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STUDY OF SELF COMPACTING CONCRETE

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INTRODUCTION

Self compacting concrete is a type of concrete that does not require any mechanical vibration or any kind External source for vibration for its condensation. It can be placed under its own weight and it can be handled without bleeding or isolation. Although the circumstances in which it is built must be free from any noise or any kind Vibration that can damage or alter the property of such concrete. Such concrete is used especially in places where it is difficult to compact. So it is gaining traction. It is more commonly used in critical works to ensure its discovery and structural performance and safety. It is widely used in various important project sites, drilled shafts, retaining Systems, pipes, sewers, columns, floor finishing and many more.

Fig 1: Flooring Finish done by self compacting concrete

KEY WORDS: Concrete, Vibration, Self Compact.

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ADVANTAGES

There are some advantages of having such concrete for construction purpose.

1. Such concrete reduces the construction time as it does not require any vibration to compact it.
2. It has established property on the basis of its own weight and there are not so much laborers needed.
3. It modifies and enhances the filling capacity of highly sophisticated structural elements.
4. It reduces noise pollution. Decibel-crossing noise will cause vibration in the concrete and it will interfere with its matrix. Therefore, noise is not encouraged to pass and cool Environment is maintained in construction.
5. It provides good structural performance and is more capable of durable production structural member.
6. It reduces the wear of those devices which are caused by vibration because there is no vibration need here.
7. This allows easy pumping of concrete.
8. It opens space for innovative ideas to bring aesthetics to structural elements.
9. This enables it to produce finer finishes on surfaces.
10. It is bonded for better reinforcement than ordinary concrete.
11. Workers safety is ensured as no heavy equipment is used which will induce vibration.

PROPERTIES

A concrete mixture has to undergo three capacities to become self-compacting concrete. These -

- filling capacity
- Passing ability and
- Resistance to isolation.

The ability to fill is the ability to self compact the concrete to cover all locations, without vibration and without its own weight, which is poured into the formwork. Entangling air on or inside the concrete surface. While the ability to pass. Under this the ability of self-compact concrete to flow freely through congested openings like its weight in terms of spaces between reinforcements. This property indicates the symmetry of concrete is to distribute it near the barriers where it is poured. Finally, resistance to ablation is the resistance offered against concrete. The separation and mixing remain the same until transported.

TESTS AS PER EFNARC SPECIFICATIONS

Some tests are recommended to test for passing capacity, filling capacity, and resistance. For isolation. These are -

- Slump Flow Test
- J-Ring Test
- V-Funnel Test
- U box test

Slump Flow Test - This test is used to find the filling capacity of self compacting concrete. This test also determines the durability and capacity of the concrete Flow freely without hindrance. T50 is a secondary flow signal and gives Better signs of fluidity. Here, the minimum deceleration value should be 650 mm and the maximum deceleration value should be 800 mm.

J-ring test - This test is used to find out the passing ability of self compacting concrete. It consists of rectangular section equipment of 30 mm x 25 mm size.

V-Funnel Test - This test is used to find the filling capacity of self compacting concrete. The maximum size used here is 20 mm. The test involves a funnel and fills approximately 12 liters of concrete. The time it takes for a device to flow through it is measured. The funnel is then refilled with concrete and left for 5 minutes. To settle under your weight. Isolation will also increase as flow is related to isolation as time increases. The ability to fill the minimum and maximum time is 6 seconds and 12 seconds, respectively.

U box test - This test is used to detect the filling capacity of self compacting concrete. The height of the concrete to be filled in the compartment is measured in two places and they mean calculation. The entire test has to be done in 5 minutes. One of the following the limitation of this test is that the difference in height should be between 0–30 mm.

CONCLUSION

Although advances in research are being made in more well-modified production Self-concrete concrete, the construction industry is somehow still stuck with the general Solid. The absence of an industrial standard for self-compacting concrete allows for more Room for creativity in creating a custom mix for a specific job requirement. This advancement in technology has paved the way for more advanced self compacting. Concrete to replace ordinary concrete. Also, fly ash or other high grade water reducing

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penetration may contribute to the production of a well-advanced concrete It will be cheaper as well as more reliable. Cost is the main deciding factor in the construction industry and therefore compact concrete itself must be inexpensive to manufacture widely used worldwide.

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