

DOT REPAIR MIX

High-Performance Concrete Repair Material



PRODUCT DATASHEET

DESCRIPTION: Rapid Set® DOT REPAIR MIX is a high-performance, fast-setting, multi-purpose repair material. Durable in wet environments, DOT REPAIR MIX is a blend of Rapid Set hydraulic cement, high performance additives and ASTM C33 concrete sand. DOT REPAIR MIX is non-metallic and no chlorides are added. Mix DOT REPAIR MIX with water to produce a flowable, quality repair material that is ideal where fast strength gain, high durability and low shrinkage are desired. DOT REPAIR MIX is ready for traffic and loading within 1 hour.*

USES: Use DOT REPAIR MIX for concrete repair, highway repair, dowel bar retrofit, construction of pavements and bridges, parking decks and ramps, sidewalks and steps, joint repair and formed work. DOT REPAIR MIX contains an air-entraining admixture, in some geographical regions, for freeze thaw durability.

ENVIRONMENTAL ADVANTAGES: Use DOT REPAIR MIX to reduce your carbon footprint and lower your environmental impact. Production of Rapid Set cement emits far less CO₂ than portland cement. Contact your Rapid Set representative for LEED values and further environmental information.

APPLICATIONS: Apply DOT REPAIR MIX in thicknesses from 1/2" to 2" (1.3 cm to 5.1 cm). For thicker applications up to 24" (61 cm), extend 50% to 100% with coarse aggregate. Use only clean, dry aggregate with a nominal maximum size of 3/8" to 3/4" (0.95 to 1.9 cm) conforming to ASTM C33. Contact CTS Cement for additional information.

SURFACE PREPARATION: For repairs, application surface must be clean, sound and free from any materials that may inhibit bond such as oil, asphalt, curing compound, acid, dirt and loose debris. Mechanically abrade surface and remove all unsound material. Apply DOT REPAIR MIX to a thoroughly saturated surface with no standing water.

MIXING: The use of a power-driven mechanical mixer, such as a mortar mixer or a drill-mounted mixer, is required. Organize work so that all personnel and equipment are in place before mixing. Use clean potable water. DOT REPAIR MIX may be mixed using 3 to 4.5 quarts (2.8 L to 4.3 L) of water per 55-lb (25-kg) bag. Use up to 5 quarts (4.7 L) when extended with dry coarse aggregate. **Use less water to achieve higher strengths.** Place the desired quantity of mix water into the mixing container. While the mixer is running, add DOT REPAIR MIX. Mix for the minimum amount of time required to achieve a lump-free, uniform consistency (usually 1 to 3 minutes). Do not retemper.

PLACEMENT: DOT REPAIR MIX may be placed using traditional construction methods. Organize work so that all personnel and equipment are ready before placement. Place, consolidate and screed quickly to allow for maximum finishing time. Use a method of consolidation that eliminates air voids. On flat work, do not install in layers; install full depth sections and progress horizontally. Do not wait for bleed water. Apply final finish as soon as possible. DOT REPAIR MIX may be troweled, floated or broom finished. The working time for DOT REPAIR MIX is 10 to 25 minutes at 70°F (21°C). To extend working time, use Rapid Set® SET Control retarding admixture from the Rapid Set® Concrete Pharmacy® or use cold mix water. Do not install on frozen surfaces. DOT REPAIR MIX may be applied in temperatures ranging from 45°F to 90°F (7°C to 32°C).

OVERVIEW

Highlights:

Fast: Ready for traffic and loading in 1 hour

Durable: Formulated for long life in critical applications

Structural: For repair and new construction

Extendable: Add rock for large placements

Easy To Use: Mix to fluid or stiff consistency

Multi-Purpose: Use for concrete repair, highway repair, dowel bar retrofit, construction of pavements, bridges, parking decks, ramps, sidewalks, steps, joint repair, formed work and more

Conforms to:

ASTM C928 R3

California Test No. 551

Approved:

State (DOT) and local approvals

MasterFormat® 2016

03 01 30 Maintenance of Cast-in-Place Concrete

03 01 40 Maintenance Of Precast Concrete

03 01 50 Maintenance of Cast Decks and Underlayment

03 01 70 Maintenance of Mass Concrete

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CURING: Water cure all Rapid Set® DOT REPAIR MIX installations by keeping exposed surfaces wet for a minimum of 1 hour. Begin curing immediately after applying the final finish. When experiencing extended setting time due to cold temperature or the use of retarder, begin curing as soon as the surface starts to lose its moist sheen. Longer curing times may be required. The objective of water curing shall be to maintain a continuously wet surface until the product has achieved sufficient strength. A curing compound conforming to ASTM C309 Type 2, Class B may be used. For best results, protect from direct sunlight, wind, and other conditions that may cause rapid drying of material.

COLD WEATHER: Environmental and material temperatures below 70°F (21°C) may delay setting time and reduce the rate of strength gain. Lower temperatures will have a more pronounced effect. Thinner sections will be more significantly affected. To compensate for cold temperatures, keep material warm, use heated mix water, and follow ACI 306 Procedures for Cold Weather Concreting.

WARM WEATHER: Environmental and material temperatures above 70°F (21°C) may shorten setting time and increase the rate of strength gain. Higher temperatures will have a more pronounced effect. To compensate for warm temperatures, keep material cool, use chilled mix water and follow ACI 305 Procedures for Hot Weather Concreting. The use of Rapid Set® SET Control retarding admixture from the Rapid Set® Concrete Pharmacy® will help offset the effects of high temperatures.

