

DEVELOPMENT OF HIGH PERFORMANCE FIBRE REINFORCED CONCRETE USING SILICA FUME AND FLY ASH

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ABSTRACT

High performance concrete is a concrete mixture, which is designed to provide high durability and high strength when compared to the conventional concrete. The present study describes the development of High-Performance Fiber-Reinforced Concrete (HPFRC) with very high strength and durability properties. Initially, the optimum amount of Silica fume and fly ash needed to obtain concrete of desired compressive strength was determined by the partial replacement of cement with different quantities of Silica fume and fly ash. The mechanical properties and durability properties (limiting to water absorption test, sulphate attack and sea water attack) of High Performance Fibre Reinforced Concrete (HPFRC) were studied by varying the fibre content. The test results indicate that the incorporation of mineral admixtures and steel fibres improves mechanical and durability characteristics of the concrete.

KEYWORDS: Compressive Strength, Durability Properties, High Performance Concrete, High-Performance Fiber-Reinforced Concrete, Mechanical Properties