

Title (en)  
PROCESS FOR THE PREPARATION OF MASTER ALLOYS OF IRON AND NEODYMIUM BY ELECTROLYSIS OF OXYGEN-CONTAINING  
SALTS IN MOLTEN FLUORIDES

Publication  
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Application  
**EP 88420124 A 19880419**

Priority  
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Abstract (en)  
[origin: US4828658A] The invention concerns a process for the electrolytic preparation of a mother alloy of iron and neodymium by the reduction of a mixture comprising at least one reactive oxygen-bearing compound of neodymium in a bath of molten halides with at least one metallic cathode, preferably of iron, and a carbon anode. In accordance with the invention, the bath is primarily formed by a mixture of molten fluorides whose decomposition potential is close to that of NdF<sub>3</sub> or more negative, such as for example NdF<sub>3</sub>, MgF<sub>2</sub>, ScF<sub>3</sub>, CeF<sub>3</sub>, LaF<sub>3</sub>, BaF<sub>2</sub>, CaF<sub>2</sub> and SrF<sub>2</sub>, and permitting solubilization of the oxides by a complexing effect, the solute to be reduced is formed by a mixture of salts primarily containing a reactive oxygen-bearing compound of neodymium which is very rapidly soluble in the molten electrolyte. The working temperature is in a range of from 640 DEG to 1030 DEG C., the anodic current density is from 0.1 to 1.5 A/cm<sup>2</sup>, and the cathodic current density is between 2 and 30 A/cm<sup>2</sup>.

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