

**FUTURA®-45****Rapid-Hardening Horizontal Repair Mortar****DESCRIPTION**

FUTURA-45 is a one-component, cementitious, rapid-hardening structural repair mortar designed for horizontal applications. FUTURA-45 is composed of selected cements, graded sands and chemical additives. This proprietary blend produces a rapid-setting structural repair mortar, even in cold weather conditions, without the aid of chloride- or gypsum-based accelerators.

**USES**

FUTURA-45 is ideal for structural patching of concrete pavements, bridges, parking decks, airport runways and taxiways. FUTURA-45 is also designed for repair of industrial floors, expansion joint edges, sidewalks and general commercial applications, along with grouting keyways.

**FEATURES/BENEFITS**

- Temperature usage range from 40 to 100° F (4.4 to 38° C)/Can be used for a wide range of applications.
- Rapid strength gain/Repairs can be opened to traffic in as little as three hours.
- May be top-coated with an epoxy at 24 hours.
- Shrinkage compensated/Minimizes cracking and de-bonding.
- Contains no chlorides/Will not promote reinforcing steel corrosion.
- Contains no added gypsum/Excellent resistance to freeze-thaw and wet environments.
- Low permeability/Protects reinforcing steel from future corrosion.
- Economical/Can be extended up to 50% by weight with aggregate.
- Flowable/Easy to apply/Saves labor.

**SPECIFICATIONS:**

Conforms to ASTM C 928-99a "Packaged, Dry, Rapid Hardening Cementitious Materials for Concrete Repair," Classification R1, R2 & R3, Rapid Hardening.

**SHELF LIFE**

12 months when stored on pallets in a dry, cool area.

**YIELD**

- 50 lb (22.7 kg) bag yields 0.43 ft<sup>3</sup> (12.16 L)
- Extended with 12.5 lb (5.68 kg) of aggregate yields 0.51 ft<sup>3</sup> (14.49 L)
- Extended with 25 lb (11 kg) of aggregate yields 0.60 ft<sup>3</sup> (17.06 L)

Yields listed above are based on 5.25 pints (2.48 L) of water per 50-lb bag and will vary based on substrate profile, mix ratios, aggregate type and waste. Field trials should be performed to determine yields based on aggregate type.

**TECHNICAL DATA\***

The following physical properties were determined using the maximum water to powder ratio of 5.00 pints (1.89 L) per 50 lb (22.7 kg) of FUTURA-45 at 75° F (23.5° C).

**Set Time per ASTM C 191**

Initial	45-60 Minutes
Final	70-90 Minutes
Working Time	45 Minutes

**Flow**

Per ASTM C 928 100% after 15 Minutes

**Compressive Strength**

Per ASTM C 109	
@ 3 hours	3500 psi (24 MPa)
@ 1 day	5200 psi (35 MPa)
@ 28 days	8500 psi (58 MPa)

**Bond Strength**

Per ASTM C 882 <sup>1</sup>	
@ 1 day	1500 psi (10 MPa)
@ 28 days	2500 psi (17 MPa)

**Modulus of Elasticity**

Per ASTM C 469 4.22 x 10<sup>6</sup> psi (29 GPa)

**Length Change**

Per ASTM C 928	
Drying Shrinkage	-0.12%
Wet Expansion	+0.10%

**Scaling Resistance**

Per ASTM C 672 @ 25 Cycles	
Visual Rating	0 Rating – No Scaling
Mass Loss	0.00 – No Mass Loss

\*All technical data is typical information, but may vary due to testing methods, conditions and procedures.

<sup>1</sup>Modified – No bonding agent used. Pre-dampening of properly prepared substrate.

<sup>2</sup>Cured after three hours at 73+/-3° F and 50+/-4% RH.

**CONTINUED ON REVERSE SIDE...**

**FOR BEST PERFORMANCE:**

- FUTURA-45 is recommended for concrete repairs only.
- Not intended to be used as a self-leveling underlayment or topping; FUTURA-45 is designed as a trowel-down repair mortar.
- Protect from freezing for a minimum of 24 hours.
- Do not bridge moving cracks. Extend existing control and expansion joints through FUTURA-45.
- For large areas with no control, expansion or construction joints, refer to ACI guidelines.
- Do not exceed a length-to-width ratio of 2 to 1 for the repair area.
- Do not add any admixtures.
- Exceeding liquid requirements shall result in reduced physical properties.
- Realize that set time will decrease as the product, air, substrate and mixing liquid temperature increases and will increase as the temperature decreases.
- Repair areas should be saw cut and slightly undercut to a minimum depth of a 1/2" (12.5 mm). Do not featheredge.
- Protect from conditions that may cause early water loss, high winds, low humidity, high temperature and direct sunlight. Early water loss is exasperated in thin applications.
- Realize that the use of extender aggregate will alter physical properties.
- Failure to follow industry standard practices may result in decreased material performance.
- Proper application is the responsibility of the user. Field visits by W. R. MEADOWS personnel are for the purpose of making technical recommendations only, and are not to supervise or provide quality control on the jobsite.

