

## SARI

Batubara mengokas merupakan batubara yang memiliki spesifikasi khusus yang secara fisik mampu mengalami perubahan seperti melunak, melebur, dan dapat tersolidasi kembali, umumnya memiliki peringkat bituminus. Batubara peringkat bituminus di Indonesia dapat ditemukan pada Formasi Tanjung di Cekungan Barito, Kalimantan Tengah. Penelitian ini bertujuan untuk mengkarakterisasi batubara serta mengetahui potensinya sebagai batubara mengokas daerah penelitian. Lokasi penelitian berada di *Site* Swalang, Desa Ngurit, Kecamatan Gunung Bintang Awai, Kabupaten Barito Selatan, Kalimantan Tengah, pada wilayah kerja PT. Multitambang Jaya Utama (MTU).

Analisis batubara dilakukan pada 17 sampel batubara yang diambil dengan metode *chanel sampling, ply by ply*. Analisis yang dilakukan yaitu analisis petrologi, analisis nilai kalori, analisis proksimat, analisis ultimat, analisis petrografi organik, analisis *Free Swelling Number* (FSI) atau *Crucible Swelling Number* (CSN), dan *Gray King assay*. Analisis petrologi dilakukan untuk mengetahui makroskopis batubara. Analisis nilai kalori dilakukan untuk mengetahui peringkat batubara. Analisis proksimat meliputi kadar lengas, kadar abu, kadar zat terbang, dan karbon tertambat, serta analisis ultimat meliputi kandungan karbon, hidrogen, oksigen, nitrogen, dan sulfur untuk mengetahui komposisi kimia batubara. Analisis petrografi untuk mengetahui komposisi maseral dan reflektansi vitrinit ( $V_R$ ). Analisis FSI dan *Gray King assay* untuk mengetahui reologi batubara. Setiap parameter hasil analisis diintegrasikan dan diklasifikasikan untuk menentukan karakteristik batubara serta potensinya sebagai batubara mengokas.

Batubara daerah penelitian memiliki litotipe *bright banded coal*, memiliki nilai kalori 15227-15780 btu/lb yang termasuk kedalam *medium volatile bituminous coal*. Batubara didominasi oleh grup maseral vitrinit 68,2 - 81,5% (vol), mineral matter 3,1 - 20,8% (vol), inertinit 6,8 - 16,5% (vol), dan liptinit 0 - 2,4% (vol), dengan nilai reflektansi vitrinit ( $\%R_o$ ) sebesar 0,87 - 1,32%. Memiliki komposisi kimia dari analisis proksimat didominasi oleh karbon tertambat (*fixed carbon*) 60,39 - 72,61% (adb), kadar zat terbang (*volatile matter*) 21,67 - 28,2% (adb), kadar abu (*ash*) 1,84 - 8,51% (adb), dan kadar lengas (*moisture*) 1,36 - 4,2% (adb) dan analisis ultimat didominasi oleh karbon 85,35 - 89,8% (daf), hidrogen 5,15 - 5,55% (daf), oksigen 1,04 - 4,08% (daf), nitrogen 1,51 - 2,08% (daf), dan sulfur 0,73 - 3,98% (daf). Batubara daerah penelitian memiliki nilai FSI 8 - 9 dan Tipe kokas E, G1, G2, G3, G4. Batubara termasuk kedalam zona *medium caking* dan *strongly coking* dan termasuk kedalam tipe *standard hard coking - premium hard coking* yang layak sebagai bahan baku utama atau komponen dominan dalam *blending*.

**Kata Kunci:** Batubara mengokas, Formasi Tanjung, Karakteristik batubara, Potensi batubara

## ABSTRACT

*Coking coal is a type of coal with specific physical properties that enable it to soften, melt, and resolidify, typically classified as bituminous coal. Bituminous coal in Indonesia can be found in the Tanjung Formation within the Barito Basin, Central Kalimantan. This study aims to characterize the coal and evaluate its potential as coking coal in the research area. The study site is located at Swalang Site, Ngurit Village, Gunung Bintang Awai Subdistrict, South Barito Regency, Central Kalimantan, within the operational area of PT. Multitambang Jaya Utama (MTU).*

*Coal analysis was conducted on 17 samples collected using channel sampling, ply by ply. The analyses included petrographic analysis, calorific value, proximate analysis, ultimate analysis, organic petrography, Free Swelling Index (FSI) or Crucible Swelling Number (CSN), and Gray King assay. Petrographic analysis was performed to determine the coal's macroscopic characteristics. Calorific value analysis was used to determine the coal rank. Proximate analysis included moisture, ash, volatile matter, and fixed carbon content, while ultimate analysis covered carbon, hydrogen, oxygen, nitrogen, and sulfur composition to determine the coal's chemical composition. Petrographic analysis revealed maceral composition and vitrinite reflectance ( $V_R$ ). FSI and Gray King assays were used to assess the coal's rheological properties. All analysis results were integrated and classified to identify the coal's characteristics and its potential as coking coal.*

*The coal in the study area is characterized as bright banded coal lithotype, with calorific values ranging from 15,227 to 15,780 btu/lb, classifying it as medium volatile bituminous coal. The coal is dominated by vitrinite macerals (68.2 - 81.5% vol), mineral matter (3.1 - 20.8% vol), inertinite (6.8 - 16.5% vol), and liptinite (0 - 2.4% vol), with vitrinite reflectance ( $\%R_o$ ) values between 0.87 and 1.32%. Chemically, proximate analysis showed fixed carbon content of 60.39 - 72.61% (adb), volatile matter 21.67 - 28.2% (adb), ash 1.84 - 8.51% (adb), and moisture 1.36 - 4.2% (adb). Ultimate analysis revealed carbon 85.35 - 89.8% (daf), hydrogen 5.15 - 5.55% (daf), oxygen 1.04 - 4.08% (daf), nitrogen 1.51 - 2.08% (daf), and sulfur 0.73 - 3.98% (daf). The coal's FSI ranged from 8 to 9, with coke types E, G1, G2, G3, and G4. It belongs to the medium caking and strongly coking zones and is classified as standard hard coking to premium hard coking coal, making it suitable as a primary raw material or dominant component in blending.*

**Keywords:** *Coking coal, Tanjung Formation, Coal characteristics, Coal potential*