Rapid Strength Concrete Mix SE

1. PRODUCT NAME
Tenon® Rapid Strength Concrete Mix SE

2. MANUFACTURER
TCC Materials®
2025 Centre Pointe Blvd.
Mendota Heights, MN 55120 USA

Phone: 1.651.688.9116
Fax: 1.651.688.9164
Internet: tccmaterials.com

3. PRODUCT DESCRIPTION
Tenon® Rapid Strength Concrete Mix SE is a commercial grade blend of fast–setting cement, sand, gravel, and other proprietary performance additives designed to provide extended working time and high early strength for concrete applications requiring a minimum thickness of 1.5 in. (38 mm). Air–entrained for improved workability and freeze–thaw resistance, this mix is performance enhanced with corrosion inhibitors and contains fibers for crack resistance and increased toughness.

Features and Benefits
- Air entrained for improved freeze/thaw resistance
- Full depth applications 1.5 in. (38 mm) or greater
- Fast job turn–arounds with working time of 1 hour, walk–on time of 3 hours
- High early compressive strength, reaches 3,500 psi (24.1 MPa) in 24 hours
- High overall compressive strength of 8,000 psi (55.2 MPa) in 28 days
- Ideal for projects requiring small structural concrete applications
- Contains corrosion inhibitor
- Excellent workability
- Exceeds ASTM C 387/C387M for High Early Strength Concrete

Uses
Structural application, full depth or repairs:
- Highways
- Structural piers
- Bridge decks
- Balconies
- Parking garages
- Slabs, sidewalks, and patios
- Industrial floors
- Foundations and footings
- Driveway aprons

SAFETY
READ THE SAFETY DATA SHEET (SDS) BEFORE USING THIS PRODUCT. SDS information is available on our website: tccmaterials.com or contact TCC Materials® at 651–688–9116 (7:30 AM to 4:00 PM Central US Time).

CAUTIONS
Read complete cautionary information printed on product container prior to use.
This Product Data Sheet has been prepared in good faith on the basis of information available at the time of publication. It is intended to provide users with information about and guidelines for the proper use and application of the covered Tenon® brand product (s) under normal environmental and working conditions. Because each project is different, neither Tenon® nor TCC Materials® can be responsible for the consequences of variations in such conditions, or for unforeseen conditions.

4. TECHNICAL DATA

Typical Values • Tenon® Rapid Strength Concrete Mix SE	
Slump range	3–5 in. (75–125 mm)
Set Time (ASTM C403)	
Initial Set (hrs:min)	1:15
Final Set (hrs: min)	1:30
Compressive Strength, psi (ASTM C39)	
3 hour	>2,500 psi (17.2 MPa)
1 day	>3,500 psi (24.1 MPa)
7 day	>5,500 psi (37.9 MPa)
28 day	>8,000 psi (55.2 MPa)

Greater than: > Greater than or equal to: ≥ Less than: < Less than or equal to: ≤

Note: Test results obtained under controlled laboratory conditions at 72°F (22°C) and 50% relative humidity. Reasonable variations can occur due to atmospheric and job site conditions.

Packaging
Gray: 50 lb. (22.7 kg.) bag – Product #120965

Shelf Life
Best when 12 months from the date of manufacture when stored in the original, unopened container, away from moisture, under cool, dry conditions and out of direct sunlight.

5. INSTALLATION

Preparation

- Stake out the planned area and remove sod or soil to the desired depth. Nail and stake forms securely in place. Tamp and compact the sub–base until firm.
- Subgrade surface should be brought to a saturated surface dry (SSD) condition with clean potable water.

Note: It is the responsibility of the installer/applicator to ensure the suitability of the product for its intended use.

Refer to:
ACI 302 Guide for Concrete Flooring and Slab Construction
ACI 304 Guide for Measuring, Mixing, Transporting and Placing Concrete

Job Mockups

The manufacturer requires that when its Tenon® products are used in any application or as part of any system that includes other manufacturers' products, the contractor and/or design professional shall test all the system components collectively for compatibility, performance and long–term intended use in accordance with pertinent and accepted industry standards prior to any construction. Written documentation of the tests performed shall be satisfactory to the design professional and contractor. Test results must include the means and methods of application, products used, project–specific conditions being addressed, and standardized tests performed for each proposed system or variation.

Forming

- Forms must be sealed to prevent material from escaping.
- Release agents are recommended for pre–treating wood form surfaces that can absorb moisture. The design of the form work should take into consideration the consistency of the mix, the method of placement and the distance the material must travel.
- Form sides must be squared off.

Mixing

Mix only the amount of material that can be placed in 1 hour. The use of a barrel–type concrete mixer or a mortar mixer is recommended, although hand–mixing can also be used. Choose the mixer size most appropriate for the size of the job to be done. Allow at least 1 cu. ft. (28 L) of mixer capacity for every 80 lb. (36.3 kg) bag of product.

Machine Mixing:

1. Add approximately 3.5 pt. (1.65 L) of cool, clean potable water per 80 lb. (36.3 kg) bag to the clean mixer. Always add powder to the liquid for easier blending. Turn on the mixer and begin adding the bags of concrete. Addition of cold water at high temperatures or warm water at low temperatures will aid in adjusting the mix temperature.
2. Mix for 3 – 5 minutes to a lump free consistency.
3. If the material becomes too difficult to mix, add additional water, up to a total of 4.25 pt. (2 L), until a workable mix is obtained. If a slump cone is available, adjust water to achieve a 3–5 in. (75–125 mm) slump, but do not overwater as this will reduce strength and increase permeability.
4. Do not retemper, exceed water limits or add any materials other than clean, potable water.
5. Clean mixer often to prevent buildup of material.

