

# Influence of Amount of Light Weight Aggregate on Properties of Self Compacting Concrete

Sabyath Shetty and Ashish Shetty

Department of Civil Engineering

N.M.A.M. Institute of Technology, Nitte, Karnataka, India

shettysabyath@nitte.edu.in and ashish.shetty919@gmail.com

**Abstract:** Concrete with low density is termed lightweight concrete. The unit weight of such concretes is about two-thirds of normal concrete. Most structural lightweight concretes weigh between 1600 and 1760 kg/m<sup>3</sup>. Design strengths between 20 to 35 MPa are common. The lightweight nature of these concretes is usually obtained either by using lightweight cellular aggregates. LWC can be produced by using lightweight materials like Lightweight Expanded Clay Aggregate, Pumice stone, expanded shale, Perlite etc. Structural lightweight aggregate can be produced naturally or from environmental waste. Use of these aggregates can reduce the density of concrete, the self-weight of the structure and it helps to construct larger precast unit. Lightweight concrete (LWC) is an exceptional solution in terms of decreasing the dead weight of the structure, while self-compacting concrete (SCC) eases the pouring and eliminates construction difficulties. Investigations are also reported the literature on the performance of micro silica in SCC wall panels. The Self-Compacting Concrete made by partially varying coarse aggregate with the lightweight pumice aggregate is described in the paper. This paper presents the fresh and hardened properties of low strength grade and standard grade, self-compacting concrete partially incorporating pumice as coarse aggregate with different replacements. This experimental study also compares the fresh and hardened concrete properties of conventional self-compacting concrete and Light weight self-compacting concrete. The fresh concrete test properties were examined using the slump flow, T500, and J-ring tests. Hardened concrete test properties incorporate 7-, 28- and 56-days compressive strength tests. From the test results it is found that Lightweight self-compacting concrete exhibits better flow property than conventional self-compacting concrete.

**Keywords:** Light weight concrete, Self-compacting concrete, Pumice aggregate, Design strength, Compressive strength

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