Strength Efficiency Factor For Nano Silica at Different Age

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ABSTRACT

Concrete is being widely used as a construction material, hence it is necessary to improve its properties. Thease days supplementary cementecious materials are used for enhancement of concrete properties. Use of Nano materials is gaining importance due to its vital characteristics, these materials help in developing high performance concrete[5]. This study aims at determining efficiency factor 'K' for Nano silica. Efficiency factor is the part of supplementary cementecious material in the Nano silica concrete which can be considered as equivalent to Portland cement [3]. The efficiency factor helps in economic mix design of Nano silica concrete. This paper presents the results of an experimental study to evaluate strength of hardened concrete and strength efficiency factor 'K' for Nano silica by replacing the cement by various percentages of Nano silica (0.25% to 2.5% by weight of cement) for M20 ,M40 concrete at 7 & 28 days of curing. Modified Bolomey equation [3] is used for determination of strength efficiency factor. From this study it can be concluded that the optimum replacement of Nano Silica is 2% and 1.5% respectively for M20&M40 concrete. The mode value of 'K' is 6.0, 6.64 for 7 & 28 days respectively of M20 concrete, similarly 5.83, 5.94 for 7 &28 days respectively of M40 concrete.

Keywords: Nano Silica, Strength efficiency factor, Nano Silica concrete, Supplimentery Cementecious Material (SCM).