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STUDY OF MECHANICAL PROPERTIES OF CONCRETE USING SYNTHETIC AND STEEL FIBER

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ABSTRACT

Fiber reinforce concrete is a family of composite materials that combine the high compressive strength properties of cement mortars with significantly increased impact, flexural and tensile strengths imparted by the fiber reinforcement The aim of this study is to investigate the effect of variation of synthetic fibers i.e polypropylene fibres ranging from 0.1% to 0.5% along with 0.9% steel fibres on the behaviour of concrete. The experimental investigation is carried out with 60 Nos. of fibre based reinforced concrete cubes, 60 nos. of fibre based reinforced concrete cylinder & 60 Nos. of fibre based reinforced concrete beams, having overall dimensions (L x B x D) as 150 x 150 x 150 mm for cubes, for cylinder (L x D) as (300 x 150 mm) & for beams (L x B x D) as 500 x 100 x 100 mm. The experimental results shows that there is little variation in the compressive strength of concrete, but there is increase in tensile strength and flexural strength with the increase in fiber percentage.Steel-Synthetic fibre reinforced concrete showed increase in flexural strength when compared with steel fibre reinforced concrete.

KEYWORDS: Polypropylene fiber (PPF), Fiber Reinforced concrete (FRC), Polypropylene Fiber Reinforced Concrete (PFRC), Steel Fiber Reinforced Concrete (SFRC)