

ABSTRAK

Semakin berkembangnya pengetahuan tentang teknologi beton, maka semakin banyak pula inovasi dan jenis beton yang di kembangkan seperti beton ringan. Beton ringan adalah beton yang memiliki berat jenis lebih ringan dari pada beton pada umumnya. Penelitian ini dititik beratkan pada nilai berat volume, kuat tekan dan kuat tarik dari variasi *mix design* yang di buat.

Pada penelitian ini beton ringan menggunakan bahan penyusun yang meliputi air, pasir, semen, *silica fume*, *foam*, dan serat bambu. Metode yang digunakan adalah Metode Taguchi dengan penetapan 5 bahan 3 variasi. Air : 60% dan 75%, pasir : 60% dan 75%, *foam* : 40% dan 60%, *silica fume*: 10% dan 15%, serat bambu: 1% dan 2%. Pengujian yang dilakukan yaitu uji kuat tekan, berat volume, dan kuat tarik.

Dari hasil penelitian, diketahui nilai kuat tekan yang optimum BRS 4 dengan nilai kuat tekan rata – rata 16,985 MPa, berat volume minimum BRS 6 dengan nilai berat volume rata – rata 1637,214 kg/m³, kuattarik optimum BRS 4 dengan nilai kuat tarik rata –rata 1,821 MPa. Setelah menggunakan Metode Taguchi didapatkan komposisi campuran untuk kuat tekan dan kuat tarik maksimum adalah Air: 60%, Pasir: 75%, *Foam*: 40%, *Silica fume*: 15% dan Serat bambu: 2%, sedangkan untuk berat volume minimum adalah Air: 75%, Pasir: 60%, *Foam*: 60%, *Silica fume*: 10%, dan Serat bambu: 1%.

Kata kunci : Beton ringan, serat bambu, *silica fume*, Metode Taguci

ABSTRACT

Developing knowledge about concrete technology are always increased, so that making more and more innovation and types of concrete are developed such as lightweight concrete. The lightweight concrete is concrete which a specific gravity lighter than concrete in general. The research on this case, focussed on the value of volume weight, compressive strength and tensile strength of the mix design variations made.

In this research, lightweight concrete used by building materials which cover of water, sand, cement, silica fume, foam, and also bamboo fiber. The method of lightweight concrete referring to the Taguchi Method with determination of 5 ingredients and 3 variations. Such as water: 60% and 75%, sand: 60% and 75%, foam: 40% and 60%, silica fume: 10% and 15%, bamboo fiber: 1% and 2%. The tests carried out were tests of compressive strength, volume weight, and tensile strength.

The result from this reseach, its known that the optimum compressive strength value of BRS 4 with an average compressive strength value of 16,985 MPa, minimum volume weight of BRS 6 with an average volume weight value of 1637,214 kg / m³, optimum tensile strength of BRS 4 with an average tensile strength value - mean 1,821 MPa. After used the Taguchi Method, the composition of the mixture for compressive strength and maximum tensile strength of Water: 60%, Sand: 75%, Foam: 40%, Silica fume: 15% and Bamboo fiber: 2%, and the other side the minimum volume weight of Water: 75%, Sand: 60%, Foam: 60%, Silica fume: 10%, and Bamboo fiber: 1%.

Keywords: lightweight concrete, bamboo fiber, silica fume, Taguci Method