

# Effect of Silica Fume and Limestone on Self Compacting Concrete

R. Jayaatchaya  
Dept of CIVIL-PITS

R. Swathi  
Dept of CIVIL-PITS

Dr. M. Kannan  
HOD of CIVIL-PITS

**Abstract:-** The project title of “EFFECT OF SILICA FUME AND LIME STONE OF SELF COMPACTING CONCRETE” itself explains the sequence of work undergone in the project. We used the OPC43 grade cement, due to adding admixture of Silica Fume and lime stone. The silica fume was added in 5%, 10%, 15% and 20%. The lime stone was added in 10%, 20%, 30%, 40% and 50%. Then combination of both the materials are added with certain percentage as we required. The Fine Aggregate are in the size of 1.12mm, within dry condition. The Mix design for SCC is on accordance with the code book of IS-10262 2009 and Concrete Technology, For SCC, Finer materials must be higher than the larger size of materials, for that based on, EFNARC, FA should be 60% and CA should be 40% during mixing. The other proportions SP and VMA are also based on EFNAC specification. CA & FA are tested with the basic tests such as Specific Gravity and Sieve Analysis test.

## INTRODUCTION:

### SELF COMPACTING CONCRETE:

The process of selecting suitable ingredients of concrete and determining their relative amounts with an objective of producing concrete of required strength, durability and workability as economically as possible is termed as concrete mix design.

Also, Silica Fume is extensively using in all our building constructional activities similar to that of common concrete work. The Silica Fume is comparatively lighter in weight and stronger than common materials. It is 100 times finer than the cement, so it can act as best water reducer and reduce pores in concrete.

Since Silica fume is being accumulated as waste material in large quantity from the by-product of manufacturing process of Silicon and Ferro silicon alloys, which also creates serious problems in environment. Its utilization as main raw material in the manufacture of concrete will not only create ample opportunities for its proper and useful disposal but also help in environmental pollution control.

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### LIME POWDER:

For improving strength and durability properties, limestone powders produce a compact structure by pore-filling effect.

It improves the viscosity of the concrete, hence the segregation of concrete is considerably reduced. & increases setting and hardening of concrete.

### PROPERTIES OF SCC:

The various aspects of workability which control its filling ability, its ability and its segregation resistance all need to be carefully controlled using preferably roof the differ types of test.

### WORKABILITY:

The level of fluidity of the SCC is governed chiefly by the dosing of super plasticizer and VMA. However over dosing may lead to the risk of segregation and blockage, consequently the characteristics of the fresh and SCC need to be carefully controlled using preferably two of the different types of test.

### ADVANTAGES ON SCC:

- Faster construction time
- Lower over all costs
- Better surface finishes
- Easier placing
- Thinner concrete sections
- Greater freedom in Design
- Improved durability and reliability of concrete structure
- Facilitation of introduction of automation into concrete construction.
- Improvement of health and safety is also achieved through elimination of handling of vibrators.
- Substantial reduction of environmental noise loading on and around a site.
- Possibilities for utilization of “dusts”, which are currently waste product sand which are costly to dispose of Better surface finishes.

## APPLICATIONS

- Bridge(anchorage,arch,beam,girder,tower,pier, joint between beam and girder)
- Box culvert
- Building
- Concrete filled steel column
- Tunnel(lining ,immersed tunnel, fill of survey tunnel)
- Dam(concrete around surface)
- Concrete products (block ,culvert, wall ,water tank, slab and segment)
- Diaphragm wall
- Tank (side wall, joint between side wall and slab)
- Fire proof

## CONCLUSION:

SCC is recommended in high rise building because construction will be shorter and cost will be cheaper than ordinary concrete. It is recommended in complicated frameworks using congested steel bars very smoothly without vibration and give best compaction.

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