ABSTRAK

Batubara *coking* atau disebut *metallurgical coal* merupakan batubara yang memiliki karakteristik dan tendensi mengalami perubahan secara fisik dengan melunak, meleleh, melebur, dan kemudian tersolidasi kembali pada saat karbonisasi. Batubara *coking* merupakan batubara yang berpotensi dimanfaatkan sebagai kokas (*coke*). Batubara *coking* di Indonesia ditemukan pada Formasi Tanjung di Cekungan Barito, Kalimantan Tengah. Penelitian ini bertujuan untuk mengkarakterisasi serta mengetahui potensi batubara *coking* daerah penelitian. Lokasi penelitian berada pada Blok Sekako, Desa Lemo I, Kecamatan Teweh Tengah, Kabupaten Barito Utara, Kalimantan Tengah, pada wilayah kerja PT. Suprabari Mapanindo Mineral (SMM).

Analisis batubara dilakukan pada 10 sampel batubara *coking seam* Gaharu dan *seam* Kasturi yang diambil dengan metode *channel sampling, ply by ply*. Analisis laboratorium yang dilakukan yaitu analisis petrografi organik serta analisis geokimia meliputi analisis proksimat, analisis ultimat, analisis nilai kalori, dan analisis *Crucible Swelling Number* (CSN). Analisis petrografi organik dilakukan untuk mengetahui komposisi maseral dan reflektansi vitrinit (Rv). Analisis proksimat menentukan kadar abu, kadar zat terbang, kadar lengas, dan kadar karbon tertambat, sedangkan analisis ultimat menentukan kadar karbon, oksigen, hidrogen, nitrogen, dan sulfur. Setiap parameter hasil analisis diintegrasi serta diklasifikasi untuk menentukan karakteristik batubara *coking* yang sesuai sebagai kokas.

Batubara *seam* Gaharu dan *seam* Kasturi tersusun dominan oleh maseral *vitrinite* sebesar 92,91-99,28%, *liptinite* ≤1,82%, *inertinite* ≤6,55%, dan *mineral matter* ≤1,27%, dengan Rv sebesar 0,66-0,94%. Nilai kalori batubara *coking* sebesar 13561,89 – 14697,63 Btu/lb (adb), termasuk ke dalam peringkat *high volatile bituminous A*. Berdasarkan analisis proksimat, batubara *coking* memiliki kandungan abu sebesar 2,78-9,05 adb (%), t*otal moisture* sebesar 1,98-4,33 ar (%), *volatile matter* sebesar 35,13-39,50 adb (%), serta *fixed carbon* sebesar 53,46-59,40 adb (%). Berdasarkan analisis ultimat, batubara *coking* mengandung C sebesar 77,02-82,22 (%wt), H sebesar 5,01-6,27 (%wt), O sebesar 4,88-6,27 (%wt), N sebesar 1,43-1,78 (%wt), serta *total sulfur* sebesar 0,29-1,53 (%wt). Batubara *coking* daerah penelitian memiliki nilai CSN 7,5 sampai 8,5 termasuk kelompok batubara *semi soft coking* yang cocok digunakan untuk *coal blending* pembuatan kokas metalurgi.

Kata kunci: Batubara *coking*, petrografi organik, geokimia, kokas, Formasi Tanjung

ABSTRACT

Coking coal or called metallurgical coal is coal that has characteristics and tendencies to undergo physical changes by softening, melting, and then consolidating again at the time of carbonization. Coking coal is a coal that has the potential to be used as coke. Coking coal in Indonesia is found in the Tanjung Formation in the Barito Basin, Central Kalimantan. This study aims to characterize and determine the potential of coking coal in the research area. The research location is in Sekako Block, Lemo I Village, Central Teweh District, North Barito Regency, Central Kalimantan, in the working area of PT. Suprabari Mapanindo Mineral (SMM).

Coal analysis was carried out on 10 samples of coking coal Gaharu seam and Kasturi seam taken using the channel sampling method, ply by ply. Laboratory analysis carried out were organic petrographic analysis and geochemical analysis including proximate analysis, ultimate analysis, calorific value analysis, and Crucible Swelling Number (CSN) analysis. Organic petrographic analysis was carried out to determine the maceral composition and vitrinite reflectance (Rv). Proximate analysis determines ash content, volatile matter content, moisture content, and fixed carbon content, while the ultimate analysis determines the levels of carbon, oxygen, hydrogen, nitrogen, and sulfur. Each parameter resulting from the analysis is integrated and is classified to determine the characteristics of suitable coking coal as coke.

Gaharu seam and Kasturi seam are predominantly composed by vitrinite maceral at 92.91-99.28%, liptinite ≤1.82%, inertinite ≤6.55%, and mineral matter ≤1.27%, with Rv of 0.66 -0.94%. The calorie value of coking coal is 13561.89 - 14697.63 Btu / lb (adb), which is included in the rank of high volatile bituminous A. Based on the proximate analysis, coking coal has an ash content of 2.78-9.05 adb (%), total moisture is 1.98-4.33 ar (%), volatile matter is 35.13-39.50 adb (%), and fixed carbon is 53.46-59.40 adb (%). Based on the ultimate analysis, coking coal contains C of 77.02-82.22 (wt%), H is 5.01-6.27 (wt%), O is 4.88-6.27 (wt%), N amounting to 1.43-1.78 (wt%), and total sulfur of 0.29-1.53 (% wt). The coking coal in the research area has a CSN value of 7.5 to 8.5 including the semi soft coking coal which is suitable for coal blending for metallurgical coke manufacturing.

Keywords: Coking coal, organic petrographic, geochemical, coke, Tanjung Formation