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(54) **Non-toxic percussion primers and methods of preparing the same**

(57) A percussion primer composition including at least one explosive, at least one nano-size non-coated fuel particle having natural surface oxides thereon, at

least one oxidizer, optionally at least one sensitizer, optionally at least one buffer, and two methods of preparing the same.

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EUROPEAN SEARCH REPORT

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EP 13 15 7579

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 2006/113014 A1 (PUSZYNSKI JAN A [US] ET AL) 1 June 2006 (2006-06-01) * paragraph [0013] - paragraph [0014] * * paragraph [0007]; claims *	1-68	INV. C06C7/00 C06B23/00 C06B33/00
Y	US 4 133 707 A (ANDREW EUGENE A) 9 January 1979 (1979-01-09) * claims *	1-68	
Y	EP 0 334 725 A1 (NCS PYROTECHNIE & TECH [FR]) 27 September 1989 (1989-09-27) * claims *	1-68	
Y	DE 196 06 237 A1 (COMPANHIA BRASILEIRA DE CARTUC [BR]) 29 August 1996 (1996-08-29) * page 3; claims *	1-68	
Y	EP 1 195 366 A2 (R A BRANDS L L C [US]) 10 April 2002 (2002-04-10) * claims *	1-68	
Y	WO 99/44968 A1 (SNC IND TECHNOLOGIES INC [CA]; GUINDON LOUISE [CA]; LEPAGE DANIEL [CA]) 10 September 1999 (1999-09-10) * page 11, line 13 - line 23; claims *	1-68	TECHNICAL FIELDS SEARCHED (IPC) C06C C06B
Y	US 6 544 363 B1 (ERICKSON JACK A [US]) 8 April 2003 (2003-04-08) * column 2, line 22 - line 52; claims *	1-68	
Y	EP 0 699 646 A1 (EUROPA METALLI SEZIONE DIFESA [IT]) 6 March 1996 (1996-03-06) * page 3, line 6 - line 14; claims; figures *	1-68	
Y	WO 2006/009579 A2 (RA BRANDS LLC [US]) 26 January 2006 (2006-01-26) * claims *	1-68	
		-/--	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 20 October 2014	Examiner Schut, Robert
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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EUROPEAN SEARCH REPORT

Application Number
EP 13 15 7579

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
	& US 2005/183805 A1 (PILE DONALD A [US] ET AL PILE DONALD ALLEN [US] ET AL) 25 August 2005 (2005-08-25) -----		
Y	US 2006/219341 A1 (JOHNSTON HAROLD E [US] ET AL) 5 October 2006 (2006-10-05) * paragraph [0024] - paragraph [0030]; claims *	1-68	
Y	WO 2006/083379 A2 (SOUTH DAKOTA SCHOOL OF MINES A [US]; PUSZYNSKI JAN A [US]; SWIATKIEWIC) 10 August 2006 (2006-08-10) * claims *	1-68	
Y	US 3 367 805 A (CLAY ROBERT B ET AL) 6 February 1968 (1968-02-06) * claims *	1-68	
Y	US 3 113 059 A (URSENBACH WAYNE O ET AL) 3 December 1963 (1963-12-03) * claims *	1-68	
Y	WO 96/12770 A1 (ELISHA TECHNOLOGIES CO L L C [US]) 2 May 1996 (1996-05-02) * claims 1-68 *	1-68	TECHNICAL FIELDS SEARCHED (IPC)
Y	WO 02/06421 A1 (PROCTER & GAMBLE [US]; LI YU JUN [JP]; MAO MARK HSIANG KUEN [JP]) 24 January 2002 (2002-01-24) * claims *	1-68	
Y	DE 25 13 735 A1 (CALGON CORP) 2 October 1975 (1975-10-02) * claims *	1-68	
	----- -/--		
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 20 October 2014	Examiner Schut, Robert
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)



