**FUTURA®-15**

**Very Rapid-Hardening Horizontal Repair Mortar**

**DESCRIPTION**
FUTURA-15 is a one-component, cementitious, very rapid-hardening, structural repair mortar designed for horizontal applications. FUTURA-15 is composed of selected cements, graded sands, and chemical additives. This proprietary blend produces a very rapid-setting structural repair mortar, even in cold weather conditions, without the aid of chloride- or gypsum-based accelerators.

**USES**
FUTURA-15 is ideal for structural patching of concrete pavements, bridges, parking decks, and airport runways and taxiways. FUTURA-15 is also designed for repair of industrial floors, expansion joint nosings, sidewalks, and general commercial applications, along with grouting keyways.

**FEATURES/BENEFITS**
- Temperature usage range from 20° - 85°F (-7° - 29°C)/Can be used for a wide range of applications.
- May be top-coated with an epoxy in as little as four hours.
- Rapid strength gain/Repairs can be opened to traffic in as little as one hour.
- 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.
- Self-compacting/Easy to apply/Saves labor.

**PACKAGING**
50 Lb. (22.7 kg) Bags

**COVERAGE**
Bag yields 0.43 ft³ (12.16 L). Extended with 12.5 lb. (5.68 kg) of aggregate yields 0.51 ft³ (14.49 L). Extended with 25 lb. (11 kg) of aggregate yields 0.60 ft³ (17.06 L). Yields 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.

**SHELF LIFE**
Store on pallets in a cool, dry location. Do not store product outdoors. Shelf life of properly stored products is one year from date of manufacture when stored in unopened, original packaging.

**SPECIFICATIONS:**
Conforms to ASTM C 928-99a “Packaged, Dry, Rapid Hardening Cementitious Materials for Concrete Repair,” Classification R1, R2 & R3, Very Rapid Hardening.

**TECHNICAL DATA**
The following physical properties were determined using the maximum water to powder ratio of 5.25 pints (2.48 L) per 50 lb. (22.7 kg) of FUTURA-15 at 75°F (23.5°C)

Set Time per ASTM C 191
- Initial 14-18 Minutes
- Final 20-25 Minutes
- Working Time 7-9 Minutes
- Flow Per ASTM C 928 103% after 5 Minutes
- Compressive Strength per ASTM C 109
  - @ 1 hour 2,000 psi (14 MPa)
  - @ 2 hours 3,500 psi (24 MPa)
  - @ 3 hours 4,400 psi (30 MPa)
  - @ 1 day 6,000 psi (42 MPa)
  - @ 7 days 8,500 psi (59 MPa)
  - @ 28 days 9,500 psi (65 MPa)
- Bond Strength per ASTM C 882
  - @ 1 day 2,370 psi (16 MPa)
  - @ 28 days 3,910 psi (27 MPa)
- Modulus of Elasticity per ASTM C 469
  - @ 28 days 5.16 x 10⁶ psi (35.5 GPa)
- Length Change
  - Per ASTM C 928
    - Drying Shrinkage 0.11%
    - Wet Expansion +0.08%
- Scaling Resistance
  - Per ASTM C 672 25 Cycles
    - Visual Rating 0 Rating – No Scaling
    - Mass Loss 0.00 – No Mass Loss
    - Freeze-Thaw Resistance
      - Per ASTM C 666 (Procedure A)
        - At 300 Cycles 100% RDM
        - AASHTO T260, Chloride Analysis
          - Weight % of sample 0.005
        - All technical data is typical information, but may vary due to testing methods, conditions and procedures.
        - 1Independent reports are available upon request.
        - 2Modified – No bonding agent used. Pre-dampening of properly prepared substrate.
        - 3Cured after 3 hours at 73 +/-3°F and 50 +/-4% RH
        - 4RDM-Relative Dynamic Modulus

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APPLICATION

Surface Preparation ... Prepare concrete substrate in accordance with International Concrete Repair Institute (ICRI) Technical Guideline #310.2-1997: Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.

Mechanically roughen or high pressure water-jet existing concrete substrate to a minimum concrete surface profile (CSP) of CSP-6 or higher, depending on substrate condition. Remove all unsound concrete and provide a profiled, porous surface. Substrate must be structurally sound, dust-free, and free of grease, oil, dirt, curing compounds, release agents, or any other surface or penetrated contaminants that will adversely affect bond. Sanding, grinding, wire-abricrating, or similar are not approved surface preparation methods.

Substrate must be saturated surface dry (SSD) and free of standing water.

Saw cut perimeter of repair zone to a depth of 1/2” (12.5 mm) to avoid featheredging. Completely expose all reinforcing steel, ensuring a minimum clearance of 3/4” behind reinforcing steel. Abrace entire circumference of steel to a white metal finish. Perform reinforcing steel preparation in accordance with ICRI Technical Guidelines No. 310.1R-2008: Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion.

Mixing ... Mix only complete bags. Using a suitable sized mortar type mixer, add 4.75-5.25 pints (2.24-2.48 L) of clean water to the mixer per bag of FUTURA-15. If extension is required, add appropriate amount of aggregate to mixer prior to the addition of FUTURA-15. Mix for 3-5 minutes until homogenous and lump-free. Do not mix more product than can be mixed, placed, and finished in 15 minutes at 70°F (21°C). Do not over-mix.

Aggregate Extension ... For repairs greater than 2” (51 mm) in depth, extend FUTURA-15 with 12.5 lbs. (5.68 kg) of aggregate. For repairs greater than 4” (102 mm) in depth, extend FUTURA-15 with 25 lbs. (11.36 kg) of aggregate. The aggregate must be a minimum of 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-15. 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-15 by trowel or screed. Compact FUTURA-15 well against the prepared substrate prior to bulk placement. Ensure complete encapsulation of reinforcing steel. Finish surface by screeding FUTURA-15 to a level surface. For a rough finish, a broom or burlap bag is suitable. Do not over-temper or over-work.

Application Range: 20° - 85°F (-7° - 29°C)

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

FUTURA-15 May be top-coated with an epoxy-based overlay after four hours. For most systems, wait a minimum of 24 hours prior to top-coating. Consult appropriate installation guide for the product to be overlaid.

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.