

Influence of Alccofine on Semi-Light Weight Concrete under Accelerated Curing and Conventional Curing Regimes

Authors : P. Parthiban, J. Karthikeyan

Abstract : This paper deals with the performance of semi-light weight concrete, prepared by using wood ash pellets as coarse aggregates which were improved by partial replacement of cement with Alccofine. Wood ash is a tamarind bark combustion product composed of fine particles that falls in the bottom of the modern rice mill dryers. Alccofine is a mineral admixture which contains high glass content obtained through the process of controlled granulation. These cementitious materials are much finer than cement and carries its own pozzolanic property. Therefore, cement could be replaced by Alccofine as 0%, 5%, 10%, 15%, 20%, 25%, 30%, 35%, 40%, 45%, 50%, 55%, 60%, 65%, and 70% to enhance the strength and durability properties of concrete. High Range Water reducing admixtures (HRWA) was used in these mixes which were dosed up to 1.5% weight of the total cementitious materials content. It also develops the weaker transition zone into more impermeable layer. Specimens were subjected to accelerated curing method as well as conventional curing method. Experimental results were compared and reported that a maximum 28th day compressive strength of 32.6 MPa has achieved at 30% replacement level with a density of 2200 kg/m³ in conventional curing while in accelerated curing, the maximum compressive strength has achieved at 40% replacement level. Rapid chloride penetration test output results of conventional curing method for 0% and 70% gives 3296.7 and 545.6 coulombs.

Keywords : Alccofine, compressive strength, RCPT, wood ash pellets

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