

عنوان مقاله:

The effect of microwave radiation on grinding kinetics by selection function and breakage function - A case study of low-grade siliceous manganese ores

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خلاصه مقاله:

In this study, the effect of microwave radiation on grindability and grinding kinetics were investigated. Microwave treatment was performed using an oven with 1100 W power and 2.45 GHz frequency. In order to study the breakage mechanism the grindability from the standard Bond ball mill work index (BBMWI) test was used with the selection function and breakage function as grinding parameters for treated and untreated samples. Based on the results of grindability, the work index (Wi) of a standard Bond ball mill after 4 min of microwave radiation decreased from 12.46 kWh/t to 6.45 kWh/t. selection function results showed that the specific rate of breakage (Si) value for the size fraction -3350+2360 μm increased to 8.42% after microwave treatment. Cumulative breakage function results showed that microwave-treated products were coarser in comparison with untreated products. This phenomenon is more significant in coarse fractions, where the effect of microwave treatment is more obvious.

کلمات کلیدی:

Microwave treatment, Work index, Grindability, Specific rate of breakage, Siliceous manganese ore

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