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INFLUENCE OF CARBON REDUCING MATERIAL ON MECHANISM AND KINETICS OF PROCESSES OF CHLORINATING

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The work specifies the results of investigations the processes of chlorinating the oxides of magnesium, titanium and other metals. Consideration has been given to the reductant's nature influence on process mechanism and the rate of its progress. Conclusions have been made on the possibility of intensifying the chlorination process by means of preliminary reductant gasification.

Keywords : chlorination, chloride, melt, reductant, rate of chlorination

Entry. During the last decades the methods of chloric metallurgy saved the actuality and efficiency both in the traditional productions of metals (titan, magnesium, zirconium and other) and for drawing out of valuable components at processing of complex and secondary raw material.

Main part of researches. Research in relation to development of chlorinating process with use carbon oxide as a repairer was carried out in Institute of titan. Research of mechanism and kinetics of process of chlorinating, that it is executed on the basis of the worked out «method of the divided reagents» [1] showed that the previous stage of gasification for hard repairer allowed substantially to promote speed of chlorinating of magnox. At laboratory scales there are investigated the mechanism of co-operation of natural magnesite with gas mixture of chlorine and carbon oxide there are studied conformities to law of mass transfer in the system and set diffusive nature for process of chlorinating. In theory, with the use of equations of laws of Henry and Fik and the terms of equal delivery of gas reagents an experimental way to the surface of the chlorinated magnesite, are defined that provide the complete mastering of chlorine in the process [2].

Worked out technology tested on a pilot device chlorinating of the broken to pieces natural magnesite in the chlorinator of mine type with the internal diameter of mine a 0.3 t [3]. For correlation 2,3 in reactionary gases it is attained practically complete mastering of chlorine, high-rate of process and specific productivity 6.5-7.0 t $MgCl_2$/(m^2·twenty-four hours), that exceeds the attained before productivity of mine electrical furnace (MEF) three times. Fusion of chloride of magnesium, that it is got, on content main admixtures fully suits electrolytic redistribution for all types of electrolyzers, which exploit today in the countries of the CIS, and also stream line of

electrolyzers. After the additional cleaning of fusion its quality can be increased to the level of requirements of bipolar electrolyzers.

The offered technology foresees a number of technological principles for organizations which substantially promote its technique-economy level:

– processing of lump (broken to pieces) materials simplifies the apparatus chart of preparation of raw material, does not need previous burning, growing and mixing of oxide and repairer shallow; as a result, capital-intensiveness of technology goes down, a requirement diminishes in floorspaces;

– сягається practically complete filling of volume of vehicle by the chlorinated material (in a salt hypochlorinator fate of the chlorinated oxide - 5-10 %); in a vehicle for new technology consistently carry out drying, burning and chlorinating, that allows maximally to use the warmth of exothermic process of chlorinating, shorten thermal losses and energy consumption;

– a receipt is eliminated to the hypochlorinator of admixtures which are contained in a repairer (a repairer acts to the gazogene), that allows to improve quality of the got chloride;

– for the receipt of легколетких chlorides of metals organization of process of chlorinating becomes possible in the pseudofluidized layer which promotes the productivity and economy of technology substantially.

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