

Utilization of Waste Foundry Slag and Alccofine for Developing High Strength Concrete

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This paper discusses the strength development of concrete using Foundry Slag(FD) as partial replacement for conventional fine aggregates and Alccofine (AF) as partial replacement of cement. Concrete samples of M100 grade using water/binder ratio 0.239, with varying percentage of FD (0 to 50%) and with optimum percentage of AF(15%) were casted and tested for compressive strength(CS), tensile strength(TS) and flexural strength(FS) development at the age of 7, 14, 28, 56 and 90 days. Replacement of fine aggregates with up to 45% of FD showed an increase in CS, FS and TS at all ages but showed a decrease in these properties with 50% of FD. Results suggested that reasonably high strength concrete can be designed by substituting fine aggregates with 10% to 45% of FD and partial replacement of cement with 15% of Alccofine. Carbonation in terms of alkalinity test and Rapid Chloride Permeability Test had also been studied in the present research work. Result showed increase in alkalinity and improvement in permeability of concrete with increase in FD contents at optimized (15%) replacement of Cement with Alccofine.

Keywords: Foundry Slag, Alccofine. High Strength Concrete, Compressive Strength, Flexural Strength, Tensile Strength, Carbonation, RCPT

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