

MasterEmaco® T 545 and T 545HT

Very rapid-setting chemical action mortar

FORMERLY SET® 45 AND SET® 45 HW

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

12 months when properly stored

VOC CONTENT

0 g/L less water and exempt solvents

DESCRIPTION

MasterEmaco T 545 is a one-component magnesium phosphate-based mortar. Offered in two formulations: T 545 for ambient and substrate temperatures below 85° F (29° C) and T 545 HT for ambient and substrate temperatures ranging from 85 to 100° F (29 to 38° C).

PRODUCT HIGHLIGHTS

- Single component to just add water and mix
- Reaches 2,000 psi compressive strength in 1 hour to rapidly return repairs to service
- Takes rubber tire traffic in 45 minutes
- 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
- Cold temperature 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, 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.

MIXING

1. MasterEmaco T 545 must be mixed, placed, and finished within 10 minutes in normal temperatures (71° F [21° C]). Only mix quantities that can be placed in 10 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 ½" slow-speed drill and mixing paddle or an appropriately sized forced-action mortar mixer. Do not mix by hand.

Technical Data

Composition

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

Test Data

| PROPERTY | RESULTS | | | | TEST METHOD |
|--|--|---|---|----------------------|---|
| Typical Compressive Strengths*, psi (MPa) | | | | | ASTM C 109, modified |
| | Plain Concrete | T 545 | T 545 | T 545 HT | |
| | 72° F (22° C) | 72° F (22° C) | 36° F (2° C) | 95° F (35° C) | |
| 1 hour | — | 2,000 (13.8) | — | — | |
| 3 hour | — | 5,000 (34.5) | — | 3,000 (20.7) | |
| 6 hour | — | 5,000 (34.5) | 1,200 (8.3) | 5,000 (34.5) | |
| 1 day | 500 (3.5) | 6,000 (41.4) | 5,000 (34.5) | 6,000 (41.4) | |
| 3 day | 1,900 (13.1) | 7,000 (48.3) | 7,000 (48.3) | 7,000 (48.3) | |
| 28 day | 4,000 (27.6) | 8,500 (58.6) | 8,500 (58.6) | 8,500 (55.2) | |
| Note: Only T 545 formula, tested at 72° F (22° C), obtains 2,000 psi (13.8 MPa) compressive strength in 1 hour. | | | | | |
| Modulus of Elasticity, psi (MPa) | | | | | ASTM C 469 |
| | | 7 days | 28 days | | |
| MasterEmaco T 545 | | 4.18 x 10 ⁶ (2.88 x 10 ⁴) | 4.55 x 10 ⁶ (3.14 x 10 ⁴) | | |
| MasterEmaco T 545 HT | | 4.90 x 10 ⁶ (3.38 x 10 ⁴) | 5.25 x 10 ⁶ (3.62 x 10 ⁴) | | |
| Freeze/thaw durability test, % RDM, 300 cycles, for MasterEmaco T 545 and T 545 HT | | | | | 80 ASTM C 666, Procedure A (modified**) |
| Scaling resistance to deicing chemicals, MasterEmaco T 545 and T 545 HT | | | | | ASTM C 672 |
| | 5 cycles | | 0 | | |
| | 25 cycles | | 0 | | |
| | 50 cycles | | 1.5 (slight scaling) | | |
| Sulfate resistance | | | | | ASTM C 1012 |
| | MasterEmaco T 545 length change after 52 weeks, % | | 0.09 | | |
| | Type V cement mortar after 52 weeks, % | | 0.20 | | |
| Typical setting times, min, for MasterEmaco T 545 at 72° F (22° C), and MasterEmaco T 545 HT at 95° F (35° C) | | | | | Gilmore ASTM C 266, modified |
| | Initial set | | 9 – 15 | | |
| | Final set | | 10 – 20 | | |
| Coefficient of thermal expansion,*** both MasterEmaco T 545 and T 545 HT Hot Weather coefficients | | | | | CRD-C 39 7.15 x 10 ⁻⁶ /° F (12.8 x 10 ⁻⁶ /° C) |
| Flexural Strength, psi (MPa), 3 by 4 by 16" (75 by 100 by 406 mm) prisms, 1 day strength, | | | | | ASTM C 78, modified |
| | MasterEmaco T 545 | | 550 (3.8) | | |
| | MasterEmaco T 545 with 3/8" (9 mm) pea gravel | | 600 (4.2) | | |
| | MasterEmaco T 545 with 3/8" (9 mm) crushed angular noncalcareous hard aggregate | | 650 (4.5) | | |

* All tests were performed with neat material (no aggregate)

**Method discontinues test when 300 cycles or an RDM of 60% is reached.

***Determined using 1 by 1 by 11" (25 mm by 25 mm by 279 mm) bars. Test was run with neat mixes (no aggregate).

Extended mixes (with aggregate) produce lower coefficients of thermal expansion.

Test results are averages obtained under laboratory conditions. Expect reasonable variations.

3. Pour potable water into mixer. Use a maximum of 4 pts (1.9 L) of water per 50 lb (22.6 kg) bag of MasterEmaco T 545. Do not deviate from the recommended water content.
4. Add the powder to the water and mix for approximately 1–1½ minutes.
5. Use neat material for repairs from ½–2" (6–51 mm) in depth. For deeper repairs, 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 non-calcareous crushed angular aggregate, not exceeding ½" (13 mm) in accordance with ASTM C 33, #8 (Test aggregate for fizzing with 10% HCl). 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.

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 545 and screed to the elevation of the existing concrete. Minimal finishing is required.

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.
- MasterEmaco T 545 will not freeze at temperatures above -20° F (-29° C) when appropriate precautions are taken.
- Do not add sand, fine aggregate, or Portland cement.
- Do not use MasterEmaco T 545 for repairs less than ½" (13 mm) deep. For deep repairs, use MasterEmaco T 545 HT formula extended with aggregate, regardless of the temperature. Consult your BASF representative for further instructions.
- 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 for the first three hours.
- When mixing or placing in a closed area, provide adequate ventilation.
- Do not use as a precision machinery grout.
- When using in contact with galvanized steel or aluminum, consult your local BASF sales representative.
- Do not mix partial bags.
- For professional use only; not for sale to or use by the general public.
- 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.

HEALTH, SAFETY AND ENVIRONMENTAL

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.**

LIMITED WARRANTY NOTICE

BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Technical Data Guide, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is the replacement of product or refund of the purchase price, at the sole option of BASF. Any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on BASF's present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. BASF reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.