YIELD & PACKAGING: DOT REPAIR MIX is available in 55-lb (25 kg) bags. One 55-lb (25 kg) bag of DOT REPAIR MIX will yield approximately 0.5 ft³ (0.01 m³). When extended 60% by weight with quality coarse aggregate, yield is approximately 0.7 ft³ (0.02 m³). When extended 100% by weight with quality coarse aggregate, yield is approximately 0.9 ft³ (0.03 m³).

SHELF LIFE: DOT REPAIR MIX has a shelf life of 12 months when stored properly in a dry location, protected from moisture, out of direct sunlight, and in an undamaged package.

USER RESPONSIBILITY: Before using CTS products, read current technical data sheets, bulletins, product labels and safety data sheets at www.CTScement.com. It is the user's responsibility to review instructions and warnings for any CTS products prior to use.

WARNING: DO NOT BREATHE DUST. AVOID CONTACT WITH SKIN AND EYES. Use material in well-ventilated areas only. Exposure to cement dust may irritate eyes, nose, throat, and the upper respiratory system/lungs. Silica exposure by inhalation may result in the development of lung injuries and pulmonary diseases, including silicosis and lung cancer. Seek medical treatment if you experience difficulty breathing while using this product. The use of a NIOSH/MSHA-approved respirator (P-, N- or R-95) is recommended to minimize inhalation of cement dust. Eat and drink only in dust-free areas to avoid ingesting cement dust. Skin contact with dry material or wet mixtures may result in bodily injury ranging from moderate irritation and thickening/cracking of skin to severe skin damage from chemical burns. If irritation or burning occurs, seek medical treatment. Protect eyes with goggles or safety glasses with side shields. Cover skin with protective clothing. Use chemical resistant gloves and waterproof boots. In case of skin contact with cement dust, immediately wash off dust with soap and water to avoid skin damage. In case of skin contact with wet cement, wash exposed skin areas with cold running water as soon as possible. In case of eye contact with cement dust, flush immediately and repeatedly with clean water, and consult a physician. If wet cement splashes into eyes, rinse eyes with clean water for at least 15 minutes and go to the hospital for further treatment. Please refer to the SDS and www.CTScement.com for additional safety information regarding this material.

LIMITED WARRANTY: CTS CEMENT MANUFACTURING CORP. (CTS) warrants its materials to be of good quality and, at its option, will replace or refund the purchase price of any material proven to be defective within one (1) year from date of purchase. The above remedies shall be the limit of CTS' responsibility. Except for the foregoing, all warranties expressed or implied, including merchantability and fitness for a particular purpose, are excluded. CTS shall not be liable for any consequential, incidental, or special damages arising directly or indirectly from the use of the materials.

⚠ WARNING
CANCER and REPRODUCTIVE HARM - www.P65Warnings.ca.gov

TYPICAL PHYSICAL DATA

Neat Bag (3.0 to 4.5 quarts)	60% Extension (3.5 to 4.75 quarts)	100% Extension (3.5 to 5.0 quarts)
Yield		
0.5 ft ³	0.7 ft ³	0.9 ft ³
Compressive Strength		
ASTM C109 Mod.	ASTM C39	ASTM C39
1 hr* 3300 psi	1 hr* 2800 psi	1 hr* 2500 psi
3 hrs 5000 psi	3 hrs 4600 psi	3 hrs 4200 psi
24 hrs 7000 psi	24 hrs 6800 psi	24 hrs 6500 psi
7 days 7500 psi	7 days 7200 psi	7 days 7000 psi
28 days 9500 psi	28 days 9000 psi	28 days 8500 psi
Flexural Strength, ASTM C78		
4 hrs 450 psi	4 hrs 400 psi	4 hrs 400 psi
7 days 700 psi	7 days 650 psi	7 days 600 psi
28 days 900 psi	28 days 850 psi	28 days 800 psi
Modulus of Elasticity, ASTM C469		
7 days 4,400,000 psi	7 days 4,100,000 psi	7 days 3,900,000 psi
28 days 5,100,000 psi	28 days 4,500,000 psi	28 days 4,000,000 psi
Slant Shear Bond Strength, ASTM C882 per C928		
1 day 1500 psi	1 day 1200 psi	1 day 1100 psi
7 days 2000 psi	7 days 1800 psi	7 days 1700 psi
Splitting Tensile Strength, ASTM C496		
7 days 700 psi	7 days 500 psi	7 days 390 psi
28 days 900 psi	28 days 600 psi	28 days 415 psi
Resistance of Concrete to Rapid Freezing and Thawing, ASTM C666 Procedure A		
Durability factor 300 Cycles: 95%	Durability factor 300 Cycles: 95%	Durability factor 300 Cycles: 95%
Scaling Resistance, ASTM C672 per C928		
Scaling of material at 25 cycles: 0.05 lb/ft ²	Visual rating at 25 cycles - 2	Visual rating at 25 cycles - 1
Length Change, ASTM C157 modified per ASTM C928		
Air Cure: -0.08% Water Cure: 0.02%	Air Cure: -0.07% Water Cure: 0.01%	Air Cure: -0.05% Water Cure: 0.05%
*Data obtained at flow consistency of 105 by ASTM C1437 at laboratory conditions	*Data obtained at slump consistency at 6" by ASTM C143 at laboratory conditions	*Data obtained at slump consistency at 6" by ASTM C143 at laboratory conditions

*After final set
Results will vary depending on aggregates and jobsite conditions



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