**SURFACE PREPARATION**

Perform surface preparation in accordance with ICRI Technical Guidelines No. 03730, "Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion." Mechanically abrade existing substrate to remove all unsound concrete, but do not use excessive force, which may cause micro-fracturing. Substrate must be structurally sound and free of any contaminants that will adversely affect the bond. Prepared substrate surface must have a sufficient profile of 1/4" to ensure adequate mechanical lock. Saw cut perimeter of repair zone to a depth of 1/2" to avoid possible premature cracking due to point loading.

Completely expose all reinforcing steel, ensuring a minimum clearance of 3/4" behind reinforcing steel. Abrade entire circumference of steel to a white metal finish. Perform reinforcing steel preparation in accordance with ICRI Technical Guidelines No. 03730. Pre-dampen concrete substrate to a saturated surface dry (SSD) condition. Remove all standing water and puddles.

**MIXING**

Mix only complete bags. Using a suitable sized mortar type mixer, 5.0 pints (2.36 L) of clean water to the mixer per 50 lbs. (22.7 kg) bag of FUTURA-45. If extension is required, add appropriate amount of aggregate to mixer prior to the addition of FUTURA-45. Mix for 3-5 minutes until homogenous and lump-free. Do not mix more products than can be mixed, placed and finished in 45 minutes at 70° F (21° C). Do not over-mix.

**LIMITED WARRANTY**

"W. R. MEADOWS, INC. warrants at the time and place we make shipment, our material will be of good quality and will conform with our published specifications in force on the date of acceptance of the order." Read complete warranty. Copy furnished upon request.

**Disclaimer**

The information contained herein is included for illustrative purposes only, and to the best of our knowledge, is accurate and reliable. W. R. MEADOWS, INC. cannot however under any circumstances make any guarantee of results or assume any obligation or liability in connection with the use of this information. As W. R. MEADOWS, INC. has no control over the use to which others may put its product, it is recommended that the products be tested to determine if suitable for specific application and/or our information is valid in a particular circumstance. Responsibility remains with the architect or engineer, contractor and owner for the design, application and proper installation of each product. Specifier and user shall determine the suitability of products for specific application and assume all responsibilities in connection therewith.

**AGGREGATE EXTENSION**

For repairs greater than 1.5" (38.25 mm) in depth, extend FUTURA-45 with 12.5 lbs (5.68 kg) of aggregate. For repairs greater than 4" (102 mm) in depth, extend FUTURA-45 with 25 lbs (11.36 kg) of aggregate. The aggregate must be a minimum 3/8" (9 mm) size, saturated but surface dry condition, clean pea gravel. Always add the aggregate to the mixing water prior to the addition of FUTURA-45. For configurations requiring greater than 50% extension or larger areas, contact your local W. R. MEADOWS representative. Proper stress relief must be given for large patch areas.

**PLACEMENT**

Apply FUTURA-45 by trowel or screed. Compact FUTURA-45 well against the prepared substrate prior to bulk placement. Ensure complete encapsulation of reinforcing steel. Finish surface by screeding FUTURA-45 to a level surface. For a rough finish, a broom or burlap bag is suitable. Do not re-temper or over-work.

Application Range: 40 to 100° F (4.4 to 38° C)

Follow ACI 305-R89 "Standard on Hot Weather Concreting" or ACI 306-R88 "Standard on Cold Weather Concreting," when applicable.

For epoxy-based coating systems, wait a minimum of six hours at 75° F (23.5° C) prior to coating. Follow application instructions and recommendations of the coating manufacturer. For all other systems, contact the coating manufacturer.

**CURING**

Cure FUTURA-45 immediately following application using a suitable curing compound from W. R. MEADOWS (2250-WHITE or 1130-CLEAR) or in accordance with ACI 308. On large patches, cure repair zone as work proceeds. Wet curing for a minimum of one day, followed by a suitable curing compound, helps minimize shrinkage.

**SAFETY AND TOXICITY**

Avoid inhalation of dust. Avoid direct contact with this product. Utilize gloves and safety glasses to minimize direct contact. If contact occurs, wash affected areas with mild soap and water. Keep product out of reach of children. FOR INDUSTRIAL USE ONLY. Refer to Material Safety Data Sheet for complete health and safety information.

**FOR BEST PERFORMANCE, VERIFY MOST RECENT TECHNICAL DATA SHEET IS BEING USED BY VISITING OUR WEBSITE:**

[www.wrmeadows.com](http://www.wrmeadows.com)

**ALSO, FOR ADDITIONAL RESTORATION PRODUCTS FROM W. R. MEADOWS, VISIT OUR WEBSITE.**