EUROPEAN SEARCH REPORT

Application Number
EP 13 15 7579

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	MUELLER B: "Citric acid as corrosion inhibitor for aluminium pigment", CORROSION SCIENCE, OXFORD, GB, vol. 46, no. 1, 1 January 2004 (2004-01-01), pages 159-167, XP002507196, ISSN: 0010-938X, DOI: 10.1016/S0010-938X(03)00191-4 * page 159 * -----	1-68	
			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		20 October 2014	Schut, Robert
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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20-10-2014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2006113014 A1	01-06-2006	US 2006113014 A1 WO 2006083379 A2	01-06-2006 10-08-2006
US 4133707 A	09-01-1979	NONE	
EP 0334725 A1	27-09-1989	DE 68904921 D1 DE 68904921 T2 EP 0334725 A1 ES 2054042 T3 FR 2628735 A1	25-03-1993 08-07-1993 27-09-1989 01-08-1994 22-09-1989
DE 19606237 A1	29-08-1996	BR 9500890 A DE 19606237 A1 FI 960712 A FR 2730991 A1 SE 9600627 A	29-04-1997 29-08-1996 25-08-1996 30-08-1996 25-08-1996
EP 1195366 A2	10-04-2002	AT 315016 T AU 782638 B2 AU 7218001 A BR 0104341 A CA 2357632 A1 CN 1349959 A DE 60116453 T2 EP 1195366 A2 HK 1045832 A1 IL 145482 A KR 20020027280 A MX PA01010110 A US 6478903 B1	15-02-2006 18-08-2005 11-04-2002 28-05-2002 06-04-2002 22-05-2002 31-08-2006 10-04-2002 07-07-2006 17-05-2005 13-04-2002 25-06-2004 12-11-2002
WO 9944968 A1	10-09-1999	AT 404509 T AU 6287298 A CA 2335474 A1 DK 1062188 T3 EP 1062188 A1 ES 2310419 T3 PT 1062188 E US 6620267 B1 WO 9944968 A1	15-08-2008 20-09-1999 10-09-1999 01-12-2008 27-12-2000 01-01-2009 22-10-2008 16-09-2003 10-09-1999
US 6544363 B1	08-04-2003	NONE	
EP 0699646 A1	06-03-1996	AT 186526 T CA 2153820 A1 DE 69513251 D1	15-11-1999 16-01-1996 16-12-1999

EPO FORM P0459

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 13 15 7579

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-10-2014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		DE 69513251 T2	13-07-2000
		EP 0699646 A1	06-03-1996
		IL 114523 A	12-03-1999
		IT 1266171 B1	23-12-1996
		US 5672219 A	30-09-1997

WO 2006009579 A2	26-01-2006	CA 2556595 A1	26-01-2006
		US 2005183805 A1	25-08-2005
		US 2005189053 A1	01-09-2005
		US 2012125493 A1	24-05-2012
		US 2014305555 A1	16-10-2014
		WO 2006009579 A2	26-01-2006

US 2006219341 A1	05-10-2006	EP 1707547 A2	04-10-2006
		JP 2006290734 A	26-10-2006
		US 2006219341 A1	05-10-2006
		US 2010116385 A1	13-05-2010
		US 2013126057 A1	23-05-2013

WO 2006083379 A2	10-08-2006	US 2006113014 A1	01-06-2006
		WO 2006083379 A2	10-08-2006

US 3367805 A	06-02-1968	NONE	

US 3113059 A	03-12-1963	NONE	

WO 9612770 A1	02-05-1996	AU 709965 B2	09-09-1999
		AU 4003695 A	15-05-1996
		CA 2203181 A1	02-05-1996
		DE 69516298 D1	18-05-2000
		DE 69516298 T2	28-12-2000
		EP 0788527 A1	13-08-1997
		JP H10509469 A	14-09-1998
		MY 145330 A	31-01-2012
		US 5871668 A	16-02-1999
		WO 9612770 A1	02-05-1996

WO 0206421 A1	24-01-2002	AU 6490000 A	30-01-2002
		CA 2414191 A1	24-01-2002
		DE 60030596 T2	30-08-2007
		EP 1299499 A1	09-04-2003
		ES 2272307 T3	01-05-2007
		JP 2004504580 A	12-02-2004
		MX PA03000357 A	13-09-2004
		WO 0206421 A1	24-01-2002

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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