

The Effect of CO₂ Sparging on the Flocculation and Filtration Rate of Concentrated Hematite Slurries

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Abstract

Filtration of hematite ore slurries can be a bottleneck in some hematite processing plants due to inadequate filtration rates caused by the dispersion of fine particles. Flocculation of fine particles in the slurry decreases the specific cake resistance of the filter cake allowing for increased filtration rates. CO₂ sparging of hematite slurry was shown to increase the filtration rate by altering the pH and the surface chemistry of the particles. It was shown that an increase in filtration rate of 278% can be accomplished by lowering the pH from 11 to 6.5 using CO₂. This was attributed to increased flocculation of hematite and silica particles in the ore.