

## ABSTRAK

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STUDI KAPASITAS LENTUR BALOK BETON RINGAN DENGAN PENAMBAHAN SERAT KAWAT

Kata kunci : serat kawat, Beton Ringan, dan Pasir Batu Apung (*Pumice*)

Beton ringan didapat dari pencampuran bahan-bahan agregat halus dan kasar yaitu pasir, batu kerikil (batu apung) atau bahan semacam lainnya, dengan menambahkan secukupnya bahan perekat semen, dan air sebagai bahan pembantu, guna keperluan reaksi kimia selama proses pengerasan dan perawatan beton berlangsung (Dipohusodo, 1994).

Beton ringan dengan berat antara  $1440 \text{ kg/m}^3$  –  $1850 \text{ kg/m}^3$ , dapat dipakai sebagai beton struktur jika bersifat mekanik dapat memenuhi syarat pada umur 28 hari mempunyai kuat tekan berkisar  $>17,42 \text{ MPa}$ . Untuk mencapai kekuatan sebesar itu, beton dapat memakai agregat kasar seperti *pumice*, *expanded shale*, *clays*, *slate*, dan *slag*.

Penelitian ini bertujuan untuk mengetahui efek penambahan serat kawat bendrat terhadap lentur balok beton ringan. Benda uji yang dipakai berbentuk balok dengan ukuran  $15 \text{ cm} \times 20 \text{ cm} \times 120 \text{ cm}$ , dan tambahan potongan kawat bendrat lurus dengan panjang  $6 \text{ cm}$ , dan konsentrasi penambahan serat sebesar  $7,5\%$  terhadap berat semen. Jumlah benda uji 12 buah masing-masing komposisi sebanyak 3 sampel.

Dari hasil penelitian ini menunjukkan penambahan serat kawat bendrat dengan kadar serat  $7,5\%$  ke dalam campuran beton dapat meningkatkan kuat lentur pada balok beton. Seperti halnya balok BS.L0%T2 memiliki nilai kuat lentur sebesar  $5,755 \text{ MPa}$ , BS.L7,5%T2 memiliki nilai kuat lentur sebesar  $6,995 \text{ MPa}$ , begitu pula dengan balok BS.L0%T3 memiliki nilai kuat lentur sebesar  $6,729 \text{ MPa}$ , sementara balok BS.L7.5%T3 memiliki nilai kuat lentur sebesar  $7,437 \text{ MPa}$ .

## ABSTRACT

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STUDY OF FLEXIBLE CAPACITY OF LIGHTWEIGHT CONCRETE BEAM WITH THE ADDITION OF WIRE FIBER

Keywords: Wire Fiber, Lightweight Concrete, And Pumice Sand (Batu Apung)

Lightweight concrete is obtained from mixing fine and coarse aggregate materials, namely sand, gravel (pumice stone) or the similar materials, by adding an adequate amount of cement adhesive and water as auxiliary materials, for the purposes of chemical reactions during the hardening process and concrete treatment takes place. (Dipohusodo, 1994)

Lightweight concrete between  $1440 \text{ kg/m}^3$  –  $1850 \text{ kg/m}^3$ , can be used as structural concrete if it is mechanical in nature and can meet the requirements at the age of 28 days and has a compressive strength of  $> 17,42 \text{ Mpa}$ . To achieve such strength, concrete can use coarse aggregates such as pumice, expanded shale, clays, slate, and slag.

This study aims to determine the effect of adding bendrat wire fibers to the bending of lightweight concrete beams. The test object used was in the form of a beam with a size of  $15 \text{ cm} \times 20 \text{ cm} \times 120 \text{ cm}$ , and an additional piece of straight bendrat wire with a length of 6 cm, and the concentration of fiber addition was 7,5% to the weight of cement. The number of test objects 12 pieces of each composition as many as 3 samples.

The results of this study indicate that the addition of bendrat wire fiber with a fiber content of 7,5% into the concrete mixture can increase the flexural strength of the concrete beam. As well as the BS.L0%T2 beam has a flexural strength value of 6,995 Mpa, as well as the BS.L0%T3 beam has a flexural strength value of 6,729 Mpa, while the beam BS.L7,5%T3 has a flexural strength value of 7,437 Mpa.