

Title (en)
METHOD FOR ELECTROLYTIC PRODUCTION AND REFINING OF SILICON

Title (de)
VERFAHREN ZUR ELEKTROLYTISCHEN HERSTELLUNG UND ZUR RAFFINATION VON SILIZIUM

Title (fr)
PROCÉDÉ DE PRODUCTION ÉLECTROLYTIQUE ET DE RAFFINAGE DE SILICIUM

Publication
EP 1999286 A2 20081210 (EN)

Application
EP 07758136 A 20070308

Priority
• US 2007063555 W 20070308
• US 37287506 A 20060310
• US 80740006 P 20060714

Abstract (en)
[origin: WO2007106709A2] The present invention relates to a method for electrolytic production and refining of metals having a melting point above about 1000 °C, particularly silicon, where there is provided a first electrolytic cell having an upper molten electrolyte layer of a first electrolyte, a lower molten alloy layer of an alloy of the metal to be refined and at least one metal more noble than the metal to be refined. The lower alloy layer is the cathode in the first cell and an anode is positioned in the upper molten electrolyte layer. A second electrolytic cell is also provided with an upper molten metal layer of the same metal as the metal to be refined, said layer constituting a cathode, a lower molten alloy layer, said lower layer constituting an anode, said alloy having a higher density than the metal to be refined, and an intermediate molten electrolyte layer having a density between the density of the upper and lower molten layers. Both electrolytes are oxide based electrolytes containing oxide of the metal to be refined, and the electrolyte is in molten state and has a melting point below the operating temperature of the process. Raw material comprising an oxide of the metal to be refined is added to the first cell and direct electric current is passed through the anode to the cathode such that the metal to be refined is moved from the anode and deposited in molten state at the cathode. The two cells can be operated in two separate steps. One to produce an alloy and the other to refine metal from the alloy.

IPC 8 full level
C25B 1/00 (2006.01); **C25C 3/28** (2006.01); **C25C 3/34** (2006.01); **C25C 7/00** (2006.01)

CPC (source: EP NO)
C25B 1/00 (2013.01 - NO); **C25B 1/33** (2021.01 - EP); **C25C 3/28** (2013.01 - EP NO); **C25C 3/34** (2013.01 - EP NO); **C25C 7/005** (2013.01 - EP)

Designated contracting state (EPC)
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR

DOCDB simple family (publication)
WO 2007106709 A2 20070920; WO 2007106709 A3 20071129; WO 2007106709 A9 20080103; AU 2007226754 A1 20070920;
AU 2007226754 B2 20110120; BR PI0708603 A2 20110607; BR PI0708603 B1 20160517; CA 2645161 A1 20070920; CA 2645161 C 20111122;
EP 1999286 A2 20081210; EP 1999286 A4 20110907; EP 1999286 B1 20170419; ES 2633113 T3 20170919; JP 2009529607 A 20090820;
JP 5183498 B2 20130417; NO 20083970 L 20080917; NO 344829 B1 20200518

DOCDB simple family (application)
US 2007063555 W 20070308; AU 2007226754 A 20070308; BR PI0708603 A 20070308; CA 2645161 A 20070308; EP 07758136 A 20070308;
ES 07758136 T 20070308; JP 2008558531 A 20070308; NO 20083970 A 20080917