SARI

Formasi Tanjung merupakan salah satu formasi pembawa batubara di Cekungan Barito yang berpotensi sebagai batubara *coking*. Penelitian tentang karakteristik petrografi organik dan geokimia serta hubungannya dengan maksimum fluiditas batubara *coking* masih belum pernah dilakukan. Maksimum fluiditas merupakan parameter penting di dalam industi kokas, sehingga dapat dimanfaatkan secara optimal. Penelitian ini bertujuan untuk menganalisis hubungan antara karakteristik petrografi organik dan geokimia dengan maksimum fluiditas batubara *coking* di daerah penelitian.

Penelitian dilakukan di Daerah Sekako, Kabupaten Barito Utara, Provinsi Kalimantan Tengah. Metode yang digunakan meliputi observasi lapangan dan pengambilan sampel batubara *coking* dengan metode *channel sampling ply by ply*. Analisis laboratorium yang dilakukan terhadap 10 sampel batubara meliputi analisis petrografi organik, proksimat, ultimat, *gross calorific value* (nilai kalori)*, free swelling index* (FSI) dan *Gieseler plastometer* (maksimum fluiditas). Variabel bebas (X) yang digunakan yaitu meliputi kelompok maseral *reactive,* rata-rata rerflektansi vitrinit maksimum (%, Rv_{mak}), kandungan abu (*ash*), kandungan total sulfur, kandungan zat terbang (*volatile matter*), kandungan unsur hidrogen dan kandungan unsur karbon serta data variabel terikat (Y) yaitu maksimum fluiditas batubara. Analisis hubungan antara masing-masing variabel bebas (X) terhadap variabel terikat (Y) dilakukan dengan metode regresi linier sederhana dan dengan basis pengukuran data *air dried basis* (adb) serta dilakukan juga analisis perbandingan dengan batubara *coking* daerah lainnya dengan basis *dry basis* (db) dan *dry ash free* (daf).

Batubara *seam* A dan *seam* B merupakan *high volatile* A *bituminous* dan merupakan *semi-soft coking coals*, kecuali sampel batubara 5PLY1A, 6PLY1, 6PLY2, dan 6PLY4**.** Batubara tersebut secara karakteristik memiliki komposisi maseral *reactive* 93.06-97.16 (vol%), rata-rata reflektansi vitrinit maksimum (Rv_{mak}) 0,66%- 0,94%, lengas total 2.11-4.33 (wt%, ar), kandungan abu 2.79-9.05 (wt%, adb), zat terbang 35.14-39.50 (wt%, adb), karbon tertambat 53.47-59.41 (wt%, adb), karbon 77.02-82.20 (wt%, adb), hidrogen 5.01-5.56 (wt%, adb), total sulfur 0,29-1,54 (wt%, adb), nilai kalori15.889,93-17.235,44 (Btu/lb, mmmf)**,** FSI 7,5-8,5 dan maksimum fluiditas 22263-49029 (ddpm). Variabel kelompok maseral *reactive*, hidrogen dan zat terbang berkorelasi positif lemah hingga sangat kuat dengan maksimum fluiditas. Variabel rata-rata reflektansi vitrinit maksimum (Rv_{mak})*,* total sulfur*,* kandungan abu dan karbon berkorelasi negatif lemah hingga kuat dengan maksimum fluiditas batubara. Dari beberapa variabel bebas tersebut, hanya variabel bebas zat terbang yang memiliki korelasi sangat kuat dan berpengaruh signifikan terhadap variabel terikat maksimum fluditas. Hal tersebut ditunjukkan dengan koefisien korelasi (r = 0,794), koefisien determinasi (R^2 = 0,6301) dan nilai t_{hitung} lebih besar dari nilai t_{tabel} (t_{hitung} 3,6914 > t_{tabel} 2,3060) serta dapat dinyatakan dengan persamaan y = 6327,9x - 200248.

Kata kunci : *Sekako, cekungan barito*, *batubara coking, petrografi organik, geokimia, maksimum fluiditas*

Abstract

Tanjung Formation is one of the coal-bearing formation deposits in the Barito Basin which has the potential as coking caol. The previous research on organic petrographic and geochemical characteristics and their relationship to the maximum fluidity of coking coal is still little. The maximum fluidity is an important parameter in the coke industry so that it can be used optimally. This study aims to analyze the relationship between organic petrographic and geochemistry characteristics with the maximum fluidity of coking coal in the study area.

The study area is located in Sekako, North Barito Regency, Central Kalimantan Province. The method that used includes field observation and sampling of coking coal by the channel sampling method ply by ply. Laboratory analysis conducted on 10 coal samples including organic petrographic analysis, proximate, ultimate, gross calorific value, free swelling index (FSI) and Gieseler plastometer (maximum fluidity). The independent variable (X) that used includes reactive maceral, mean maximum vitrinite reflectance (%Rv$_{max}$), ash content, total sulfur content, volatile matter, hydrogen, and carbon content, and the dependent variable (Y) is the maximum fluidity. The analysis of the relationship between each independent variable (X) on the dependent variable (Y) is done by a simple linear regression method according air dried basis (adb), and also the comparison analysis with the another coking coal that conducted according to dried basis data (db) and dry ash free basis (daf).

Coal seam A and seam B are high volatile A bituminous and semi-soft coking coals, except coal samples 5PLY1A, 6PLY1, 6PLY2, and 6PLY4. The coal has reactive maceral composition varies from 93.06 to 97.16 (vol%), the mean maximum vitrinite reflectance (Rv$_{max}$) varies from 0.66% to 0.94%, total moisture varies from 2.11 to 4.33 (wt%, ar), ash content varies from 2.79 to 9.05 (wt%, adb), volatile matter varies from 35.14 to 39.50 (wt%, adb), fix carbon varies from 53.47 to 59.41 (wt%, adb), carbon varies from 77.02 to 82.20 (wt%, adb), hydrogen varies from 5.01 to 5.56 (wt% , adb), total sulfur varies from 0,29 to 1,54 (wt%, adb), calorific value varies from 15,889.93 to 17,235.44 (Btu/lb, mmmf), FSI varies from 7.5 to 8.5 and maximum fluidity varies from 22263 to 49029 (ddpm). The variables of reactive maceral, hydrogen, and volatile matter are positively weak to very strong correlates with maximum fluidity. Meanwhile, the mean random vitrinite reflectance (Rv), total sulfur, ash, and carbon content are negatively weak to strong correlates with maximum fluidity. Of the various independent variables, only the volatile matter variable which has a very strong correlation and has a significant effect on the maximum fluidity. This is indicated by the correlation coefficient (r = 0.794), the coefficient of determination (R2 = 0.6301), the t$_{calculate}$ value greather than t$_{table}$ value (t$_{calculate}$ 3,6914 > t$_{table}$ 2,3060) and can be expressed by the equation y = 6327.9x - 200248.

Keyword : *Sekako, Barito Basin, coking coal, organic petrography, geochemistry, maximum fluidity*