

SARI

GEOLOGI DAN PEMODELAN KUALITAS BATUGAMPING SEBAGAI BAHAN BAKU SEMEN DAERAH SUMBERARUM, KABUPATEN TUBAN, JAWA TIMUR

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Kabupaten Tuban memiliki potensi batugamping yang melimpah yang dapat digunakan sebagai bahan baku utama dalam pembuatan semen. Oleh karena itu diperlukan adanya kajian mengenai persebaran kualitas batugamping berdasarkan kandungan kadar kimia untuk mengetahui kelayakan sebagai bahan baku semen. Dari hal tersebut, timbul permasalahan bagaimana hubungan antara kondisi geologi, jenis fasies, diagenesis pembentukan dengan kualitasnya. Lokasi penelitian berada di Desa Sumberarum, Kabupaten Tuban, Jawa Timur. Berdasarkan analisis petrografi didapatkan 5 jenis fasies pada daerah penelitian, diantaranya fasies *Wackestone*, fasies *Packstone*, fasies *Floatstone*, fasies *Bafflestone* dan fasies *Crystalline*. Berdasarkan analisis foram besar didapatkan kisaran umur pengendapan daerah penelitian yaitu N18-N21 di kala Pliosen dengan lingkungan pengendapan Open Marine hingga Platform-Margin Reef. Berdasarkan analisis uji XRF didapatkan dominasi kadar CaO tinggi pada daerah penelitian yang berkisar antara 54-58% dengan kadar MgO <3%, sedangkan untuk kualitas dolomit memiliki kadar MgO >3%, dimana dari hasil tersebut termasuk dalam klasifikasi sesuai untuk dijadikan sebagai bahan baku semen. Dari hasil pemodelan menggunakan software *3DMine* didapatkan hasil nilai Sumberdaya batugamping pada daerah penelitian sebesar 158.563.750 m³ dengan tonase sebesar 293.154.750 ton dan nilai kadar komposisi kimia pada berkisar SiO₂ 1,48%, Al₂O₃ 0,68%, Fe₂O₃ 0,39%, CaO 52,98% dan MgO 1,78%, dengan target produksi tahunan sebesar 14juta ton, sehingga didapatkan estimasi umur tambang berdasarkan perhitungan yaitu 27 Tahun 9 Bulan.

Kata Kunci: Batugamping, Estimasi Sumberdaya, XRF, Fasies Batugamping, Diagenesis

ABSTRACT

GEOLOGY AND MODELING OF LIMESTONE QUALITY AS RAW MATERIAL FOR CEMENT IN SUMBERARUM AREA, TUBAN REGENCY, EAST JAVA

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Tuban Regency has abundant limestone potential that can be used as the main raw material in making cement. Therefore, it is necessary to study the distribution of limestone quality based on chemical content to determine feasibility as raw material for cement. From this, the problem arises how the relationship between geological conditions, types of facies, formation diagenesis and qualities. The research location is in Sumberarum Village, Tuban Regency, East Java. Based on petrographic analysis, 5 types of facies were obtained in the research area, including Wackestone facies, Packstone facies, Floatstone facies, Bafflestone facies and Crystalline facies. Based on the analysis of large forams, the age range of deposition of the study area was N18-N21 during the Pliocene with the deposition environment of Open Marine to Platform-Margin Reef. Based on the XRF test analysis, it was found that the dominance of high CaO levels in the study area ranged from 54-58% with MgO levels of <3%, while for the quality of dolomite had MgO levels of >3%, where these results were included in the appropriate classification to be used as raw materials for cement. From the modeling results using 3DMine software, the value of limestone reserves in the research area was 158.563.750 m³ with a tonnage of 293.154.750 tons and the value of chemical composition levels in the range of SiO₂ 1,48%, Al₂O₃ 0,68%, Fe₂O₃ 0.39%, CaO 52.98% and MgO 1.78%, with an annual production target are 14 million tons, so that the estimated age of the mine was obtained based on calculations are 27 years 9 months.

Keywords: Limestone, Reserve Estimation, XRF, Limestone Facies, Diagenesis