

Utilization of Steelmaking Industry Waste Materials in Producing Direct Reduced Iron

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ABSTRACT

The depletion of coke reserves and the raised environmental concerns motivated researchers to work on alternative iron-making processes. Large amount of metallurgical dusts and sludge containing iron and C are produced in the steelmaking industry. These alternative iron ore resources (fines) with poor hydrophilicity are difficult to recycle. The idea of briquetting such wastes containing iron to be used as a feed stock for steelmaking industry is practiced successfully at several plants.

In the present study, agglomerates of integrated steelmaking industry waste materials were used as feed stock to produce direct reduced iron (DRI). The reduction behavior of blends of different waste materials (namely, BF dust and sludge, BOF dust and sludge) were investigated thoroughly utilizing TGA/DTA/QMS in combination with XRD.

Keywords;

Iron and steelmaking, integrated steel making waste materials, blast furnace dust and sludge, basic oxygen furnace dust and sludge, self-reducing agglomerates.