Application

Ideal application conditions are when air, material, and substrate temperatures are between 50°F–90°F (10°C–32°C) within 24 hours of application and placement, and when rain is not forecast 24 hours after. Set times will vary in extremely hot or cold conditions. Do not apply over concrete cured less than 28 days or surfaces that are frozen or contain frost.

1. Dampen the sub–grade before concrete is placed. Do not leave standing puddles. Shovel or place mixture immediately into pre–dampened area. Maintain a minimum thickness of 1.5 in. (38 mm).
2. Once the mixture has been compacted and spread to completely fill forms or patch, strike off immediately with a straight board or screed, moving the edge back and forth with a saw–like motion. Use a darby or bull float to level any ridges and fill voids left by the screed. Hard steel trowel finish is not recommended for air–entrained concrete.
3. Cut the concrete away from forms by running an edging tool or trowel along the forms to compact the slab edges.
4. Cut 1 in. (25 mm) control joints into the slab every 6–8 ft. (1.8–2.4 m) using a grooving tool. For repair overlays, do not bridge over existing expansion or control joints.
5. Concrete shall be used and placed in final position within 1 hour after initial mixing or discarded at that time.
6. Allow the concrete to reach initial set, wait for all water to evaporate from the surface before finishing with a trowel or broom.
7. Under typical conditions, forms may be removed after 3 hours.

Limitations

- Mix with clean water only, do not add accelerators, retarders, or bonding additives.
- Do not add aggregate.
- Do not overwater. Do not exceed water limits listed when mixing.
- Set times will fluctuate in extremely hot or cold weather. Use cold water in severely hot weather; use hot water (not exceeding 120°F (48°C) when mixing in severely cold weather.
- Do not use for repairs less than 1.5 in. (38 mm).
- Do not mix more material than can be placed in 60 minutes.
- Do not apply to surfaces that are frozen or contain frost.
- Protect concrete from freezing during the first 48 hours.
- Clean trowel frequently during application.
- Do not over–work or over–trowel.
- Always comply with the steel reinforcement requirements of applicable building codes for structural applications.
- The use of salts or de–icing chemicals are not recommended during the first winter season following installation.
- As with all cementitious materials, avoid contact with aluminum to prevent adverse chemical reactions and possible product failure.

Limitations (cont.)

- Follow all industry standard safety procedures when working with concrete products including wearing impervious gloves, such as nitrile when handling.
- Rapid Strength Concrete Mix SE should be installed in accordance with local building code provisions and all applicable ASTM standards. Good workmanship and proper detailing & design assures durable, functional, water tight construction.

Curing

Curing means maintaining proper moisture and temperature to increase the strength and durability of concrete and is one of the most important steps in concrete construction. Under hot and windy conditions, all concrete tends to lose moisture unevenly and may develop plastic shrinkage cracks. When weather is too hot, dry or windy, water is lost by evaporation from the concrete, and hydration stops, resulting in finishing difficulties and cracks. In such cases, concrete can be moist cured by a gentle mist of water applied to the surface or covering the concrete surface with clean wet burlap or flat–laid plastic sheeting. Curing should be started as soon as possible without damaging the concrete finish and should continue for a period of 5 days in warm weather at 70°F (21°C) or higher or 7 days in colder weather at 50°–70° F (10°–21°C). In near freezing temperatures the hydration process slows considerably. Protect concrete from freezing during the first 48 hours; if temperatures are expected to fall below 32°F (1°C), plastic sheeting and insulation blankets should be used. The final appearance will be affected by the curing method used. Coverings such as burlap or plastic sheets may affect the color in spots.

Refer to:
ACI 308 Standard Practice for Curing Concrete

Cleaning

Use clean potable water to clean all tools immediately after use. Dried material must be mechanically removed. Use a waste water hardener (e.g. Conglez™ or similar product) for cementitious waste disposal.

Coverage

Each 50 lb. (22.7 kg) bag yields approximately 0.375 cu. ft. wet (10.6 L); or ½ cu. ft. (0.014 m^3) of mortar; 72 bags will cover approximately 1 cu. yd. (0.76 m^3).

6. AVAILABILITY

To locate Tenon® products in your area, please contact:

Phone: 1.651.688.9116
Email: info@tccmaterials.com

7. WARRANTY

Seller warrants that its product will conform to and perform in accordance with the product specifications. The foregoing warranty is in lieu of all other warranties, expressed or implied, including, but not limited to those concerning merchantability and fitness for a particular purpose. Because of the difficulty in ascertaining and measuring damages hereunder, it is agreed that Seller's liability to the Buyer shall not exceed the total amount billed and billable to the Buyer for the product hereunder.

8. MAINTENANCE

Not applicable.

9. TECHNICAL SERVICES

Technical Assistance:
Information is available by calling TCC Materials®
(hours 7:30 AM to 4:00 PM CST):

Phone: 1.651.688.9116
Email: info@tccmaterials.com
Web: tccmaterials.com

Technical and Safety Literature:
To acquire technical and safety literature, please visit our website at: tccmaterials.com.

10. FILING SYSTEM

Division 3

TCC Materials
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