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DEVELOPMENT OF SELF CURING LIGHT WEIGHT CONCRETE USING LIGHT EXPANDED CLAY AGGREGATE (LECA) & CRYSTALLINE ADMIXTURE (CA)

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ABSTRACT: Quite a lot of innovations in new types of concrete have been turned up worldwide to address the unique needs of the construction industry. Several new and innovative materials such as chemical admixtures, mineral admixtures and eco-friendly binders are being used to impart required quality to concrete to satisfy the needs of the construction industry. Apart from using these materials, it is essential to ensure proper compaction and curing to achieve high strength and durability to the concrete. The conventional methods of compaction such as hand rodding and mechanical vibration are used. These methods require more man power and time for construction and also may not be effective in structures congested with reinforcement. In order to make concrete with better surface finish, improved strength and durability, it is essential to impart self-compacting ability to concrete. Apart from compaction, curing is also equally important to achieve the designed strength and durability of concrete. Curing is the process of promoting the hydration of cement in the paste. Generally, curing is being done using conventional methods such as ponding, fogging, sprinkling and covering with saturated materials etc. These methods are seldom labour intensive, time consuming and expensive. Also, negligence in curing, paucity of water in arid areas, inaccessibility of structure and presence of contaminant are some of the reasons for promoting self-curing concrete. Curing compounds such as wax emulsion, acrylic emulsion, and chlorinated rubber based compounds; hydro carbon resins and polyvinyl acetate based compounds can also be used in the concrete to promote self-curing. These chemical compounds absorb water from atmosphere to promote hydration in concrete. However, there is a need to search for cost effective solutions to impart self-curing ability to concrete. Hence, an attempt has been made in the present work to study the suitability of Light Expanded Clay Aggregate (LECA) and Crystalline Admixture (CA) as a self-curing agent (by replacing coarse aggregate partially) and also to evaluate the effect of these materials on strength, durability and flexural behavior of Self-Compacting Self Curing Concrete (SCSCC).

Keywords: *Light Expanded Clay Aggregate (LECA), Crystalline Admixture(CA), Self-Compacting Concrete (SCC), Control Mix (CM), Ordinary Portland Cement (OPC)*