

Water-Bentonite Interaction of Green Pellets through Micro-Structural Analysis

Authors : Satyananda Patra, Venugopal Rayasam

Abstract : The quality of pellets produced is affected by quality and type of green pellets, amount of addition of binders and fluxing agents along with the provided firing conditions. The green pellet quality depends upon chemistry, mineralogy and granulometry of fines used for pellet making, the feed size, its moisture content and porosity. During firing of green pellets, ingredients present within reacts to form different phases and microstructure. So in turn, physical and metallurgical properties of pellets are influenced by amount and type of binder and flux addition, induration time and temperature. During iron making process, the metallurgical properties of fired pellets are decided by the type and amount of these phases and their chemistry. Green pelletizing and induration studies have been already carried out with magnetite and hematite ore fines but for Indian iron ores of high alumina content showing different pelletizing characters, these studies cannot be directly interpreted. The main objective of proposed research work is to understand the green pelletizing process and determine the water bentonite interaction at different levels. Swelling behavior of bentonite and microstructure of the green pellet are investigated. Conversion of iron ore fines into pellets, the key raw material and process variables that influence the pellet quality needs to be identified and a correlation should be established between them.

Keywords : iron ore, pelletization, binders, green pellets, microstructure

Conference Title : ICMPG 2017 : International Conference on Mineral Processing and Geochemistry

Conference Location : Paris, France

Conference Dates : August 28-29, 2017