

## ABSTRAK

**Lidia Marliana Nasution, NIM 4202540005 (2024). Pengaruh Penambahan Serbuk *Rockwool* Terhadap Sifat Fisis Mekanis Pada Bata Ringan CLC Menggunakan Kombinasi Pasir Merah Labuhan Batu Selatan**

Penelitian ini bertujuan untuk mengetahui pengaruh variasi dalam komposisi pasir merah dengan penambahan *rockwool* terhadap sifat fisis mekanis pada bata clc ringan. Penelitian ini dibuat dengan variasi komposisi 0%, 25%, 50%, 75% dan 100%. Metode yang digunakan adalah *Celluler Lightweight Concrete* (CLC). Pembuatan bata dengan penambahan *rockwool* berbentuk kubus dengan sisi 15cm terdiri dari semen, pasir, *rockwool*, *foam agent*, *stabilizer* dan air. Pembukaan cetakan bata dilakukan setelah bata berumur 24 jam dan mengering selama 14 hari. Setelah melalui 14 hari pengeringan, sampel diambil untuk pengujian berat jenis, kemudian dilakukan pengujian kuat tekan. Pengujian daya serap dilakukan dengan merendam sampel dalam bak selama 24 jam, lalu dilakukan pengujian terhadap suhu panas. Selanjutnya dilakukan pengujian SEM dan XRD. Dari hasil pengujian diperoleh tekanan bata optimum pada komposisi 50% dengan nilai 0,645 Mpa. Dari hasil uji daya serap air didapatkan adanya penurunan pada komposisi 50% yaitu 10,2%. Tes XRD memperoleh elemen SiO<sub>2</sub>, CaO<sub>3</sub>, Ca(OH)<sub>2</sub> dengan intensitas kalsit tertinggi. Dari tes SEM, ukuran struktur beton dengan penambahan *rockwool* memiliki lebih sedikit pori-pori.

**Kata kunci:** Beton Ringan; Pasir Merah; *Rockwool*; Kuat Tekan; Analisis (XRD, SEM)



## ABSTRACT

**Lidia Marlina Nasution, NIM 4202540005 (2024). *Analisis Physical and Mechanical Properties of CLC Lightweight Bricks Using Variations in the Composition of Red Sand from Labuhan Batu South with Rockwool***

*This research aims to investigate the influence of variations in red sand composition with the addition of rockwool on the physico-mechanical properties of lightweight CLC bricks. This research was conducted with variations in composition of 0%, 25%, 50%, 75%, and 100%. The method used is Cellular Lightweight Concrete (CLC). Brick making with the addition of rockwool was in the form of a 15 cm cube consisting of cement, sand, rockwool, foam agent, stabilizer, and water. The brick mold was opened after 24 hours and allowed to dry for 14 days. After 14 days of drying, samples were taken for specific gravity testing, followed by compressive strength testing. Water absorption testing was conducted by immersing the samples in a tank for 24 hours, then heat temperature testing was carried out. Furthermore, SEM and XRD tests were performed. The results showed that the optimum brick pressure was at a 50% composition with a value of 0.645 MPa. From the water absorption test results, a decrease was found at a 50% composition, which was 10.2%. The XRD test obtained SiO<sub>2</sub>, CaO<sub>3</sub>, and Ca(OH)<sub>2</sub> elements with the highest calcite intensity. From the SEM test, the structure of concrete with the addition of rockwool had fewer pores.*

**Keywords:** *Lightweight Concrete; Red Sand; Rockwool;, Compressive Strength; Analysis (XRD, SEM)*

