

# **“ANALYSIS OF POLYESTER FIBRE REINFORCED CONCRETE SUBJECTED TO ELEVATED TEMPERATURES”**

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## **ABSTRACT**

Deterioration of concrete structures due to steel corrosion is a matter of considerable concern since the repairing of these structures proved to be a costly process. Repair and rehabilitation of the civil structures needs an enduring repair material. The ideal durable repair material should have low shrinkage, good thermal expansion, and substantial modulus of elasticity, high tensile strength, improved fatigue and impact resistance. Reinforcing the concrete structures with fibres such as polyester is one of the possible ways to provide all the criteria of the durable repair material. This type of reinforcement is called Fibre Reinforcement of Concrete Structures. There is an increasing worldwide interest in utilizing fibre reinforced concrete structures for civil infrastructure applications. The bonding between the fibres and the concrete has to be good and the plastic has to withstand the changing environment. With these brand new materials, little is known about the effect of fibre percentage on properties such as flexural and compressive strengths. This information is necessary to be able to study the durability of polyester FRC beams when exposed to elevated temperatures.

Fire represents one of the most severe exposure conditions and hence provisions for appropriate fire resistance for structural members are major safety requirements for any building design. In order to predict the fire resistance of the structure, the temperatures in the structures needs to be determined. The fire resistance of structural members is dependent on the thermal and mechanical properties at elevated temperatures, of the materials of which the members are composed. This project aims at studying the performance of polyester fibre reinforced concrete subjected to elevated temperatures. Performances of varying compositions of polyester fibre reinforced concrete were subjected to different elevated temperatures for an exposure time of 2 hours each.

**KEYWORDS:** Analysis, Polyester Fibre Reinforced Concrete, Elevated Temperatures, FRC