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(54) Title: NEW IONIC LIQUIDS

(57) Abstract: There is provided a mixture having a freezing point of up to  $100^{\circ}$ C formed by a process comprising the step of contacting: (A) from 1 to 2 equivalents of a compound of formula (I) AIX<sub>3</sub>(I) wherein each X independently represents Cl, Br or F; with (B) 1 equivalent of a compound of formula (II) R¹-C(O)-N(R²)(R³) (II) wherein R¹ to R³ have meanings given in the description. There is also provided further mixtures containing additional components, as well as methods of using the mixtures in various applications, such as for the electroreduction of the mixtures to produce aluminium metal.

### INTERNATIONAL SEARCH REPORT

International application No PCT/GB2010/002195

A. CLASSIFICATION OF SUBJECT MATTER INV. C25D3/44 C25D3/66

C07C233/05

C07C275/02

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

### B. FIELDS SEARCHED

ADD.

Minimum documentation searched (classification system followed by classification symbols) C07C C25D

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, BEILSTEIN Data, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT						
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.				
A	WO 2007/003956 A2 (UNIV LEICESTER [GB]; ABBOTT ANDREW PETER [GB]) 11 January 2007 (2007-01-11) cited in the application the whole document	1-12				
А	US 4 764 440 A (JONES STEVEN D [US] ET AL) 16 August 1988 (1988-08-16) cited in the application the whole document	1-12				
A	WO 2004/016571 A2 (SACHEM INC [US]) 26 February 2004 (2004-02-26) claims; examples	1-12				

"A" document defining the general state of the art which is not considered to be of particular relevance  "E" earlier document but published on or after the international filing date  "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  "O" document referring to an oral disclosure, use, exhibition or other means  "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone  "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.  "&" document member of the same patent family
Date of the actual completion of the international search	Date of mailing of the international search report
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See patent family annex.

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Name and mailing address of the ISA/

Further documents are listed in the continuation of Box C.

European Patent Office, P.B. 5818 Patentlaan 2

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International application No
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Category* Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT  ategory*  Citation of document, with indication, where appropriate, of the relevant passages  WO 2004/106287 A1 (MERCK PATENT GMBH [DE]; IGNATYEV NIKOLAI MYKOLA [DE]; WELZ-BIERMANN UR) 9 December 2004 (2004-12-09) claims; examples	Relevant to olaim No.  1-12

## **INTERNATIONAL SEARCH REPORT**

Information on patent family members

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