

# Utilization of Limestone Mineral Wastes for Developing Self-compacting Micro Concrete

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## ABSTRACT

This study aims at investigating the feasibility of replacing cement and fine aggregate by limestone mineral wastes in developing Self Compacting Micro Concrete (SCMC). SCMC is highly flowable and can be used in places where there is no access to vibrators for compaction. Hence, these types of micro concretes are used mainly for repair purposes. The novelty of the work is that fines and coarse form of limestone mineral wastes generated during the beneficiation of low-grade limestone ore have been studied for its utility as cement and fine aggregate substitute respectively in the preparation of SCMC. The main requirement of repair concrete such as flowability has been studied along with other mechanical properties. Flowability of mixes were assessed by mini slump test and V-funnel test. Mechanical properties namely compressive strength, flexural strength and split tensile strength tests were also studied to evaluate the performance efficacy. It was found that with 100% coarse limestone waste of less than 1 mm in size as fine aggregate, it is possible to achieve about 25 MPa and 45 MPa compressive strength at 3 and 28 days respectively. As high flowability and early age strength are of significant parameter for the development of micro concrete, the mix made of 100% limestone wastes as fine aggregate is found to be a successful mix for sustainable development of micro concrete.

**Keywords:** Waste utilization; Self-Compacting Micro Concrete; limestone wastes; mineral wastes; fly ash

