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## OPTIMIZATION OF PROCESS FOR TOTAL RECOVERY OF ALUMINUM FROM SMELTING SLAG 2. REMOVAL OF ALUMINUM SULFATE

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### Abstract

This paper continues the previous investigations regarding the technology for the Aluminum (Al) recovery as Al sulfate from black Al slag. Leaching is the next compulsory step in the Al extraction process. The paper studies the influence of mother solutions' (MS) recirculation resulted from the process within the system over the quality of Al sulfate and the siliceous residue (R) and, the aluminum nitride (AlN) hydrolyses in the leaching process. The optimum parameters determined are: \*the leaching yield of the slag that registers values between 56÷66 % and for the soluble Al 96-97%; \*the quality of the products obtained from this technology which have significant coagulation properties; \*the AlN decomposition which continues at the leaching phase but is lower than those achieved in the washing process. Besides, the (R) from the leaching process was inertized employing binder slag-cement or slag-lime into the proportion 7:3 binders: (R) ratio. The flow sheet of entire process is also presented. The experimental results were ultimately the purpose for the feasibility study, the economical analysis and the designing of a pilot plant (600t/year Al slag).

*Key words:* Al slag, Al sulfate, hydrolysis, leaching, silica matrix, waste processing

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