



### **Choice of concrete and casting technique when producing HTC Superfloor™**

Concrete floors are designed according to requirements depending on activity and load.

The designer is always responsible for ensuring the requirements are met regarding reinforcement and concrete quality as well as dimensioning.

For all exposed concrete floors, measures should be taken to minimize cracks and pores.

#### **Cracks:**

In general, larger aggregate (stone size) and high stone content reduce the shrinkage and thus, the risk for cracking. If high quality aggregate is used (in Sweden = granite), greater strength is also obtained. Therefore, aggregate as large as possible (d-max) should be chosen, but not bigger than 1/3 of the floor thickness. Agents to reduce shrinkage can be used with advantage.

It may be appropriate to saw crack initiators/joints at approx. 6m c/c. This should be done relatively early, not more than 2 hours after the max. temperature is attained in the concrete, which usually means sawing must be done within 24 hours of casting.

Limit heat generation, especially in warm climates. Do not use higher cement content than necessary.

Post curing is very important. Suitable methods include:

- a) Covering the surface with a vapor-proof layer, which is secured at the edges and joints to prevent draughts.
- b) Laying damp covering materials on the concrete surface as well as protecting the cover against drying out.
- c) Keeping the concrete visibly wet with suitable quantities of water.

#### **Pores:**

Vibration: Poor vibration results in unnecessarily many air pores. Excessive vibration may result in the aggregate sinking and some areas of the finished floor completely without visible stones.

Finishing: Thorough power floating and light power trowelling are recommended. Excessive trowelling makes the surface difficult to grind. No trowelling results in more pores in the concrete surface.

## **Reinforcement and concrete:**

Concrete reinforced with steel fibers is not suitable for HTC Superfloor™. We recommend traditional reinforcement.

Traditional concrete is preferable to self-compacting (SCC), because SCC usually has a rough surface, more air pores and more uneven distribution of the aggregate. SCC means a lower stone content and, possibly, also a risk that the stones that do exist sink slightly during laying out and finishing

Foreign objects (slate, wood chips, pine cones, roots and suchlike) must be minimized, as far as possible, in the concrete. Choose aggregate that does not contain contaminants and make sure the form is clean prior to casting.

Coloring concrete is possible. Pigment is added to the fresh concrete at the factory or in the concrete mixer truck on the way to the worksite. The producer of the concrete will have more information about colored concrete.

## **Requirements on the appearance influence the choice of concrete grade**

Because the appearance of HTC Superfloor™ is dependent on the choice of aggregate and the exposure of this, aesthetic requirements can also influence the choice of the concrete quality. However, not to such an extent that the concrete quality will not fulfil the designer's requirements. Concrete quality C28/35 is a suitable grade for HTC Superfloor™. If a higher concrete quality is used, it is more difficult and time-consuming to expose the aggregate. If a lower grade is used, it is easier to grind, but this usually results in more air pores.

## **Other points to consider:**

- Point out that the concrete should be rotated/mixed during transport, and for at least 5 minutes at maximum speed at the site before discharging commences. (This is to ensure that the stone fraction is distributed as evenly as possible in the concrete.)
- Hardening: Water hardening is recommended, alternatively plastic sheeting. Note! At air temperatures of +5 degrees and lower, adding water in connection with hardening is not permitted. The sheeting should have an overlap of at least 150mm at joints. It is important that the sheeting is sealed against walls or outer edges, otherwise differences in color will arise. The circumstances (wind, temperature) may mean that measures such as, for example, misting unit, are needed immediately after casting. At the minimum, hardening should be done to Hardening Class 3 in accordance with Execution Standard EN 13670.
- Vibration: Poor vibration results in unnecessarily many air pores. Excess vibration may result in the aggregate sinking and some areas of the finished floor completely lacking visible stones.
- For laser casting: Never transport concrete with the internal vibrator. This entails a risk of over-vibration and separation.
- Do not walk on the concrete any more than necessary. This is to prevent the stones from being pushed down.
- Polypropylene fibers, for example SIKA Crackstop, can be used to reduce the plastic shrinkage. They also help to maintain a more even aggregate structure in the concrete.

- Finishing: Thorough power floating and light trowelling are recommended. Excessive trowelling makes the surface difficult to grind. No trowelling results in more pores in the concrete surface.
- Otherwise, refer to the European standard for Concrete, SS EN 206 – 1.

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