

Title of invention: Holcim Supercrete HS

Specifications / Description

In view of the global warming which may affect our future generation, it has become extremely important to conserve the natural resources and also upgrading the specific properties of the concrete, this product has been developed having special features.

Considering the above Holcim Supercrete HS concrete is developed having ultra high strength, high performance, with specified compressive strength of 80 MPa and above.

Generally ultra high compressive strength mixes has problem of high adiabatic temperature rise, high shrinkage. In this invention, this has been taken care of. It is a unique combination of positive properties with reference to above issues.

Novelty

It is unique combination of Ordinary Portland Cement (OPC) (24%), silica fume of (3.5%), polycarboxylate based admixture (700ml per 100 kg cementitious materials), water with water-cement ratio of 0.25, retarder (500ml per 100kg cementitious materials), natural sand (22%) and 20mm graded granite stone (43%).

This product has many specialties as described below:

1. It is a high strength concrete which can help to reduce the structural component sizes of and therefore the amount of concrete used per building. Possible application of this concrete could be for areas of bridge girders and bridge decks in vehicular bridges and flyovers, encasing steel for composite steel columns and concrete columns and shear walls of high-rise building.
2. Using this high strength concrete have advantages such as reduction the amount of reinforcement required, earlier removal of formwork and propping, less deflection of beams and slabs, and higher durability.
3. Unlike normal high strength concrete, the Holcim Supercrete HS at Grade 100 has low shrinkage even when compared with Grade 40 normal concrete. This is achieved by up to 65% replacement of Ordinary Portland cement by Ground granulated blastfurnace (GGBS) and having very low water-cement ratio.
4. This product has another special characteristic which is having low temperature rise compared with normal concrete. For example: Grade 100 Holcim Supercrete HS has lower temperature rise compared with Grade 40 normal concrete. This is achieved by special Holcim Coolcrete technology by adopting special process of keeping the placement temperatures of concrete to be as low as 12°C, restricting the internal temperature rise much below 65°C.

5. It consists of environment advantages, such as reduction of resources requirement compared with lower grades (reinforcement steel, formwork and labour being self-compacting concrete); No vibration required as such no noise pollution; Easy access of concrete through congested reinforcement steel; Faster construction (shorten floor cycles); 45% less concrete required for Grade 100 as compared to Grade 40 normal concrete; Reduced CO₂ emission. This is a environment-friendly product using green cement and lower usage of aggregates. This results in significant reduction in the concrete usage index, CUI.

Claims

1. This unique product, Holcim Supercrete HS having special technical features, It is unique combination of Ordinary Portland Cement (OPC) (24%), silica fume of (3.5%), polycarboxylate based admixture (700ml per 100 kg cementitious materials), water with water-cement ratio of 0.25, retarder (500ml per 100kg cementitious materials), natural sand (22%) and 20mm graded granite stone (43%), having low carbon footprint of about 30% of normal concrete, low shrinkage (0.264%) and low adiabatic temperature rise (<75 degree celcius) as characterized by the description and abstract shall be having exclusive intelligent property rights for the inventor and anyone trying to utilize this combination directly or indirectly and copying the same would be breaching the patent rights filed for this product by the inventor and the said party would be liable for legal actions.