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钢铁厂铁鳞硫酸的浸出过程

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摘 要：为制备高纯氧化铁，以钢铁厂铁鳞为原料，考察液固比、温度、时间和硫酸用量对铁浸出率的影响。研究确定硫酸浸出过程的工艺条件，分析浸出过程的动力学机理。确定硫酸浸出铁鳞的最佳工艺条件为：液固比31:，温度100 ℃，时间6.0 h，硫酸用量为理论量的1.25倍。在此优化工艺条件下，铁鳞中Fe的平均浸出率为91.69%。动力学研究结果表明，铁鳞的硫酸浸出过程在动力学上属收缩核模型，即满足$1/2(1-a_t)^{-2/3}-1/2=Kt$，受化学反应的控制，反应活化能为70.40 kJ/mol。

关键字：铁鳞；硫酸浸出；动力学

Leaching process of millscale from steel plant

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Abstract: For preparation of high-purity iron oxide, a study on the leaching of millscale from steel plant and the effects of the liquid-solid ratio, the reaction temperature, the leaching time and the sulfuric acid excessive times was investigated. The best technical conditions of the leaching process were ascertained, and the kinetics of leaching was studied. The results show that when liquid-solid ratio is 31:, the sulfuric acid excess is 1.25 times, reaction temperature is 100 ℃ and the leaching time is 6.0 h, the average leaching rate of Fe in the three comprehensive experiments is 91.69%. The leaching process is controlled by chemical reaction and can be described by the shrinking core model with activation energy of 70.40 kJ/mol.

Key words:millscale; sulfuric acid leaching; kinetics