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Leaching of alumina from local clays by hydrochloric, sulphuric and nitric acids precipitation

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Leaching of alumina from three local clays of ukpor, auchi and udi obtained from different locations in Nigeria was carried out using three different acids (HCL, H2SO4 and HNO3) as precipitants. The leaching process involved preparation of the clay sample, dissolution in acid solution, precipitation of basic aluminium sulphate from the filtrate and the use of EDTA titration method to obtain the alumina yield. The effects of process parameters (acid concentration, particle size, leaching temperature and acid to clay weight ratio) on alumina extraction were investigated. Factorial design of experiment techniques was used in the assessment of the influence of experimental factors on the final results. Clay characterization was also carried out on the different clay samples. The highest yield of 36.96% was obtained from auchi clay with HNO_3 yielding more alumina than HCl and H_2SO_4.

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