Technical Bulletin 110



Page 1 of 2

All cementitious materials need to be cured while they are new and developing strength (hydrating). This is particularly true for Five Star[®] cementitious grouts because of the rapid hydration process which allows them to develop their strengths very quickly. The primary reason for curing a cementitious grout is to prevent the surface of the grout from losing moisture too rapidly. If the grout loses moisture too quickly surface cracking is likely to develop.

The only surfaces that need to be cured are those that are exposed to the atmosphere. In most cementitious grout applications, the grout shoulders (grout that is not under a baseplate) are the only surfaces exposed to the atmosphere. Grout that is covered by formwork does not need to be cured until the formwork has been removed. The formwork protects the grout from losing moisture.

In general, Five Star[®] cementitious grouts¹ shall be

- Wet cured for a minimum of three days or coated with an approved curing compound after a minimum 24-hour wet cure. The wet curing should be monitored routinely for its entire duration to ensure that the surface remains wet.
- Kept above 40°F (4°C) throughout the curing process. Keeping the area above 40°F (4°C) keeps the water in the grout from freezing. Allowing the water to freeze on the surface is not considered wet curing.
- Protected from excessive evaporation with wet rags prior to set.
- Protected from wind, rain, freezing, and vibration until a minimum compressive strength of 1000 psi (6.9 MPa) is achieved. This will happen in the first 24 hours at 40°F (4°C) or above. Consult the grout's strength development properties on its technical data sheet for additional information.

¹Consult the grout's technical data sheet for specific curing instructions. Specialty grouts such as high temperature exposure grouts have different requirements.

Curing should begin after the grout takes its initial set and any surface finishing has been completed. Curing should not start if the surface has not hardened sufficiently to prevent surface damage.

A. Wet Cure Methods



USING WATER SATURATED RAGS TO WET CURE THE GROUT.

A wet cure is the most effective way to cure a cementitious grout because it absorbs heat (promoting hydration) and helps to eliminate shrinkage while preventing the surface from losing moisture. There are different methods of wet curing.

1. Flooding or ponding the surface with a layer of water is by far the most effective. This does, however, require a means of holding the water in place. If the forms are left in place, they can function as the means to hold the water.

2. Misting the surface with water and keeping it wet is another water application process. It is important to note that a fine mist of water will evaporate quickly so the misting must be continuous for the first 24 hours.

3. Covering the surface with a material that is saturated with water like burlap, rags, or specialized curing blankets are another commonly employed method.

It is common and recommended that the area being cured be covered with plastic sheeting to prevent evaporation of the water. This step is usually combined with one of the wet curing methods described above.

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CEMENTITIOUS Grout - Curing

Page 2 of 2

B. Curing Compounds

A curing compound may be applied after the initial 24-hour wet cure to eliminate the need to continue to wet cure the material for another 48 hours (72 hours total). A curing compound meeting the requirements of ASTM C309, Type 1 or 2, Class B should be selected. The curing compound manufacturer's installation instructions must be followed to apply the material correctly. The project engineer should approve the curing method.

C. Placing the Grout into Service

The grout may be placed into service once the compressive strength of the product is sufficient to resist the load that will be placed on the grout. In the absence of any guidance from the project specifications or the project engineer, the grout shall achieve at least 75% of the material's compressive strength. The grout will continue to develop strength as the material ages and hydrates. Prior to placing the grout into service, its compressive strength should be verified via testing using ASTM C942 (C109 Restrained). Refer to Five Star[®] Technical Bulletin 109 *Cementitious Grouts Proper Compressive Strength Testing* for guidelines.

For additional information, contact your Five Star® Technical Sales Representative

Five Star Products follows standard industry practices. For more information, refer to ACI PRC-308-16 Guide to External Curing of Concrete.

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