

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

**Authors :** Koksai Yılmaz, Burak Birol, Muhlis Nezihi Saridede, Erdogan Yigit

**Abstract :** A bauxite ore can be utilized in Bayer Process, if the mass ratio of  $\text{Al}_2\text{O}_3$  to  $\text{SiO}_2$  is greater than 10. Otherwise, its  $\text{Fe}_2\text{O}_3$  and  $\text{SiO}_2$  content should be removed. On the other hand, removal of  $\text{TiO}_2$  from the bauxite ore would be beneficial because of both lowering the red mud residue and obtaining a valuable raw material containing  $\text{TiO}_2$  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,  $800^\circ\text{C}$  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,  $600^\circ\text{C}$  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

**Conference Title :** ICCPE 2015 : International Conference on Chemical and Petrochemical Engineering

**Conference Location :** Singapore, Singapore

**Conference Dates :** September 10-11, 2015