**A Study On Use Of Polymeric Waste Materials In Concrete For Road Pavements**

**Abstract**

Concrete is strong in compression but weak in tension and brittle also. Cracks also start forming as soon as the concrete is placed. These 3 drawbacks don’t permit the use normal concrete in pavements as they lead to lack of ductility along with fracture and failure. These weaknesses in concrete can be mitigated by using fibers as reinforcement in the concrete mix. Waste materials in the form of polyethylene and tires cause environmental pollution which leads to various health problems. Polyethylene and waste tires can be recycled and used effectively in the concrete as reinforcement in the fiber form. Polyethylene is a synthetic hydrocarbon polymer which can improve the ductility, strength, shrinkage characteristics etc. This paper deals with the effects of addition of polyethylene fiber on the properties of concrete. Polyethylene and tire fibers were cut into the size of 30mm x 6mm and they were used 1.5% each by volume. Grade of concrete used were M30, M35 and M40. IRC 44:2008 was followed for the design of concrete mix.

In this study, the results of the Strength properties of Polyethylene fiber reinforced concrete have been presented. 4 point bending test and double shear test were performed in the laboratory for flexure and shear strength determinations. There was seen an increase of 18% in the 28 day compressive strength along with an increase of 39% in flexure and 32% in shear strength. 22% decrease in 4 point bending test and 36% decrease in double shear test in deflection was found out from the experiments. Theoretical analysis of deflection was carried out by the help of energy methods. Practical values were verified with the theoretical values within the permissible limits. Finally it can be concluded that polyethylene and tire can be used effectively in reinforced cement concrete.