

## **Incorporating Ground Sand in Production of Self-Consolidating Concrete to Decrease High Paste Volume and Improve Passing Ability of Self-Consolidating Concrete**

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**Abstract :** The production of SCC (self-consolidating concrete) generally requires a fairly high paste volume, ranging from 35% to 40% of the total concrete volume. Such high paste volume would lead to low dimensional stability and high carbon footprint. Direct lowering the paste volume would deteriorate the performance of SCC, especially the passing ability. It is often observed that at narrow gap of congested reinforcements, the paste often flows in the front leaving the coarse aggregate particle behind to block the subsequent flow of concrete. Herein, it is suggested to increase the mortar volume through incorporating ground sand with a mean size of 0.3 mm while keeping the paste volume small. Trial concrete mixes with paste volumes of 30% and 34% and different ground sand contents have been tested to demonstrate how the paste volume can be lowered without sacrificing the passing ability. Overall, the results demonstrated that the addition of ground sand would enable the achievement of high passing ability at a relatively small paste volume.

**Keywords :** ground sand, mortar volume, paste volume, self-consolidating concrete

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