

Improvement of Sintering Characteristics by the Briquetting of High Alumina Iron Ore and Ultrafine Iron Ore

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Abstract

It is well known that high Al_2O_3 iron ores or ultrafine iron ores have detrimental effects on sintering productivity and sinter quality due to the undesirable component or the fineness of particle size, which lead to the limitation of its use in the sintering process. Therefore, this study aims to find out the possibility of improving sintering performance by blending iron ores briquettes comprising high Al_2O_3 iron ore and ultrafine iron ore (pellet feed) containing low Al_2O_3 without increasing the Al_2O_3 content in sinter. Sintering pot tests by the conventional sintering and briquette embedded sintering were carried out by using an experimental sintering pot. The results showed that the blending of iron ore briquettes produced by briquetting technology provided highly positive effects on sintering productivity and sinter quality (Strength, RDI) with the increase of bed permeability as well as the strong bonding between iron ore briquette and iron ore sinter. Compared with the standard blending, the sinter pot test with the 26% of iron ore briquettes showed the improvement of sintering productivity (+4.1t/d.m²), sinter strength (TI, +3.6%) and reduction degradation index (RDI, -2.9%).

Also, It was found that the blending of iron ore briquettes produced by briquetting technology is an alternative to improve sintering performance as well as to effectively utilize the low grade iron ores such as high Al_2O_3 iron ore and ultrafine iron ore in the sintering process.

Keywords: High Al_2O_3 iron ore, Ultrafine iron ore, Briquetting, Sintering