ASSESSMENT OF MECHANICAL PROPERTIES OF PELLETS PRODUCED USING BLENDS FROM ITAKPE, AGBAJA AND KOTON-KARFE IRON ORE CONCENTRATES

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ABSTRACT
The production and assessment of the characteristics of pellets from blends of Itakpe/Agbaja and Itakpe/Koton-Karfe iron ores have been conducted with the aim of utilizing the blends in the blast furnace for liquid pig iron production. The blends were made up of Itakpe, Agbaja and Koton-Karfe iron ore concentrates with high phosphorus content with Itakpe iron ore concentrate having low phosphorus content. The chemical analysis of the pellets produced from blends of ores was carried out. Moisture content, green compressive strength, dry compressive strength, indurative compressive strength, micro-porosity, drop number, drop resistance, tumbler index and abrasion index tests were all carried out. It was observed that all the iron ore samples were found to be geologically Oolithic in nature with the exception of Itakpe. The optimum blend ratio in terms of mechanical property is 70/30 Itakpe/Agbaja, which had indurative strength value of 2583.33N/P, moisture content value of 5.36ml, compressive strength value of 34.67N/P, indurative strength value of 2588.33, micro-porosity value of 14.96%, drop number value of 4.50cm, tumbler index value of 95.99%, abrasion index value of 16.16% and these are optimum values. From the foregoing, Itakpe/Agbaja iron ore pellets of blend ratio 70/30 have the best required mechanical property needed to produce liquid pig iron in the blast furnace. Hence, good quality pellet can be produced from Itakpe/Agbaja iron ore blends.