

ABSTRAK

PENGARUH PENAMBAHAN *STYROFOAM* DAN SERAT *FIBERGLASS* TERHADAP SIFAT FISIS DAN SIFAT MEKANIS PADA MORTAR POLIMER DENGAN WAKTU PERENDAMAN 14 HARI DAN 21 HARI

Oleh

RIDHO FIRNANDO

Penelitian ini bertujuan untuk menganalisis pengaruh penambahan styrofoam dan serat fiberglass terhadap sifat fisis (porositas, absorpsi, dan densitas) serta sifat mekanis (kuat lentur) pada mortar polimer dengan waktu perendaman 14 dan 21 hari. Variasi komposisi styrofoam dan fiberglass yang digunakan adalah 0%, 2,5%, 5%, 7,5%, 10%, dan 12,5%. Sampel mortar dicetak dengan ukuran $4 \times 4 \times 16 \text{ cm}^3$, kemudian diuji menggunakan timbangan digital untuk pengukuran sifat fisis dan Universal Testing Machine (UTM) tipe HT-2402 untuk uji kuat lentur. Hasil menunjukkan bahwa penambahan styrofoam menurunkan densitas dan meningkatkan porositas, sedangkan serat fiberglass memberikan kontribusi dalam meningkatkan kekuatan lentur. Proses perendaman selama 21 hari menghasilkan struktur mortar yang lebih padat dan stabil dibandingkan 14 hari, ditandai dengan penurunan porositas dan absorpsi serta peningkatan kuat lentur. Variasi komposisi 7,5% dan 12,5% menunjukkan performa terbaik secara fisis dan mekanis.

Kata kunci: mortar polimer, styrofoam, fiberglass, kuat lentur, UTM, sifat fisis, perendaman.

ABSTRACT

EFFECT OF STYROFOAM AND FIBERGLASS ADDITION ON PHYSICAL PROPERTIES AND MECHANICAL PROPERTIES OF POLYMER MORTAR WITH 14 DAYS AND 21 DAYS SOAKING TIME

By

RIDHO FIRNANDO

This study aims to analyze the effect of the addition of Styrofoam and fiberglass on the physical properties (porosity, absorption, and density) and mechanical properties (flexural strength) of polymer mortar with 14 and 21 days soaking time. Styrofoam and fiberglass composition variations used were 0%, 2.5%, 5%, 7.5%, 10%, and 12.5%. Mortar samples were molded with a size of $4 \times 4 \times 16 \text{ cm}^3$, then tested using digital scales for measurement of physical properties and Universal Testing Machine (UTM) type HT-2402 for flexural strength test. The results showed that the addition of Styrofoam decreased density and increased porosity, while fiberglass fibers contributed to increasing flexural strength. The 21-day soaking process resulted in a denser and more stable mortar structure compared to 14 days, characterized by decreased porosity and absorption and increased flexural strength. The 7.5% and 12.5% composition variations showed the best physical and mechanical performance.

Keywords: polymer mortar, styrofoam, fiberglass, flexural strength, UTM, physical properties, soaking.