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中低品位铝土矿添加铁酸钙的溶出规律及机制

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摘要: 研究添加铁酸钙条件下铝硅比(A/S)为5.96的铝土矿的溶出规律对溶出赤泥进行X射线衍射、扫描电镜和能谱分析。结果表明: 随铁酸钙添加量增多, 溶出赤泥铝硅比和钠硅比均下降; 随配矿量减少, 溶出温度升高, 溶出时间延长, 溶出赤泥铝硅比降低; 在温度为250 °C, 时间为60 min, 使用铁酸钙添加剂, 得到的赤泥铝硅比为0.69, 钠硅比(N/S)为0.21; 赤泥中硅矿物以铁取代铝的水化石榴石为主, Fe₂O₃的饱和系数为0.73, Al₂O₃的饱和系数为0.22, SiO₂饱和系数接近1, 硅矿物组成改变是赤泥铝硅比和钠硅比降低的原因。

关键字: 铝土矿; 铁酸钙; 拜耳法; 溶出

Digesting rule and mechanism of middle and low grade bauxite with calcium ferrite

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Abstract: The digesting rule of diasporic bauxite with A/S of 5.96 was studied by adding calcium ferrite. With increasing addition of calcium ferrite, A/S and N/S in the red mud are reduced. Under the conditions of higher digestion temperature and longer time, A/S in the red mud is reduced with lower bauxite addition. Under the condition of 250 °C, 60 min and adding calcium ferrite, large scale experiments have been done, which results in that A/S in the red mud is 0.69, N/S is 0.21. The main Si-mineral of red mud is ferrite hydro-garnet through analysis of X-ray diffraction and SEM. The coefficient of SiO₂ approaches 1, Al₂O₃ is 0.22, Fe₂O₃ is 0.73 in ferrite hydro-garnet. It is because the structure of Si-mineral is changed that A/S and N/S in the red mud is greatly reduced.

Key words: bauxite; calcium ferrite; Bayer process; digestion

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