

عنوان مقاله:

RECOVERY OF IRON FROM LOW-GRADE HEMATITE ORE USING COAL-BASED DIRECT REDUCTION
FOLLOWED BY MAGNETIC SEPARATION

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خلاصه مقاله:

In the present work, iron recovery from a low-grade hematite ore (containing less than ۴۰% iron), which is not applicable in common methods of ironmaking, was studied. Non-coking coal was used as reducing agent. Reduction experiments were performed under various coal to hematite ratios and temperatures. Reduction degree was calculated using the gravimetric method. Reduced samples were subjected to magnetic separation followed by X-ray diffraction analysis. Total iron content, degree of metallization and recovery efficiency in magnetic part were determined by quantitative chemical analysis, which were obtained about ۸۲%, ۹۵% and ۶۴% respectively under optimal conditions. CaO as an additive improved ore reducibility and separation efficiency. The microstructure of reduced samples and final products were analyzed by scanning electron microscopy. Final product with a high degree of metallization can be used in steel making furnaces and charging of blast furnaces which can improve production efficiency and decrease coke usage.

کلمات کلیدی:

Low-grade iron ore, Coal-based direct reduction, Sponge iron, Lime, Magnetic separation

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