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RED MUD AND WASTE BASE: RAW MATERIALS FOR COAGULANT PRODUCTION

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Abstract

Proposal for coagulant production using red mud and waste base as row material, by-products of abandoned alumina factory near Obrovac in Croatia, is described. Basic physico-chemical characteristics of red mud and waste base were also given. Elemental concentrations of red mud, waste base and wastewaters before and after treatment were measured using tube excited EDXRF method. Coagulant production consist of partial dissolution of red mud with diluted sulphuric acid (30% wt), separation of liquid from residual red mud by centrifugation or filtration through the filter press, and neutralisation of acid red mud (pH = 0) with the waste base to pH = 8. This process of red mud neutralisation results in heavy metals removal and also neutralisation of waste base to pH = 8, which could be, after treatment, discharged directly into the environment. Resulting red mud, after neutralisation, is in gel-like state and is suitable for heavy metals and turbidity removal from industrial wastewaters. As an example,

wastewaters from pressure washing of boats coated with antifouling paints were used and promising results were obtained. With one dose of coagulant (activated red mud), five cycles of heavy metals removal could be done.

Keywords:

EDXRF | Red mud | Waste base | Coagulant | Antifouling paints | Coagulation/flocculation

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