# SUITABILITY OF EXTRACTING ALUMINIUM FROM ALUMINIUM SLUDGE WASTE

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This research aims to explore an innovative and sustainable approach for extracting aluminium from aluminium sludge waste, thereby transforming it into a valuable resource. The study proposes a comprehensive methodology involving a combination of physical, chemical, and electrochemical techniques to maximize aluminium recovery. Since there are two steps; purification of alumina and electrolyzing, this paper has discussed both steps. The steps in purification process; leaching, precipitation have been analyzed considering parameters such as concentrations of leachants, pH value, stirring time, temperature of bath. Purified samples were analyzed using FTIR, EDEX methods. Electrolyzing process of alumina has performed using $CaCl_2$-NaCl electrolyte and analyzed the extraction of metallic aluminium by analyzing products of electrolyzation using XRD, SEM results.

**Keywords**: Sludge Waste, Aluminium, Recovery, Leaching, Extraction, Electrolysis