A	01.10.1991 17.09.1992 13.04.1985
US 2006-0054570 A1	16.03.2006	AU 2003-247656 A1 AU 2003-247656 A8 AU 2003-280419 A1 CA 2490114-A1 CA 2490296-A1 EP 1515918 A2 EP 2049442 A1 US 2005-0258110 A1 US 7473372 B2 WO 2004-002902 A1 WO 2004-002923 A2	19.01.2004 19.01.2004 19.01.2004 08.01.2004 08.01.2004 23.03.2005 22.04.2009 24.11.2005 06.01.2009 08.01.2004 08.01.2004