



The Chemical Company

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Ph: 800-474-7570, 602-272-8128 Fax: 602-272-8014
www.BestMaterials.com Email: Sales@BestMaterials.com

Technical Data Guide

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Maintenance of
Concrete

MasterEmaco® T 545DOT

Very rapid setting chemical-action repair mortar

FORMERLY SET® 45 CAL TRAN

PACKAGING

50 lb (22.6 kg) polyethylene-lined bags

YIELD

A 50 lb (22.6 kg) bag of mixed with the required amount of water produces a volume of approximately 0.39 ft³ (0.011 m³); 60% extension using ½" (13 mm) rounded, sound aggregate produces approximately 0.58 ft³ (0.016 m³).

STORAGE

Store in unopened containers in cool, clean, dry conditions

SHELF LIFE

1 year when properly stored

VOC CONTENT

0 g/L less water and exempt solvents

DESCRIPTION

MasterEmaco T 545DOT is a one-component magnesium phosphate-based patching and repair mortar. This concrete repair and anchoring material has a minimum initial set time of 15 minutes and a minimum final set time of 25 minutes @ 70° F and takes rubber tire traffic in 45 minutes.

PRODUCT HIGHLIGHTS

- Only requires the addition of potable water
- Reaches 2,000 psi compressive strength in 1 hour to rapidly return repairs to service
- Wide temperature use range from below freezing to hot weather exposures
- Very low drying shrinkage for improved bond to concrete for repair and anchoring applications
- Resistant to freeze/thaw cycles and deicing chemicals so it is usable in most environments
- Air cure only, no wet curing compounds required
- Coefficient of thermal expansion similar to Portland cement concrete for more permanent repairs
- Higher sulfate resistance than conventional mortars

APPLICATIONS

- Interior and exterior
- Horizontal and formed vertical or overhead repairs
- Applications requiring high early-strength gain
- Structural concrete repairs
- Partial and full-depth repairs
- Grouting applications such as anchor bolts, rebar, dowel rods and precast applications

SUBSTRATES

- Concrete

HOW TO APPLY

SURFACE PREPARATION

1. Concrete must be structurally sound and fully cured (28 days).
2. Saw cut the perimeter of the area being repaired into a square with a minimum depth of ½" (13 mm).
3. The surface to be repaired must be clean, dry, strong, and roughened to a CSP of 8–9 following ICRI Guideline no. 310.2 to permit proper bond.
4. Any surface carbonation in the repair area will inhibit chemical bonding. Apply a pH indicator to the prepared surface to test for carbonation. If carbonation is present, abrade surface to a depth that is not carbonated.

Technical Data

Composition

MasterEmaco T 545DOT is a magnesium-phosphate patching and repair mortar.

Test Data

PROPERTY	RESULTS	TEST METHOD
Compressive strength, psi (MPa), 3 hour 24 hour	 4000 (27.6) 5200 (35.9)	California Test 551 - Section 1
Flexural Strength, psi (MPa), 24 hours	 525 (3.6)	California Test 551 - Section 4
Bond Strength, psi (MPa), SSD Bond Strength @ 24 hours Dry Bond Strength @ 24 hours	 350 (2.4) 420 (2.9)	California Test 551 - Section 5
Water Absorption, %	9	California Test 551 - Section 8
Abrasion Resistance, grams 24 hours	 21 grams	California Test 550
Drying Shrinkage, % 4 days	 0.05	ASTM C 596
Soluble Chlorides by weight, %	0.03	California Test 422
Water Soluble Sulfates by weight, %	0.15	California Test 417

* All tests were performed with neat material (no aggregate)
 Test results are averages obtained under laboratory conditions. Expect reasonable variations.

MIXING

1. MasterEmaco T 545DOT must be mixed, placed, and finished within 15 minutes in normal temperatures (72° F [22° C]). Only mix quantities that can be placed in 15 minutes or less.
2. Do not deviate from the following sequence; it is important for reducing mixing time and producing a consistent mix. Use a minimum 1/2" slow-speed drill and mixing paddle or an appropriately sized mortar mixer. Do not mix by hand.
3. Pour potable water into mixer. Water content is critical. Use a maximum of 4 pts (1.9 L) of water per 50 lb (22.6 kg) bag of MasterEmaco T 545DOT. Do not deviate from the recommended water content.
4. Add the powder to the water and mix for approximately 2½ to 3 minutes.
5. Use neat material for patches from ½–2" (13–51 mm) in depth or width. For deeper patches, extend a 50 lb (22.6 kg) bag of MasterEmaco T 545 HT by adding up to 30 lbs (13.6 kg) of properly graded, dust-free, hard, rounded aggregate or noncalcareous crushed angular aggregate, not exceeding ½" (13 mm) in accordance with ASTM C 33, #8. If aggregate is damp, reduce water content accordingly. Special procedures must be followed when angular aggregate is used. Contact your local BASF representative for more information. (Do not use calcareous aggregate made from soft limestone. Test aggregate for fizzing with 10% HCL). Please refer to MasterEmaco T 545 HT product data guide for further information. Note: Aggregate addition can affect compressive strength. Testing with the locally sourced aggregate is required to fully evaluate its effect on compressive strength.

APPLICATION

1. Immediately place the mixture onto the properly prepared substrate. Work the material firmly into the bottom and sides of the patch to ensure good bond.
2. Level the MasterEmaco T 545DOT and screed to the elevation of the existing concrete. Minimal finishing is required. Match the existing concrete texture.

CURING

No curing is required, but protect from rain immediately after placing. Liquid-membrane curing compounds or plastic sheeting may be used to protect the early surface from precipitation, but never wet cure.

FOR BEST PERFORMANCE

- Color variations are not indicators of abnormal product performance.
- Do not add sand, fine aggregate, or Portland cement.
- Do not use MasterEmaco T 545DOT for patches less than ½" (13 mm) deep.
- Do not use limestone aggregate.
- Do not deviate from the recommended water content printed on the bag.
- Precondition these materials to approximately 70° F (21° C) for 24 hours before using.
- Protect repairs from direct sunlight, wind, and other conditions that could cause rapid drying of material.
- When mixing or placing in a closed area, provide adequate ventilation.
- Do not use a precision machinery grout.
- Prevent any moisture loss during the first 3 hours after placement. Protect MasterEmaco T 545DOT with plastic sheeting or a curing compound in rapid-evaporation conditions.
- Do not wet cure.
- When using in contact with galvanized steel or aluminum, consult your local BASF sales representative.
- Do not mix partial bags
- Make certain the most current versions of product data sheet and SDS are being used; visit www.master-builders-solutions.BASF.us to verify the most current versions.
- Proper application is the responsibility of the user. Field visits by BASF personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

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Read, understand and follow all Safety Data Sheets and product label information for this product prior to use. The SDS can be obtained by visiting www.master-builders-solutions.basf.us, e-mailing your request to basfbcst@basf.com or calling 1(800)433-9517. Use only as directed.

**For medical emergencies only,
call ChemTrec® 1(800)424-9300.**

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