



TECHNICAL BULLETIN 109

PROPER TESTING FOR Compressive Strength

Five Star® Cementitious Grouts should be tested for compressive strength using 2" x 2" cube specimens made in brass or steel cube molds and a cover plate as directed in ASTM C 942. The use of cylinders, plastic molds, lack of a cover plate or curing at temperatures below 70°F (21°C) will all result in lower compressive strengths being reported.

A. Equipment Required for Testing

- 2" x 2" brass or steel cube mold and cover plate (plastic molds or plastic inserts not acceptable)
- Release agent
- Compression Testing Machine
- Moist Cabinet - Temperature 70°F - 77°F (21°C - 25°C), Humidity 95% minimum

B. Test Time Tolerances

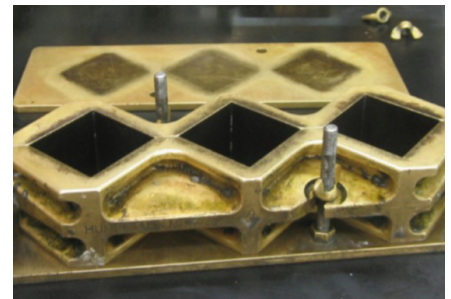
- 1 day ± ½ hour (from start time)
- 3 days ± 1 hour (from start time)
- 7 days ± 3 hours (from start time)
- 28 days ± 12 hours (from start time)

C. Compressive Strength Requirement

- Refer to Technical Data Sheet of product being tested.

D. Testing Procedure

1. Using mold release agent, spray cube mold and cover plate.
2. **Flowable** or **Fluid** consistency grout: fill all cube molds halfway with grout. Puddle grout in cube mold 5 times with gloved finger or tamping rod; fill mold full with grout, puddle with gloved finger or tamping rod 5 times.



A. 2"x2" Brass cube mold with cover plate



D.2. Fill cube mold ½ way with fluid / flowable grout.



D.2. Puddle 5 times with gloved finger or tamping rod.

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3. **Dry-Pack** consistency grout:

- Fill cube mold half way and tamp 25 times using ASTM C 109 tamper or tamping rod. Repeat process for dry-pack consistency, tamping new layer of grout into previous layer until cube mold is filled.
 - Tap the side of cube mold 5 times (each side) with rubber mallet for dry-pack consistency grouts. Drop mold on solid surface 5 times from a height of 6 inches to further help consolidation.
4. Screed off excess grout so the surface of each specimen is flush with the top of the mold.
 5. Clean off any excess material on the top of the mold.
 6. Place the cover plate on the mold and tighten with screws or clamps.
 7. Immediately upon completion of molding: Place laboratory specimens in the moist room and cure in accordance with the applicable portions of Test Method C 109/C 109M. On a jobsite, place molds in cooler with top, with wet towels and cover plates firmly in place. Move to lab at an appropriate time and place in humidity cabinet, if available.
 8. Identify cubes with product name, batch code, start time, age, test date and water content.
 9. Leave mold undisturbed for 24 hours.
 10. De-mold cubes after 24 hours and break one cube. Place remaining cubes in a moisture cabinet in a laboratory. The other cubes are tested at 7 days and 28 days.
 11. When testing cubes do not apply the load to the original top or bottom cube surfaces (rotate cubes 90° before loading in compression tester).
 12. Record the compressive strength in pounds per square inch by dividing the cross sectional area by load.



D.5. Clean off any excess material on top of mold.



D.6. Place cover plate on mold and tighten with screws or clamps.

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FIVE STAR PRODUCTS, INC.
60 Parrott Drive
Shelton, CT 06484 USA
Phone: +1 203-336-7900
Support: 1-800-243-2206 (IN THE U.S.)

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