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INVITED LECTURE

ACID ACTIVATION OF BENTONITE: PHYSICO-CHEMICAL CHARACTERIZATION AND APPLICATION IN GOETHITIC IRON ORE GREEN PELLETIZATION

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Abstract

Utilization of natural bentonite in pelletization leads to contamination and degradation in metal production and high slag rate in blast furnace process due to additional gangue addition in the form of SiO2 and Al2O3. Acid activation of bentonite by HCl or H2SO4 can enhance the adsorption properties and reduce the alumina content in natural bentonite, which may improve metal production and reduce contamination as well. In this paper both the acid activation process has been carried out. A detailed characterization studies were conducted to know the physico-chemical variations in the activated bentonite as well as raw bentonite, which includes SEM with EDS, XRF elemental analysis, XRD, BET surface area analysis with pore volume determination, FTIR analysis and DT/TG Analysis. Besides all the detailed characterization work, all the binders were applied in iron ore pelletization to know their effect on pellet size, strength, and microstructure. Also, find out the relationship between CCS and porosity of the optimized pellets.

Keywords: Natural Bentonites, Acid Activation, Characterization, Pelletization