



Journal of Trace and Microprobe Techniques >

Volume 19, 2001 - [Issue 3](#)

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RED MUD AND WASTE BASE: RAW MATERIALS FOR COAGULANT PRODUCTION

Višnja Oreščanin, Karlo Nad, Vladivoj Valkovic, Nenad Mikulic & Olivio Meštrovic

Pages 419-428 | Received 13 Dec 2000, Accepted 06 Feb 2001, Published online: 16 Feb 2007

Cite this article <https://doi.org/10.1081/TMA-100105056>

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Abstract

Proposal for coagulant production using red mud and waste base as raw 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 consists 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 ($\text{pH} = 0$) with the waste base to $\text{pH} = 8$. This process of red mud neutralisation results in heavy metals removal and also neutralisation of waste base to $\text{pH} = 8$, 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

ACKNOWLEDGEMENT

This work has been supported in part by Zadar county.

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