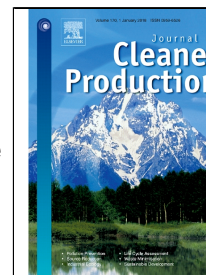


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Durability Studies on Fibre Reinforced Self Compacting Concrete with Sustainable Wastes



K. Aarthi, K. Arunachalam

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Aarthi.K^{*1a}, Arunachalam.K²

^{1a}Assistant professor Civil, Alagappa Chettiar Government College of Engineering and Technology, Karaikudi, Tamilnadu, India-630003.

²Professor and HOD Civil, Thiagarajar College of Engineering, Madurai , Tamilnadu, India-625015.

Abstract. The sustainable development in construction can be achieved by using industrial waste products in concrete. This work aims at developing a new composite by incorporating Granite Sawing Waste (GSW) in Poly Propylene fibre (PP) reinforced self compacting concrete along with Fly Ash(FA). Shrinkage studies and durability studies like water absorption, porosity, acid resistance, sulphate resistance and chloride penetration have been done. It is found that the shrinkage of Self Compacting Concrete (SCC) is considerably reduced by using GSW and PP fibre. Resistance against acid attack and chloride penetration are found to improve. Reduction in water absorption and porosity are found to be better than control concrete up to 10% of GSW and the sulphate resistance is improved.

Keywords: Granite Sawing Waste, Poly propylene fibre, Shrinkage, Durability, SCC, SEM

Highlights

- Shrinkage and Durability of Granite sawing waste concrete with fibres is studied
- Microstructure examination using SEM was conducted
- Shrinkage reduction properties are excellent
- Sulphate resistance and acid resistance are better than ordinary concrete

1.0 Introduction

A huge amount of solid wastes are generated from granite and marble industries. These wastes cause potential problems to the environment. The amount of cement used in concrete production

Corresponding Author : K.Aarthi, **E mail :** aarthi_karmegam@yahoo.co.in , aarthi@accet.edu.in

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