**STUDY ON STRENGTH PROPERTIES OF CONCRETE BY USING POLYPROPYLENE FIBERS**

**ABSTRACT**

Concrete made with Portland cement has certain characteristics: it is relatively strong in· compression but weak in tension and tends to be brittle. These two weaknesses have limited its use. Another fundamental weakness of concrete is that cracks start to form as soon as concrete is placed and before it has properly hardened. These cracks are major cause of weakness in concrete particularly in large onsite applications leading to subsequent fracture and failure and general lack of durability. The weakness in tension can be overcome by the use of conventional rod reinforcement and to some extent by the inclusion of a sufficient volume of certain fibers. Polypropylene is a synthetic hydrocarbon polymer, the fiber of which is made using extrusion processes by hot drawing the material through a die. Its use enables reliable and effective utilization of intrinsic tensile and flexural strength of the material along with significant reduction of plastic shrinkage cracking and minimizing of thermal cracking. The paper deals with the effects of addition of various proportions of polypropylene fiber on the properties of concrete. An experimental program was carried out to explore its effects on compressive, tensile, flexural, shear strength and plastic shrinkage cracking. A notable increase in flexural, tensile and shear strength was found. However, no change in compression strength was noted. Furthermore, shrinkage cracking is reduced by 83 to 85% by addition of fibers in the range of 0.35 to 0.50%.

**Keywords:** Polypropylene fibers, plastic shrinkage cracking