

Experimental Characterization of the Shear Behavior of Fiber Reinforced Concrete Beam Elements in Chips

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Abstract : This work deals with the experimental study of the mechanical behavior, by shear tests (fracture shear), elements of concrete beams reinforced with fibers in chips. These fibers come from the machining waste of the steel parts. The shear tests are carried out on prismatic specimens of dimensions $10 \times 20 \times 120 \text{ cm}^3$. The fibers are characterized by mechanical resistance and tearing. The optimal composition of the concrete was determined by the workability test. Two fiber contents are selected for this study ($W = 0.6\%$ and $W = 0.8\%$) and a BT control concrete ($W = 0\%$) of the same composition as the matrix is developed to serve as a reference with a sand-to-gravel ratio (S/G) of concrete matrix equal to 1. The comparison of the different results obtained shows that the chips fibers confer a significant ductility to the material after cracking of the concrete. Also, the fibers used limit diagonal cracks in shear and improve strength and rigidity.

Keywords : characterization, chips fibers, cracking mode, ductility, undulation, shear

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