A Study on process mineralogy of low-grade high-iron bauxite and iron recovery technology

CHEN Zhi-you, FENG Qi-ming*, SHI Qing

(*School of Resources Processing and Bioengineering, Central South University, Changsha* 410083, *China*)

Abstract: In this study mineralogy of low grade high-iron bauxite and magnetic separation process of the iron recovery were investigated. Results show that the chief mineral is diaspore crystal with fine grain size of 4~20 μm. The iron ore is hematite and limonite mainly with coarse particle sizes of 20~100 μm; fine particle sizes are smaller than 10μm and ultra fine particle is smaller than 2μm mm, closely symbiosis with other minerals. Technological parameters were determined by magnetic separation tests, while the feeding iron grade is 18.62%, roughing magnetic induction intensity at 0.9T, 90% of rough particles were concentrated with fine grind of −37 μm with induction intensity at 1.0T. Obtained final iron concentrated TFe grade is 50.05% and the recovery rate is 54.53%. Non-magnetic aluminum mineral A / S is from 4.8 to 5.48.

Keywords: high-iron bauxite; process mineralogy; magnetic separation