

Title (en)  
ELECTROLYTE USED FOR ALUMINUM ELECTROLYSIS AND ELECTROLYSIS PROCESS USING THE ELECTROLYTE

Title (de)  
ELEKTROLYT ZUR ELEKTROLYSE VON ALUMINIUM UND ELEKTROLYSEVERFAHREN MIT DEM ELEKTROLYT

Title (fr)  
ÉLECTROLYTE UTILISÉ POUR ÉLECTROLYSE D'ALUMINIUM ET PROCÉDÉ D'ÉLECTROLYSE UTILISANT L'ÉLECTROLYTE

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Application  
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Abstract (en)  
[origin: EP2862962A1] The present invention relates to an electrolyte for aluminum electrolysis and an electrolysis process using the electrolyte. The electrolyte in the present invention employs a pure fluoride salt system and is composed of the following components by mass percent: 20-29.9% of NaF, 60.1-66% of AlF<sub>3</sub>, 3-10% of LiF, 4-13.9% of KF and 3-6% of Al<sub>2</sub>O<sub>3</sub>, wherein the molar ratio of NaF to AlF<sub>3</sub> is 0.6-0.995; or the electrolyte is composed of the following components by mass percent: 30-38% of NaF, 49-60% of AlF<sub>3</sub>, 1-5% of LiF, 1-6% of KF and 3-6% of Al<sub>2</sub>O<sub>3</sub>, wherein the molar ratio of NaF to AlF<sub>3</sub> is 1.0-1.52. The electrolyte provided in the present invention has low liquidus temperature, good alumina solubility and high electric conductivity, and plays good roles in reducing energy consumption, enhancing current efficiency and improving working environment in the electrolysis process.

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CPC (source: EA EP KR US)  
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Citation (search report)  
• [X1] WO 9941431 A1 19990819 - NORTHWEST ALUMINUM TECHNOLOGY [US]  
• [X1] NZ 538777 A 20070223 - MOLTECH INVENT S  
• [X1] ALEXANDER DEDYUKHIN ET AL: "Electrical conductivity of the (KF-AlF<sub>3</sub>)-NaF-LiF Molten System with Al<sub>2</sub>O<sub>3</sub> additions at Low Cryolite Ratio", ECS TRANSACTIONS, 1 January 2009 (2009-01-01), pages 317 - 324, XP055063821, DOI: 10.1149/1.3159336  
• See references of WO 2013185540A1

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