

PROJECT REPORT ON

**“FRESH AND HARDENED PROPERTIES OF SELF COMPACTING
CONCRETE USING RECYCLED AGGREGATES “**
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Science and Technology)

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ABSTRACT

The term SCC (Self-Compacting Concrete) refers to a new special type of concrete mixture characterized by high resistance to segregation that can flow through intricate geometrical configuration in presence of reinforcement under its own mass without vibration and compaction.

The use of recycled aggregate in concrete opens a whole new range of possibilities in the reuse of materials in the building industry. The utilization of recycled aggregates is a good solution to the problems of excess waste materials, provided that the desired quality of the product is reached. Recycling of rejected building materials is a very important issue for saving energy resources and environmental protection. The recycled concrete aggregates exhibits different characteristics from natural aggregates. The use of recycled aggregate gains importance when it is used in SCC, since the advantage of fabricating SCC and the use of recycled aggregates lead to high performance concrete along with preserving the natural resources.

In this study cement, fly ash, super plasticizer, sand and crushed angular, recycled concrete and recycled marble aggregates of maximum size 20 mm were used for fabricating SCC based on absolute volume concept. The use of 20 mm maximum size of aggregates is more appropriate as this size is normally used in the field and not many research work are carried out using this. Twenty seven SCC mixes were fabricated using cement content of 300 kg/m³, 390 kg/m³ and 450 kg/m³ and constant water content of 185 l/m³ considering paste content 0.38, 0.41 and 0.43 using normal(crushed angular), recycled concrete and recycled marble aggregates. Cubes of 150 mm were cast and tested for compressive strength at 7 day, 28 days and 56 days (except for few). Normal concrete were also cast and tested for 0.41 paste content.

The findings of the study indicates that range of volume of paste for fabricating SCC is 0.38 to 0.43 even for maximum size of aggregates 20 mm, for crushed angular, recycled concrete and recycled marble aggregates. The mixture proportioning based on absolute volume is simple and reduces the number of trials for developing SCC mixes. The higher paste content not only makes the mix cohesive but also reduces the yield stress and increases the compressive strength. This is true for all types of coarse aggregates used in this study. The results however indicate that the compressive strength of SCC with recycled (concrete and marble) aggregates has a lesser value when compared to normal crushed angular aggregate.