



**Surface
Renovation
Mortars**

EMACO® R350 CI

One-component, polymer-modified, shrinkage-compensated lightweight vertical/overhead repair mortar with integral corrosion inhibitor

Description

EMACO® R350 CI repair mortar is a low-density, one-component, polymer-modified, shrinkage-compensated lightweight renovation mortar that contains an integral corrosion inhibitor. The product is ideally suited for patching and/or resurfacing distressed concrete. The lightweight nature of the product allows for excellent build without sagging. EMACO® R350 CI repair mortar is designed for both interior and exterior use.

Features/Benefits

- Corrosion resistant - contains an integral corrosion inhibitor
- One component - easy mixing and handling
- Low permeability - resists moisture and chloride intrusion
- Low modulus of elasticity - improved compatibility for surface renovation
- Economical - excellent yield per bag, low unit weight

Where to Use Emaco® R350 CI

- Vertical and overhead surfaces
- Building facades
- Balconies and columns
- Beam and soffit repair
- Bridges and parking garages
- Retaining walls
- General spalled areas
- Tuckpointing

Important: Read This First

ChemRex® does not warrant the performance of this product unless the instructions of this document and other related ChemRex® documents are adhered to in all respects.

How to Apply Emaco® R350 CI

Surface Preparation

Perform surface preparation in compliance with ICRI Technical Guideline No. 03730 "Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion."

- 1 Square cut or undercut the perimeter of the area to be patched to a minimum depth of 1/8 inch (3 mm) to prevent featheredges. Do not cut reinforcement.
- 2 Chip and remove unsound and delaminated concrete within the area to be repaired to a depth of 1/8 inch (3 mm) or to whatever additional depth is necessary to reach sound concrete. Limit the size of chipping hammers to 15 lbs. (6.8 kg) to reduce micro fractures. Hydrodemolition may be used.

- 3 Remove areas that have been saturated with oil or grease.
- 4 Remove 3/4 inches (19 mm) of concrete behind the corroded reinforcing steel to provide adequate space for preparation and material placement.
- 5 After concrete removal, thoroughly abrade the roughened surface and exposed reinforcement to remove all bond-inhibiting materials such as rust, dirt, loose chips, and dust.
- 6 **Corroded Reinforcing Steel** should be sandblasted or shotblasted after chipping to remove oxidation and scale in compliance with ICRI Technical Guideline No. 03730 "Guide for Surface Preparation for Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion." For additional protection from future corrosion, coat the prepared reinforcing steel with EMACO® P22 or EMACO® P24 rebar coatings and/or install EMACO® Corr-Stops® CI galvanic anodes.
- 7 Saturate the area thoroughly with water for several hours prior to placing EMACO® R350 CI.
- 8 Immediately prior to mixing, blow off or remove all excess water from repair area. Surface should be saturated, surface dry (SSD) condition during placement.

Mixing

Mechanical mixing is recommended with use of a slow speed drill (400 to 600 rpm) and a Jiffy-type paddle, or in an appropriate size mortar mixer. Add 0.95 to 1.1 gallon (3.6 to 4.1 L) of clean potable water per 55 lb. (25 kg) bag of EMACO® R350 CI. Pour approximately 90% of the mix water into the mixing container, then charge the mixer with the bagged material. Add remaining mix water as required for vertical or overhead applications. Mix to a uniform consistency. Typical mixing time is 3 to 5 minutes. **Do not** mix longer than 5 minutes.

Application

Remove excess water from the saturated surface dry (SSD) substrate and apply while taking proper consideration for compaction around reinforcing steel. Scrub a bond coat of EMACO® R350 CI repair mortar into the prepared surface with a stiff bristle broom or brush. EMACO® R350 CI repair mortar must be placed before the bond coat dries. When applying in multiple lifts, scratch the preliminary lift before initial set. Apply the next lift after the preliminary lift has reached final set. If the next lift is not to be immediately placed, keep the surface continually moist. Cut off or level as required to match the original concrete elevation. Maximum application thickness is 2-3/4 in. (70 mm). Where rapid drying conditions exist (e.g., hot, dry, windy conditions) use CONFILM® evaporation reducer. Finish the final surface as required.

Curing

Proper curing is extremely important and should be conducted in accordance with ACI 308, "Standard Practice for Curing Concrete." Apply a curing compound which complies with the moisture

retention requirements of ASTM C 309, such as MASTERKURE® 100W or 200W curing compounds. Apply curing materials as soon as the surface cannot be marred by the application. Sheeting material, wet burlap, or fog spray may be used in lieu of curing compounds. Minimum curing time for wet curing is three days.

Give mortar extra time for curing in temperatures below 50°F (10°C).

