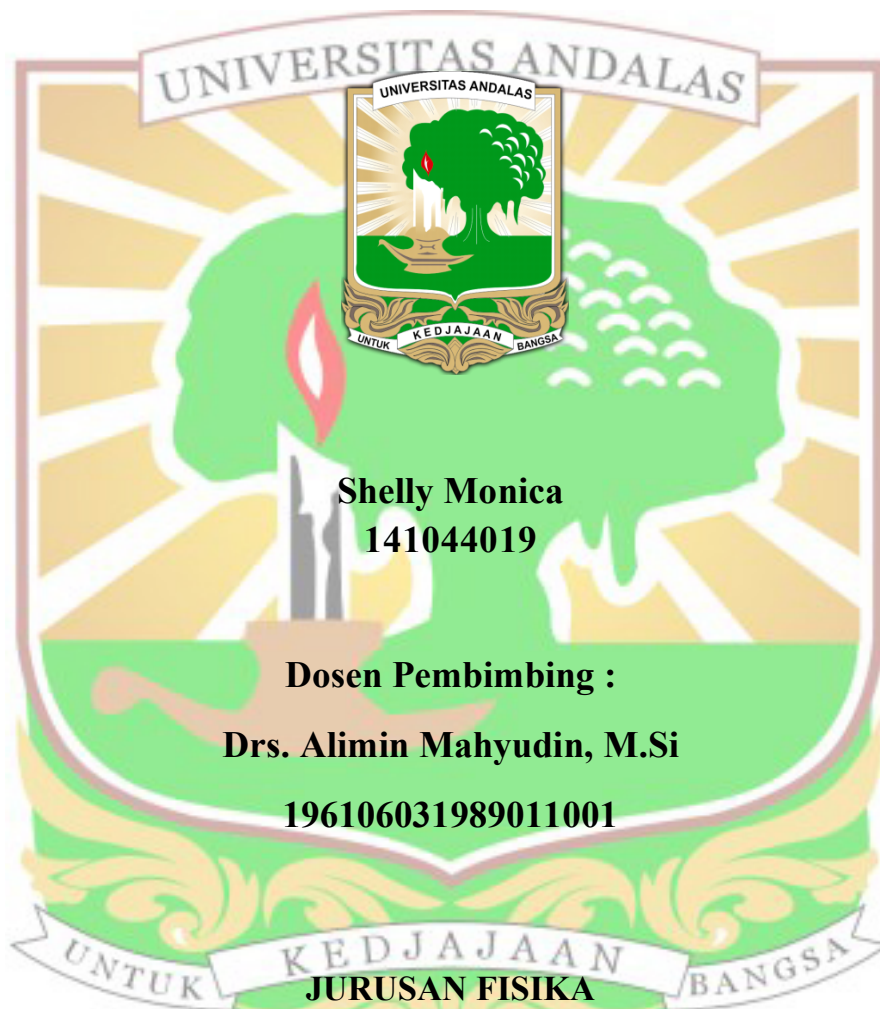


**PENGARUH PANJANG SERAT PINANG TERHADAP SIFAT
FISIK DAN MEKANIK PAPAN BETON RINGAN**

SKRIPSI



**Shelly Monica
141044019**

**Dosen Pembimbing :
Drs. Alimin Mahyudin, M.Si
196106031989011001**

**FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
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ABSTRAK

Telah dilakukan penelitian mengenai pengaruh panjang serat pinang terhadap sifat fisik dan mekanik papan beton ringan. Variasi panjang serat adalah 3 mm, 6 mm, 9 mm, 12 mm, dan 15 mm. Fraksi volume serat yaitu 2% dengan penambahan aluminium pasta 0,1%. Sifat fisik dan mekanik yang diuji meliputi densitas, kuat tekan dan kuat lentur. Penambahan serat pinang dan aluminium pasta dapat membuat papan beton menjadi lebih ringan dibandingkan dengan papan GRC komersial. Dari hasil pengujian, panjang serat mempengaruhi sifat fisik dan mekanik papan beton ringan. Nilai densitas terendah diperoleh pada panjang serat 12 mm yaitu $1,66 \text{ g/cm}^3$. Nilai kuat tekan tertinggi dimiliki sampel dengan panjang serat 9 mm yaitu $49,48 \text{ kg/cm}^2$. Kuat tekan berkurang ketika serat semakin panjang dengan nilai kuat tekan terendah pada panjang serat 15 mm yaitu $42,12 \text{ kg/cm}^2$. Nilai kuat lentur tertinggi pada variasi panjang serat 6 mm yaitu $46,8 \text{ kg/cm}^2$ dan berkurang ketika serat semakin panjang, nilai kuat lentur terendah didapat pada panjang serat 15 mm yaitu $36,90 \text{ kg/cm}^2$. Nilai densitas papan beton ringan sudah memenuhi standar GRCA dan GRC komersial namun belum memenuhi kuat tekan dan kuat lentur standar GRCA dan GRC komersial.

Kata kunci: aluminium pasta, densitas, kuat lentur, kuat tekan, serat pinang



THE INFLUENCE OF FIBER LENGTH VARIATION OF ARECA NUT FIBER ON PHYSICAL AND MECHANICAL PROPERTIES OF CONCRETE BOARD

ABSTRACT

The research on the effect of length of areca nut fiber to the physical and mechanical properties of lightweight concrete board has been done. The fiber length was varied 3 mm, 6 mm, 9 mm, 12 mm, and 15 mm. Volume fraction of the fiber is 2% with addition 0.1% of aluminium paste. Physical and mechanical properties that were tested including density, compressive strength, and flexural strength. Addition of areca nut fiber and aluminium paste makes concrete boards become lighter compared to the commercial GRC board. Fiber length influences on physical and mechanical properties of concrete board. The lowest density values obtained at fiber length of 12 mm that is 1.66 g/cm^3 . Highest compressive strength at fiber length of 9 mm that is 49.48 kg/cm^2 . Compressive strength decrease with increasing of fiber length from 49.48 kg/cm^2 to 42.12 kg/cm^2 . Highest flextural strength at 6 mm fiber length that is 46.8 kg/cm^2 and decreases when the fiber gets longer. Lowest flextural strength at 15 mm fiber that is 36.90 kg/cm^2 . The value of lightweight concrete board density has fulfilled the GRCA standard and GRC commercial but the compressive strength and flextural strength has not fulfilled the GRCA standard and GRC commercial value.

Keywords: aluminium paste, density, flexural strength, compressive strength, areca nut fiber

