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Characterization of Calcined Clay Blended Self Compacting Concrete-Correlation between Super-Plasticizer Dosage and Self Compacting Concrete Properties

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Abstract : Sustainability in construction is essential to the economic construction and can be achieved by the use of locally available construction materials. This research work, thus, uses locally available materials –calcined clay and Sandcrete SPR-300 superplasticizer in the production of Self Compacting Concrete (SCC) by investigating the correlation between the superplasticizer dosage and the fresh and hardened states properties of a grade 50 SCC made by incorporating a Calcined Clay (CC) – Portland Limestone Cement (PLC) blend as the cementitious matter at 20% replacement of PLC with CC and using CC as filler. The superplasticizer dosage was varied from 0.4 to 3.0% by weight of cementitious material and the slump, v-funnel, L-box and strength parameters investigated. The result shows a positive correlation between the increased dosage of the superplasticizer and the fresh and hardened states properties of the SCC up to 2% dosage. The J¬Spread¬, t¬500J¬, Slump flow, L-box H¬2¬/H¬1 ¬ratio and strength, all increases with SP dosage while the V-funnel flow decreased with SP dosage. Overall, SP ratio of 0.5 to 2.0 can be used in improving the properties of SCC produced using calcined clay both as filler and cementitious material.

Keywords : calcined clay, compressive strength, fresh-state properties of SCC, self compacting concrete, superplasticizer dosage
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