For Best Performance

- Do not mix partial bags.
- Minimum ambient and surface temperatures should be 45°F (7°C) and rising at the time of application.
- Do not use solvent-based curing compounds.
- Do not mix longer than 5 minutes.
- Featheredging will result in reduced performance.
- Do not use in horizontal applications where wheeled traffic is anticipated.
- Make certain the most current version of this data guide is being used; call Customer Service (1-800-433-9517) to verify the most current version.
- Proper application is the responsibility of the user. Field visits by ChemRex® personnel are for the purpose of making technical recommendations only and are not for supervising or providing quality control on the jobsite.

Technical Data

Results were obtained when material was mixed with 0.98 gallons (3.7 L) of water per bag and cured at 70°F (21°C). Reasonable variations can be expected depending upon mixing equipment, temperature, application methods, test methods, and curing conditions.

Plastic Properties	
Unit weight	103 lb./ft. ³ (1,650 kg/m ³)
Working time	30 minutes
Set times (h:min)	Initial set 0:45 Final set 1:30
(ASTM C 266)	

	Hardened Properties		
	1 Day psi (MPa)	7 Day psi (MPa)	28 Day psi (MPa)
Direct shear bond strength (Michigan DOT)	250 (1.7)	300 (2.1)	400 (2.8)
Slant shear bond strength (ASTM C 882, Modified ¹)	500 (3.5)	1,100 (7.6)	1,500 (10.4)
Modulus of elasticity at 28 days (ASTM C 469)	2.0 x 10 ⁶ psi (14.0 GPa)		
Rapid chloride permeability at 28 days (ASTM C 1202/AASHTO T 277)	300 coulombs		
Freeze-thaw resistance at 300 cycles (ASTM C 666, Procedure A)	100% RDM		
Scaling resistance at 50 cycles (ASTM C 672)	1, very slight scaling		

	1 Day psi (MPa)	7 Day psi (MPa)	28 Day psi (MPa)
Splitting tensile strength (ASTM C 496)	200 (1.4)	300 (2.1)	600 (4.1)
Flexural strength (ASTM C 348)	250 (1.7)	700 (4.8)	900 (6.2)
Compressive strength (ASTM C 109)	1,500 (10.4)	3,500 (24.2)	5,000 (34.5)

¹No epoxy-bonding agent used, air cured per ASTM C 1042.

Order Information

Packaging

EMACO® R350 CI

- 55 lb. (25 kg) moisture-resistant bags

Application Thickness

- Vertical/Overhead: Featheredge to 2-3/4 in. (70 mm) per lift.

Shelf Life

- Unopened bags have a shelf life of 12 months when stored under cover in dry conditions between 45 and 90°F (7 and 32°C).

Coverage

- Yield is approximately 0.61 ft.³ (0.017 m³). This will cover approximately 7.4 ft.² (0.69 m²) at a 1 in. (25 mm) depth before waste.

Caution

EMACO® R350 CI

Risks

Eye irritant. Skin irritant. Causes burns. Lung irritant. May cause delayed lung injury.

Precautions

KEEP OUT OF THE REACH OF CHILDREN. Avoid contact with eyes. Wear suitable protective eyewear. Avoid prolonged or repeated contact with skin. Wear suitable gloves. Wear suitable protective clothing. Do not breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment. Wash soiled clothing before reuse.

First Aid

Wash exposed skin with soap and water. Flush eyes with large quantities of water. If breathing is difficult, move person to fresh air.

Waste Disposal Method

This product when discarded or disposed of is not listed as a hazardous waste in federal regulations. Dispose of in a landfill in accordance with local regulations.

For additional information on personal protective equipment, first aid, and emergency procedures, refer to the product Material Safety Data Sheet (MSDS) on the job site or contact the company at the address or phone numbers given below.

Proposition 65

This product contains materials listed by the state of California as known to cause cancer, birth defects, or reproductive harm.

VOC Content

This product contains 0 g/L or 0 lbs./gallon.

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

Limited Warranty Notice

Every reasonable effort is made to apply ChemRex® exacting standards both in the manufacture of our products and in the information which we issue concerning these products and their use. We warrant our products to be of good quality and will replace or, at our election, refund the purchase price of any products proved defective. Satisfactory results depend not only upon quality products, but also upon many factors beyond our control. Therefore, except for such replacement or refund, CHEMREX® MAKES NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY, RESPECTING ITS PRODUCTS, and CHEMREX® shall have no other liability with respect thereto. Any claim regarding product defect must be received in writing within one (1) year from the date of shipment. No claim will be considered without such written notice or after the specified time interval. User shall determine the suitability of the products for the intended use and assume all risks and liability in connection therewith. Any authorized change in the printed recommendations concerning the use of our products must bear the signature of the ChemRex® Technical Manager.



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