

An Investigation on the Flow Properties of Some Pulverized Nigerian Coals

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Abstract

This study investigates the flow properties of pulverized coal samples from various Nigerian coal deposits. As coal remains a significant energy source in Nigeria, understanding its flow behavior is crucial for efficient handling, transportation, and utilization in power plants. The research aimed to characterize and compare the flow properties of different Nigerian coal types when pulverized. Samples from Onyenma, Iva Valley, Lafia Obi and Okpara coal deposits across Nigeria were collected, pulverized, and analyzed. Flow properties, including bulk density, tapped density, angle of repose, unconfined yield strength was measured. Additionally, the moisture content of each sample was determined to correlate with flow behavior. Results indicated significant variations in flow properties among the different coal samples. The sample from Lafia Obi exhibited the best flow properties, with a low angle of repose relative to others, while the Onyenma and Iva Valley samples showed poor flow characteristics, likely due to its higher moisture content. These findings provide valuable insights for the optimization of coal handling systems and the design of storage facilities in Nigerian power plants. The research contributes to the broader understanding of regional coal properties and their implications for energy production efficiency in Nigeria.

Keywords

Pulverized coal, Flow properties, Bulk density, Tapped density, Angle of repose, Moisture content, Coal handling, Coal characterization