

ABSTRAK

ANALISIS KUALITAS BATUBARA *SEAM* Q4 SEBAGAI DASAR PENINGKATAN NILAI TAMBAH BATUBARA MENJADI KALIAM HUMAT DAERAH PERANAP, INDRAGIRI HULU, RIAU

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Batubara peringkat rendah menyimpan potensi besar sebagai bahan baku kalium humat, yaitu produk turunan bernilai tinggi yang bermanfaat untuk meningkatkan kualitas tanah dan efisiensi pemupukan. Penelitian ini dilakukan pada *Seam* Q4 di IUP Peranap, PT Bukit Asam, Kabupaten Indragiri Hulu, Provinsi Riau, menggunakan data analisis proksimat-ultimat, data bor, peta geologi, DEMNAS, citra satelit *google earth* tahun 2019 dan *sentinel* tahun 2026. Pemilihan *Seam* Q4 didasarkan pada keberadaannya yang dijumpai pada seluruh titik bor, memiliki kemenerusan lateral yang baik, serta ketebalan rata-rata sekitar 3 meter sehingga representatif untuk dianalisis dan berpotensi untuk dimanfaatkan secara berkelanjutan. Kajian geologi dilakukan melalui analisis geomorfologi, korelasi stratigrafi, dan interpretasi lingkungan pengendapan berbasis fasies. Kualitas batubara dianalisis menggunakan parameter proksimat, ultimat, dan diagram Van Krevelen (H/C dan O/C). Hasil penelitian menunjukkan bahwa *Seam* Q4 pada Formasi Korinci diendapkan pada lingkungan *transitional lower delta plain* dan tergolong batubara *lignite* dengan kandungan oksigen relatif tinggi. Rasio atomik H/C dan O/C menunjukkan karakter batubara peringkat rendah yang kaya gugus karboksil dan fenolik sebagai prekursor senyawa humat. Hasil uji ekstraksi menghasilkan rendemen tinggi dan *grade* kalium humat A berdasarkan standar Peraturan Menteri Pertanian, sehingga *Seam* Q4 dinilai layak sebagai bahan baku kalium humat.

Kata kunci: batubara, kalium humat, kualitas, *lignite*, *seam* Q4

ABSTRACT

QUALITY ANALYSIS OF COAL SEAM Q4 AS A BASIS FOR POTASSIUM HUMATE DOWNSTREAMING PERANAP AREA, INDRAGIRI HULU, RIAU

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Low-rank coal possesses significant potential as a raw material for potassium humate, a high-value derivative product that contributes to improving soil quality and enhancing fertilizer-use efficiency. This study was conducted on Seam Q4 within the Peranap Mining Business License Area (IUP) of PT Bukit Asam, located in Indragiri Hulu Regency, Riau Province, utilizing proximate and ultimate analysis data, borehole records, geological maps, DEMNAS data, Google Earth satellite imagery (2019), and Sentinel imagery (2026). Seam Q4 was selected due to its occurrence across all boreholes, good lateral continuity, and average thickness of approximately 3 meters, making it representative for analysis and potentially suitable for sustainable utilization. The geological assessment was carried out through geomorphological analysis, stratigraphic correlation, and facies-based depositional environment interpretation. Coal quality was evaluated using proximate and ultimate parameters, as well as the Van Krevelen diagram based on H/C and O/C atomic ratios. The results indicate that Seam Q4, within the Korinci Formation, was deposited in a transitional lower delta plain environment and is classified as lignite coal with relatively high oxygen content. The H/C and O/C atomic ratios reflect the characteristics of low-rank coal enriched in carboxyl and phenolic functional groups, which serve as precursors for humic compounds. Extraction testing yielded a high recovery and produced Grade A potassium humate according to the standards established by the Indonesian Ministry of Agriculture. Therefore, Seam Q4 is considered a suitable and promising raw material for potassium humate production.

Keywords: coal, potassium humate, seam Q4, lignite, quality