

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

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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. Alccofine is a mineral admixture which contains high glass content obtained through the process of controlled granulation. This is finer than cement which 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) were used in these mixes which were dosed up to 1.5% weight of the total cementitious content (alccofine & cement). It also develops the weaker transition zone into more impermeable layer. Specimens were subjected in both the accelerated curing method as well as conventional curing method. Experimental results were compared and reported, in that the maximum compressive strength of 32.6 MPa was achieved on 28th day with 30% replacement level in a density of 2200 kg/m³ to a conventional curing, while in the accelerated curing, maximum compressive strength was achieved at 40% replacement level. Rapid chloride penetration test (RCPT) output results for the conventional curing method at 0% and 70% give 3296.7 and 545.6 coulombs.

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

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