

THE EFFECT OF FIBER ADDITIVE MATERIAL ON 25 MPa CONCRETE

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ABSTRACT

Concrete technology has developed in various ways, both through the addition of supplementary materials and by partially replacing its constituent components. This study aims to apply and identify the effect of adding fiberglass fibers on the compressive strength, splitting tensile strength, and slump value of concrete with a target strength of f_c' 25 MPa. Tests were conducted on normal concrete and concrete with the addition of fiberglass fibers in variations of 0.3%, 0.5%, and 0.9% by the weight of cement. Concrete specimens in the form of cylinders measuring 10 cm x 20 cm were tested at 28 days of age. Concrete itself consists of coarse aggregate, fine aggregate, cement, and water as a binder. The results showed that adding fiberglass fibers tended to reduce the compressive strength compared to normal concrete, which had a compressive strength of 20.08 MPa, becoming 14.52 MPa (0.3% variation), 18.54 MPa (0.5% variation), and 17.91 MPa (0.9% variation). However, the addition of fiberglass fibers increased the splitting tensile strength from 2.34 MPa (normal) to 2.44 MPa (0.3%), 3.11 MPa (0.5%), and 3.03 MPa (0.9%). In addition, the slump value also increased from 70 mm (normal concrete) to 80 mm (0.3%) and 90 mm for variations of 0.5% and 0.9%, indicating an improvement in the workability of the concrete mix.

Keywords: Splitting Tensile Strength, Compressive Strength, Fiberglass, Slump