General information on the choice of concrete and casting technique when producing a floor according to the Husqvarna SUPERFLOOR™ process.

NOTE!
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 troweling are recommended. Excessive troweling makes the surface difficult to grind. No troweling results in more pores in the concrete surface.

Reinforcement and concrete:

Concrete reinforced with steel fibers is not suitable for Husqvarna 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 Husqvarna 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 in general a suitable grade for Husqvarna SUPERFLOOR™, but also other qualities are able to use. However, if a higher concrete quality is used, it is usually a bit 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:

Before placement:

- Inform the concrete supplier that the concrete will be a polished floor, so that they can, hopefully, offer an optimal/adapted recipe for this purpose.
- Clean the mold/formwork before pouring the slab. Make sure that any loose styrofoam is removed that will else position itself in the top layer of the concrete creating unwanted marks during grinding/polishing.

During placement

- 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. NOTE! When vibrating, the poker shall never be used flat in the concrete, but either Vertical (90°) or max. 45° tilting.
- 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. Use special shoe protection while troweling to avoid permanent footprints afterwards.
- 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 troweling are recommended. Excessive troweling makes the surface difficult to grind. No troweling results in more pores in the concrete surface.

NOTE! When troweling: The use of floating discs increases the overall flatness of the concrete slab and helps reducing the number of passes with the finishing or combo blades. Also, make sure the first pass with the trowel is run at 90°angle to the pass done with the beams/screed and with discs at low rotor speed. This helps to clean the surface, otherwise the trowel has a tendency to follow the waves that the screed may have created/left.

- Otherwise, refer to the European standard for Concrete, SS EN 206 – 1.

After placement (before grinding)

- Avoid placing building material on the newly placed slab before it has had time to dry properly since this risks create permanent marks and discolorations that will appear when grinding. If any material needs to be placed, use trestle work to place the material on.
- If possible, avoid any covering during the first week after placement. Instead, water frequently and keep the surface moist. Covering the surface using plastic sheets is efficient but also risks uneven drying. And uneven drying this will risk create visible patterns and darker spots in the hardened concrete.

After grinding

- If protective covering is needed afterwards, do not use any tape. This will risk create permanent marks. If possible, use diffusion open coverings.

No constraints?

If no consideration is taken to the requirements of dimensioning for activity or load, consider the below specifications as a guideline for placing a concrete slab optimal for grinding and polishing.

- Concrete quality C28/35 (equal to a 4000 psi concrete mix). Concrete quality should not be less than C25/C30 (3500 psi)
- No admixtures (if at all possible)
- W/C ratio: <0,55
- Slump: ≤ S4 (<210mm or 8,3")
- Finish to Floor Flatness (F_F) > 50
- Floor Levelness (F_L): n/a
- Place, strike off, pan/consolidate, finish with troweling using steel or plastic finishing blades or combo blades to meet above spec.

Concrete class specified in Europe as for example C20/25, It is a measure of the compressive strength after 28 days (MPa). Example: C35 correlates to a compressive strength of 35 MPa (approx. 350kg/cm^2)