

Title (en)

PROCESS FOR ACCURATELY REGULATING THE LOW ALUMINA CONTENT OF AN IGNEOUS ELECTROLYSIS CELL FOR ALUMINIUM PRODUCTION

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Application

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Abstract (en)

[origin: US4654129A] A process is disclosed for accurately maintaining a low alumina content of between 1 and 4.5% in a cell for the production of aluminum by electrolysis in the Hall-Heroult process. According to the invention, a control parameter $P = -1/D(dR1/dt)$, is determined, wherein D is the variation in the alumina content of the electrolytic bath in % weight per hour, R1 is the internal resistance of the cell, and t is the time. A series of operations is then carried out in a repeated cycle, starting with the cell being fed alumina at a nominal rate which is substantially equal to the quantity consumed by electrolysis. At periodic intervals, an over-supply of alumina is added in order to enrich the bath, and the over-supply is continued for a preset time during which $dR1/dt$ is negative. The feed rate is then reduced to less than the nominal feed rate, during which time $dR1/dt$ passes through zero to become positive and the regulation parameter P, the value of which tends to rise, is measured often. The successive values of P are compared with a required preset value P_o . As soon as P equals P_o , the feed rate is returned to the nominal feed rate and a new cycle is recommenced.

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