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

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Application

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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 0C, 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.

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