



Concrete Placement
Finishing & Curing



A Natural Pozzolan for High
Performance Concrete



Microsilica 600

Placing, Finishing & Curing

Microsilica 600 (MS600) concrete offers many placing advantages over conventional concrete. It is more cohesive and is less prone to segregation, yet it flows and has good pumping properties.

Placing

Microsilica 600 concrete has less bleed than conventional concrete. It can often be finished earlier yet is not so prone to plastic cracking as other highly reactive pozzolan concretes. Microsilica 600 concrete has major rheological attributes that make it simpler to place. However, concrete placers should use normal practices suited to high quality concrete, unless experienced with modifications specific to MS600 concrete.

Pumping

Microsilica 600 aids concrete pumping. By reducing the bleed the MS600 avoids water being squeezed out. Pumping pressures are likely to be reduced. Use of MS600 does not overcome major mix deficiencies so standard design practice for pumped concrete mixes should be followed.

Slump

Microsilica 600 concrete is more cohesive than conventional concrete. Typically, for the same workability when placing using vibrators, the slump of MS600 concrete can be 25-50mm less than conventional concrete. This needs to be considered before increasing workability through additional dosages of superplasticisers or adding water. At very high slumps, the increased cohesion is particularly important to prevent segregation. Microsilica 600 is a suitable stabiliser for self compacting concrete.

Concrete Mobility

The higher cohesion of MS600 concrete makes it less prone to segregation. Mixes can be designed to cater for free falling concrete. The higher cohesion also helps the concrete to be vibrated through congested rebar without segregation or honeycombing.

Compaction

At high dosages of MS600 the cohesion of the concrete may tend to trap air. Because of this, additional vibration can be applied without segregation occurring. In general, MS600 concretes should be vibrated longer than conventional concrete.

Finishing

Because of its' rheology, the finishing of MS600 concrete differs from that of conventional concrete.

Screeding

Use conventional practice in regard to screeding method and timing. For best results on any floor a vibrating screed should be used.

Setting Time

MS600 does not affect setting times. However, MS600 is generally used in conjunction with admixtures which may extend setting times.

Finishing Time

Bleed water movement in concrete containing Microsilica 600 is different to that of normal concrete. This can make judging the time to start the finishing operation difficult. The two criteria – maximum footprint indentation and no bleed water sheen, normally used to judge when to start finishing normal concrete, will not necessarily apply to concrete containing Microsilica 600. Finishing operations should not be started when the concrete is still spongy. Trial pours are recommended when the placer is unfamiliar with MS600 concrete.

Trowling

Microsilica 600 is not sticky like silica fume concretes and hence is easier to finish.

Curing

Effective methods such as water ponding, polythene sheeting, or an appropriate membrane curing compound, must be used to protect the hardened surface from early age moisture evaporation. Curing should be undertaken as soon as practical and continue for 7 days.

Plastic concrete protection

To prevent plastic cracking, evaporation must be restricted to an acceptable level during the plastic stage (15mins-12hrs after pouring). ACI 305 – 72 provides evaporation rates based on humidity, temperature and wind speed and suggests 1kg/m²/hr as the limit for GP cement concrete before plastic cracking precautions are required. Table 2 gives a guide for evaporation limits for MS600 concrete.

MS600	Evaporation Limit (kg/m ² /hr)
5%	0.75
10%	0.50

Where plastic cracking is a potential risk, one or all of the following precautions should be considered:-

- Installation of wind breaks
- Fog or spray mist applied
- The use of proprietary anti-evaporation sprays

The application of early sprays will stop premature sealing of the slab, reducing the possibility of delamination.

As the final trowel finishing operation progresses across the pour, areas of slab that are completed must be effectively protected from early age moisture evaporation.

MICROSILICA 600 APPLICATIONS & INFORMATION

Other Microsilica 600 applications for specialist concretes and high performance concrete are detailed in the following brochures:

- Industrial & Commercial Floors
- Marine Concrete
- High Strength Concrete
- Water Proof Concrete
- Shotcrete

Reference should also be made to the operational and safety requirements in the following documents:

- Chemical Resistant Concrete
- Health & Safety Data Sheet
- Concrete Mixing Instructions
- Plastic Properties of Microsilica 600 Concrete

Product Note

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