



Mechanical Behavior of Normal Concrete Reinforced with Kantharo Suter Fiber

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Abstract

Physical characteristics of concrete can be enhanced by addition of different materials in various proportions. Fibrous substances, such as, steel, synthetic, glass, and natural fibers not only increase the structural and tensile strength but also cohesion of concrete by overcoming micro cracks and deficiencies in concrete. In this study, the effect of Kantharo suter fibers (animal hair) on compressive, flexural and split tensile strength, and workability of plain concrete was determined. For that, experiments were conducted on concrete cubes, beams and cylinders by adding different proportions of Kantharo suter fibers from 0.125 to 1.0 percentage by weight of cement. In each proportion of Kantharo suter fibers, three cubes, three cylinders and one beam were casted and cured for 28 days. The acquired results were compared with the plain cement concrete specimens. It was discovered from the results that 0.375 percentages of Kantharo suter fibers in normal concrete was optimum by weight of cement. The strength parameters and slump of concrete showed better results than control mixes even without using any admixture in the specimens. This study could also be enhanced using combinations of different fibers and other admixtures.

Keywords: Kantharo Suter Fiber; Slump Test; Strength; Fiber Reinforced Concrete; Curing.

1. Introduction

Concrete is the mixture of cement, water and aggregates. It is one of the most useful structure materials in all over the world. In early times, the stone and bricks were the common construction materials before introduction of concrete. At present, concrete is the only material preferred in every type of construction. Biological fibers, in recent times have become noticeable to researchers as substitute reinforcement for fiber reinforced polymer (FRP) complexes, due to their low-cost, acceptable properties and satisfactory strength [1]. The lesser weight and superior volume of the biological fibers as compared to the synthetic fibers improve the fuel competence and reduced discharge in auto application [2]. In contrast, there are some serious flaws in concrete, such as low tensile strength, flexural strength and micro-cracks. Such deficiencies in concrete can be reduced by adding different types of fibers in concrete.

Fiber reinforcement in concrete increases its tensile strength, resist post cracking capacity, and lower brittleness. Fiber reinforced concrete could be classified on the basis of type of fiber used, such as, steel fiber reinforced concrete, sisal fiber reinforced concrete, coconut fiber reinforced concrete, glass fiber reinforced concrete, oil palm trunk fiber reinforced concrete etc. Such fibers alter the properties of normal concrete. The properties includes the prevention of the cracking due to both plastic and dry shrinkage, reduction in the permeability (prevents the bleeding of concrete),

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