

Evaluate Effects of Different Curing Methods on Compressive Strength, Modulus of Elasticity and Durability of Concrete

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Abstract : Construction industry utilizes plenty of water in the name of curing. Looking at the present scenario, the days are not so far when all construction industries will have to switch over to an alternative-self curing system, not only to save water for sustainable development of the environment but also to promote indoor and outdoor construction activities even in water scarce areas. At the same time, curing is essential for the development of proper strength and durability. IS 456-2000 recommends a curing period of 7 days for ordinary Portland cement concrete, and 10 to 14 days for concrete prepared using mineral admixtures or blended cements. But, being the last act in the concreting operations, it is often neglected or not fully done. Consequently, the quality of hardened concrete suffers, more so, if the freshly laid concrete gets exposed to the environmental conditions of low humidity, high wind velocity and high ambient temperature. To avoid the adverse effects of neglected or insufficient curing, which is considered a universal phenomenon, concrete technologist and research scientists have come up with curing compounds. Concrete is said to be self-cured, if it is able to retain its water content to perform chemical reaction for the development of its strength. Curing compounds are liquids which are either incorporated in concrete or sprayed directly onto concrete surfaces and which then dry to form a relatively impermeable membrane that retards the loss of moisture from the concrete. They are an efficient and cost-effective means of curing concrete and may be applied to freshly placed concrete or that which has been partially cured by some other means. However, they may affect the bond between concrete and subsequent surface treatments. Special care in the choice of a suitable compound needs to be exercised in such circumstances. Curing compounds are generally formulated from wax emulsions, chlorinated rubbers, synthetic and natural resins, and from PVA emulsions. Their effectiveness varies quite widely, depending on the material and strength of the emulsion.

Keywords : curing methods, self-curing compound, compressive strength, modulus of elasticity, durability

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