

SUMMARY

Annisa Fitria Utami, *Department of Civil Engineering, Faculty of Engineering, University of Brawijaya, July 2018, The Effects of Spiral Variation of Canned Drink Waste as Fibers on Compressive Strength, Tensile Strength and Modulus of Elasticity in Lightweight Concrete. Academic supervisor: Christin Remayanti and Ananda Insan Firdausy.*

Concrete is the most used construction material in civil engineering. It has superiority in compression strength. However, one of its drawbacks as a structural material is they possess a very low tensile strength. To overcome its weakness, we usually installing steel reinforcement to endure tensile strength. As advances in technology enhance, a considerable amount of research has been directed towards concrete tensile strength weakness. One of them is to adding fiber made from canned drink waste in concrete mix. Hence an attempt has been made in the present investigation to study the influence of addition of canned drink waste material as fibers at two different form, which is fibers that twisted 1 time (type A) and twisted 1.5 times (type B) towards compression strength, tensile strength and modulus of elasticity in concrete. However, adding fibers will increase the weight of the concrete, then in this experimental investigation we mix the coarse aggregate with pumice at a dosage of 25% by volume of coarse aggregate. And using cement water factor 0.6-0.65.

Variation in this experimental were fibers type A, type B and without twisting at 10% by volume of cylinder concrete with dimension 15x30 cm. Test were performed on 28-day-old concrete with compressive strength and tensile strength testing using compression machine, while modulus elasticity test using extensometer.

Compressive strength test result show that the maximum strength is obtained by type B fibers concrete with a value 12.668 MPa (increased by 9.48%, 4.49% and 0.27% from concrete without fibers, with fibers without twisting and type A fibers). The result of tensile strength test shows that the maximum strength is obtained by type B fiber concrete with a value 1.617 MPa (increased by 14.76%, 37.73% and 16.08% from concrete without fibers, with fibers without twisting and

type A fibers). Likewise, the result of modulus elasticity test with Eurocode 2 and ASTM C469 method shows that the maximum strength is obtained by type B fibers concrete (increased 87.66%, 31.37% and 0.58% from concrete without fibers, with fibers without twisting and type A fibers). However, these results are not only influenced by the addition of fibers but also influenced by different cement water factors value.

Keywords: can fiber, twisted tin fiber, pumice, tensile strength, compressive strength, modulus of elasticity

