

Supercrete HS



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Holcim Singapore
Exclusive Range of Products



Product Development & Technical Services



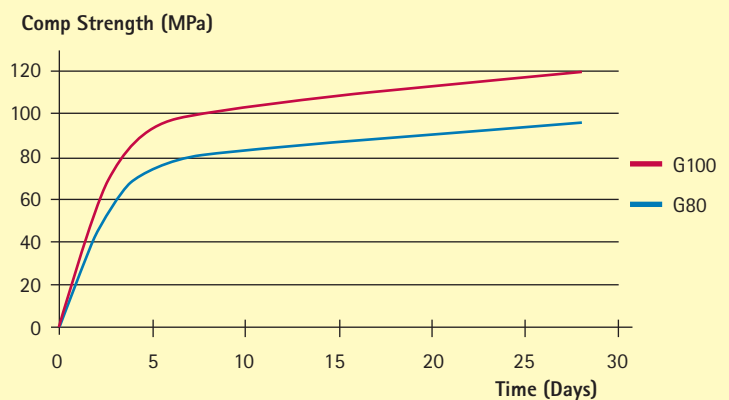
What is Holcim Supercrete HS?

Holcim Supercrete HS is a ultra high strength, high performance concrete, generally with specified compressive strength of 80 MPa & above.

Why do we need Holcim Supercrete HS?

One of the solutions towards sustainable construction is to optimise or reduce the sizes of concrete elements in a building. The use of high strength concrete can help to reduce the structural component sizes and therefore the amount of concrete used per building. Other advantages in the use of high strength concrete includes reduction in the amount of reinforcement required, earlier removal of formwork and propping, less deflection of beams and slabs, and higher durability.

Holcim Supercrete HS High Performance G100 Concrete



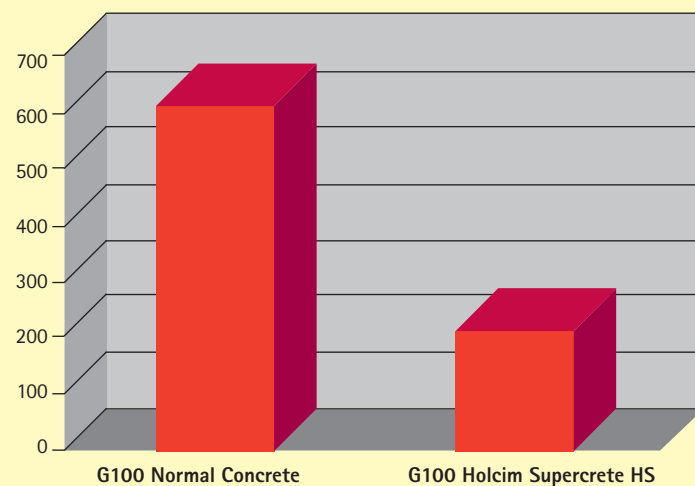
Low green house gases emissions

One of the advantages of Holcim Supercrete HS is that though 100MPa concrete, it is a green concrete having very low CO₂ emissions.

An environment-friendly solution.

Comparison of Greenhouse gas CO₂ emissions

CO₂ emissions per kg/m of concrete



Low Shrinkage

Unlike normal understanding that high strength concrete has high shrinkage, the Holcim Supercrete HS Grade 100, has low shrinkage even when compared with Grade 40 concrete.

Low shrinkage in Holcim Supercrete HS is achieved by:

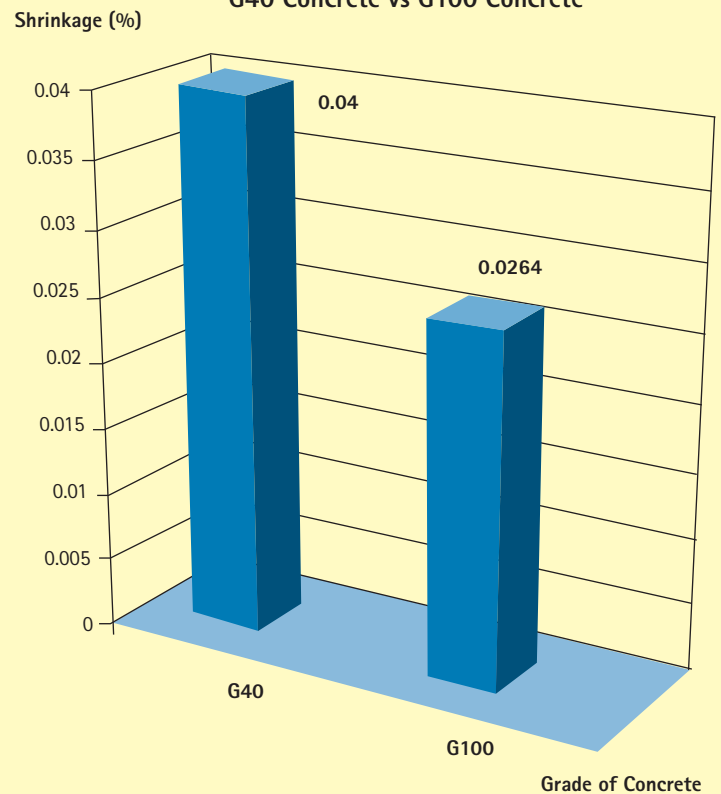
- 65% replacement of Ordinary Portland cement by GGBS
- Very low water-cement ratio (0.22)

Lower Temperature Rise In The Concrete

In contrast to normal understanding that high strength concrete has high temperature rise, the Holcim Supercrete HS Grade 100, has lower temperature rise even when compared with Grade 40 concrete.

