

Pre-Beneficiation of Low Grade Diasporic Bauxite Ore by Reduction Roasting

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Abstract : A bauxite ore can be utilized in Bayer Process, if the mass ratio of Al_2O_3 to SiO_2 is greater than 10. Otherwise, its Fe_2O_3 and SiO_2 content should be removed. On the other hand, removal of TiO_2 from the bauxite ore would be beneficial because of both lowering the red mud residue and obtaining a valuable raw material containing TiO_2 mineral. In this study, the low grade diasporic bauxite ore of Yalvaç, Isparta, Turkey was roasted under reducing atmosphere and subjected to magnetic separation. According to the experimental results, $800^\circ C$ for reduction temperature and 20000 Gauss of magnetic intensity were found to be the optimum parameters for removal of iron oxide and rutile from the non-magnetic ore. On the other hand, $600^\circ C$ and 5000 Gauss were determined to be the optimum parameters for removal of silica from the non-magnetic ore.

Keywords : low grade diasporic bauxite, magnetic separation, reduction roasting, separation index

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