



Product Specification for:
Rapid Set TRU Self-Leveling

SECTION 03 45 16 HYDRAULIC CEMENT UNDERLAYMENT
SECTION 03 35 00 CONCRETE TOPPING
SECTION 03 01 30.61 RESURFACING OF CAST-PLACE-CONCRETE
SECTION 03 01 50.61 RESURFACING OF CAST DECKS AND UNDERLAYMENT
SECTION 03 01 50.71 REHABILITATION OF CAST DECKS AND
UNDERLAYMENT

[Note to specifier: Delete unnecessary Sections.]

PART I GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General and Supplementary Conditions, apply to this section.

1.2 SUMMARY

- A. This section specifies material for self-leveling topping, resurfacer, and underlayment that can be used indoor/outdoor, can accept traffic in 2 - 3 hours, and can be coated in 12 hours.

1.3 SUBMITTALS

- A. Substitutions:
[Note to specifier: While this does not belong here, it is shown for your review and inclusion in section 01 25 13.] Requests for substitution must be received by Architect at least 14 days prior to bid opening and shall be accepted only from prime bidders. Request shall include: documentation from an approved independent testing laboratory showing compliance with this specification, record of past performance, list of similar installations, detailed comparison of the qualities of the proposed substitute with the specified product, statement of product costs showing all savings passed to owner if approved, and certification by the contractor that the proposed substitute is in every significant way equal to or better than the specified product.
- B. Submit 2 copies of product manufacturer's literature and Material Safety Data Sheets (MSDS). [Note to specifier: Add any other required submissions.]

1.4 QUALITY ASSURANCE

A. References: Comply with the following unless modified by this specification.

1. ASTM C109/C109M-02 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. Cube Specimens)
2. *ASTM C191-04 Standard Test Method for Time of Setting of Hydraulic Cement by Vicat Needle*
3. *ASTM C882-99 Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear*
4. *ASTM C928-00 Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs*
5. *ASTM C1107-99 Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)*

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to jobsite in original, unopened, undamaged containers that clearly show the manufacturer's name, product name, and batch number.
- B. Storage: Store material in a dry area off the ground protected from rain, snow, and other sources of moisture. Protect material from temperature extremes.

PART 2 PRODUCTS

2.1 SELF-LEVELING MATERIAL

- A. Shall be manufactured by CTS Cement Manufacturing Corp., 11065 Knott Avenue, Cypress, CA, 90630. Phone: 800-929-3030 Website: www.ctscement.com
- B. Rapid Set TRU Self-Leveling: One component, crack resistant, cement based, self-leveling material for topping, resurfacing, and underlayment that can be used indoor/outdoor, can accept traffic in as little as 2 hours, and can be sealed in 12 hours or coated with epoxy or vapor barriers in 16 hours.
1. *Set time per ASTM C191 (Mod.) at 70°F:*
Initial set 80 min – 120 min
 2. *Compressive strength per ASTM C109 (Mod.):*
4 hours 3000 psi
24 hours 5000 psi

- 28 days 6500 psi
3. *Slant shear strength per ASTM C882 (Mod.):*
 - 1 day 1400 psi
 - 28 day 2900 psi
4. *Flexural Strength per ASTM C348*
 - 24 hours 850 psi
 - 28 day 1900 psi
5. *Tensile Strength per ASTM C307*
 - 7 day 210 psi
 - 28 day 365 psi
6. *Shall meet ASTM C928 for packaged concrete repair materials.*
7. Shall be non-metallic with no added chlorides and shall be pre-blended requiring only the addition of water.

C. Rapid Set Concrete Pharmacy: Add these small, pre-measured packets to the repair material per manufacturer's recommendations to change the properties as shown. [Note to specifier: List only the products that you want to be used on your job.]

1. Set Control – slows down the set time
2. Fast – speeds up the set time

2.2 Water: Potable.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

- A. Mechanically remove loose, unsound, contaminated concrete.
- B. The surface shall have a profile of ICRI CSP 3-5.
- C. Concrete must be free of materials such as paint, oil, curing compound, bond breaker, etc. that will inhibit bonding.
- D. Thoroughly clean extraneous material such as dirt, loose chips, and dust from concrete surface. If compressed air is used, it shall be free of oil.
- E. Apply Rapid Set® Acrylic Primer per manufacturer's recommendations.

3.2 MIXING

- A. Organize personnel and equipment before mixing.

- B. Use 4.5 quarts of water per 50 pound bag of repair material.
- C. Mixed material should have a temperature of about 70°F. Warmer material will set faster than expected and cooler material will have slower strength gain. Control the mixed temperature by protecting the bags of repair material from temperature extremes and adjust the mixed temperature by using hot or cold water.
- D. Add potable water first then add Concrete Pharmacy packets or approved color additives if necessary then add repair material while mixing mechanically in a mortar mixer or with a drill and mixing paddle.
- E. Do not add any other admixtures. Do not add sand, aggregate, or cement.
- F. Mix for 3 to 5 minutes with a shear type mixer to achieve a uniform, lump-free consistency. Avoid mixers that entrap large amounts of air.
- G. Do not re-temper.

3.3 PLACEMENT

- A. Pour or pump the material with a minimum thickness of 1/8" and a maximum thickness of 1.5" onto the prepared and primed substrate.
- B. Use a spreader or gauge rake to level the material.
- C. Use a smoother or other tools to coax the material into place as required.
- D. Use a porcupine roller if necessary to minimize air bubbles.
- E. For thicknesses greater than 1.5", extend each 50 pound bag of material with 25 pounds of clean 3/8" pea gravel. Place the extended material to 1/2" below desired floor level and then place neat material for the final 1/2". Prepare the substrate as in Section 3.1 prior to the application of any additional coats.
- F. Place material only if surface and ambient temperatures are above 45°F and rising.
- G. Protect adjacent surfaces with drop cloths, waterproof paper, or other means to maintain them free of material splashes, water, and debris.
- H. Place material immediately after mixing.
- I. Honor all joints.

- J. Apply sealer, if specified, 12 hours or more after self-leveling material hardens per sealer manufacturer's recommendations.

3.4 CURING

- A. No curing required under normal conditions. However, if used in excessively dry, windy, hot, or sunny conditions, apply water mist to the surface as soon as it can be done without marring the surface and continue until 1 hour after initial set.

3.5 CLEAN UP

- A. Do not allow buildup of hardened repair material in the mixer, since this creates inefficient mixing and the heat generated accelerates later batches.
- B. Clean all tools immediately after use.
- C. Clean excess material from surrounding areas immediately.

END OF SECTION