Lower temperature rise in this concrete 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.

Comparison of Shrinkage
G40 Concrete vs G100 Concrete



Environmental Advantages of Holcim Supercrete HS

- 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 G100 as compared with G40 concrete.
- Reduced CO₂ emissions as explained earlier.

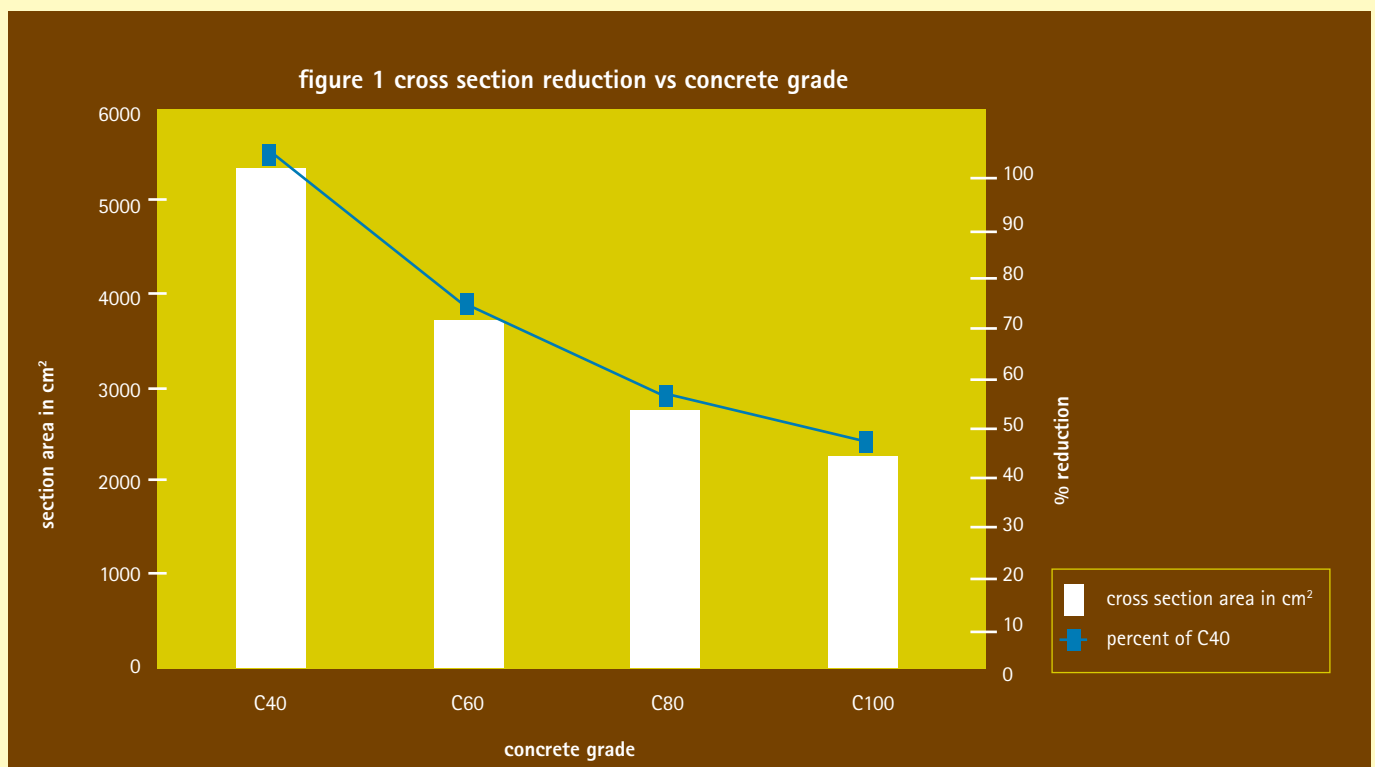
Other Advantages of Holcim Supercrete HS

- Excellent cost advantage due to lower need of concrete and higher floor space available.
- Increased construction speed amounting to:
 - lower invested capital
 - earlier returns
 - almost no need for repairs, thus saving in time and costs.

Reduction In Section Size of Structural Elements in Compression

The impact of increasing the concrete strength on the section size of structural components is tabulated in Figure 1 – Cross Section Versus Concrete Grade. As can be seen from the graph, the section size can be reduced by up to 45% if the strength of concrete is increased from concrete grade 40 MPa to 100 MPa.

The cost efficiency or reduction in concrete usage is more obvious in structural elements in compression.



Source: BCA Pillars on Safe Built Environment

The use of high strength concrete also entails many benefits, which will be evident if total project costs, and even more so if service life costs, are considered.

These benefits are:

- Smaller or more slender columns
- Additional carpark lots
- More office or usable spaces
- Increase on the construction speed
- Less dead weight.

The above benefits results in saving on foundation and an increase in service life of structure.

Possible areas where high strength concrete can be used are 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 buildings.

Holcim Supercrete HS concrete has tremendous advantages – of lower concrete quantity requirements, lower transfer loads on foundations and the greatest advantage we have is the additional floor space area which is very expensive in Singapore and would pay back substantially the cost of concrete itself.

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.

High Strength Concrete Usage in Asia:

- | | |
|---------------|---------------|
| ■ Japan | Up to 150 MPa |
| ■ China | Up to 100 MPa |
| ■ Hong Kong | Up to 100 MPa |
| ■ Singapore | Up to 80 MPa |
| ■ Middle East | Up to 100 MPa |





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