



DATA SHEET 3900-200

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

- May be top-coated with an epoxy in as little as four hours.
- Temperature usage range from -7° - 29°C (20° - 85° F) /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 debonding.
- 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

22.7 kg (50 Lb.) Bags

COVERAGE

Bag yields 12.16 L (0.43 ft.³). Extended with 5.68 kg (12.5 lb.) of aggregate yields 14.49 L (0.51 ft.³). Extended with 11 kg (25 lb.) of aggregate yields 17.06 L (0.60 ft.³). Yields are based on 2.48 L (5.25 pints) of water per 22.7 kg (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 2.48 litres (5.25 pints) per 22.7 kg (50 lb.) of FUTURA-15 at 23.5° C (75° F).

Set Time Per ASTM C 191

Initial	14-18 Minutes
Final	20-25 Minutes
Working Time	7 – 9 minutes
Flow Per ASTM C 928 ¹	103% after 5 minutes

Compressive Strength Per ASTM C 109¹

@ 1 hour	14 MPa (2,000 psi)
@ 2 hours	24 MPa (3,500 psi)
@ 3 hours	30 MPa (4,400 psi)
@ 1 day	42 MPa (6,000 psi)
@ 7 days	59 MPa (8,500 psi)
@ 28 days	65 MPa (9,500 psi)

Bond Strength Per ASTM C 882^{1,2}

@ 1 day	16 MPa (2,370 psi)
@ 28 days	27 MPa (3,910 psi)

Modulus of Elasticity Per ASTM C 469¹

	35.5 GPa (5.16 x 10 ⁶)
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Length Change Per ASTM C 928¹

Drying Shrinkage ³	-0.11%
Wet Expansion	+0.08%

Scaling Resistance Per ASTM C 672¹ @ 25 Cycles

Visual Rating	0 Rating – No Scaling
Mass Loss	0.00 – No Mass Loss

Freeze-Thaw Resistance Per ASTM C 666 (Procedure A)¹

At 300 Cycles	100% RDM4
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AASHTO T260, Chloride Analysis

Weight % of sample	0.005
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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 @ 22.8° C (73° F) ±3° and 50±4% RH

⁴RDM – Relative Dynamic Modulus.

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-abrading, 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 12.5 mm (1/2") to avoid featheredging. Completely expose all reinforcing steel, ensuring a minimum clearance of 19.1 mm (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. 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 2.24-2.48 L (4.75-5.25 pints) 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 21° C (70° F). Do not over-mix.

Aggregate Extension ... For repairs greater than 51 mm (2") in depth, extend FUTURA-15 with 5.68 kg (12.5 lb.) of aggregate. For repairs greater than 102 mm (4") in depth, extend FUTURA-15 with 11.36 kg (25 lb.) of aggregate. The aggregate must be a minimum of 9 mm (3/8") 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 re-temper or over-work.

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

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.

Curing ... Cure FUTURA-15 immediately following application using a suitable water-based curing compound, such as 1100-CLEAR or 2200-WHITE from W. R. MEADOWS, 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.

PRECAUTIONS

FUTURA-15 is recommended for concrete repairs only. It is not intended to be used as a self-leveling underlayment or topping; FUTURA-15 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-15. For large areas with no control, expansion or construction joints, refer to American Concrete Institute (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 12.5 mm (1/2"). Do not featheredge. Protect from conditions that may cause early water loss: high winds, low humidity, high temperature, direct sunlight. Early water loss is exasperated in thin applications. Realize that the use of extender aggregate in most cases will reduce the physical properties. Cylinder testing per ASTM C 39 as compared to cube testing per ASTM C 109 will not correlate due to test sample geometries. Colder temperatures will delay strength gain. Do not use evaporation retardants, such as EVAPRE™, with this product. Failure to follow industry standard practices may result in decreased material performance.

HEALTH AND SAFETY

Avoid direct contact with this product, as it may cause skin and eye irritation. Utilize gloves and safety glasses to minimize direct contact. Avoid inhalation of dust. Inhalation may cause respiratory irritation and/or lung disease (silicosis). This product contains silicon dioxide, which is classified by the IARC and NTP as probably carcinogenic to humans (IARC Group 2A). The use of NIOSH-approved respiratory protection is recommended in dusty environments. Refer to Product Material Safety Data Sheet for complete health and safety information. Keep product out of reach of children.

MASTERFORMAT NUMBER AND TITLE

32 01 29.61 - Partial Depth Patching of Rigid Paving

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WARRANTY: W. R. Meadows of Canada warrants that, at the time and place we make shipment, our materials will be of good quality and will conform with our published specifications in force on the date of acceptance of the order. THE FOREGOING WARRANTY SHALL BE EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND ALL OTHER WARRANTIES OTHERWISE ARISING BY OPERATION OF LAW, COURSE OF DEALING, CUSTOM OF TRADE OR OTHERWISE. As the exclusive remedy for breach of this Warranty, we will replace defective materials, provided, however, that the buyer examine the materials when received and promptly notify us in writing of any defect before the materials are used or incorporated into a structure. Three (3) months after W. R. Meadows of Canada has shipped the materials, all our Warranty and other duties with respect to the quality of the materials delivered shall conclusively be presumed to have been satisfied, all liability therefore terminates and no action for breach of any such duties may thereafter be commenced. W. R. Meadows of Canada shall in no event be liable for consequential damages. Unless otherwise agreed to in writing, no warranty is made with respect to materials not manufactured by W. R. Meadows of Canada. We cannot warrant or in any way guarantee any particular method of use or application or the performance of materials under any particular condition. Neither this Warranty nor our liability may be extended or amended by our salesmen, distributors or representatives, or by our distributor's representatives, or by any sales information or drawings.

LEED INFORMATION

May help contribute to LEED credits:

- MR Credit 2: Construction Waste Management
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- MR Credit 5: Regional Materials

For most recent data sheet, further LEED information, and MSDS, visit www.wrmeadows.com.



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