

**ARDEX GUIDE SPECIFICATION**  
**ARDEX FDX™ Full Depth Extended Repair Mortar**  
Concrete Repair Mortar with Corrosion Inhibitor

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**SECTION 03 92 50**  
**REPAIR MORTARS**

**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

- A. Drawings, general provisions of the Contract, and other related construction documents such as Division 01 specifications apply to this Section.

1.2 SUMMARY

- A. This Section includes Portland cement-based structural repair mortar with integral corrosion inhibitor suitable for overlays and full depth repairs.

- 1. ARDEX FDX™ Full Depth Extended Repair Mortar
- 2. ARDEX P 71™ PRIMER
- 3. ARDEX BONDING & ANTI-CORROSION AGENT™

- B. Related Sections include the following:

- 1. Section 03 30 00, Cast-In-Place Concrete

1.3 REFERENCES

- A. ASTM C 39, Compressive Strength of Cylindrical Concrete Specimens
- B. ASTM C 293, Flexural Strength of Concrete
- C. ASTM C 469, Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression
- D. ASTM C 157, Length Change of Hardened Hydraulic-Cement Mortar and Concrete
- E. ASTM C 496, Splitting Tensile Strength of Cylindrical Concrete Specimens
- F. ASTM D 4541, Pull-Off Strength of Coatings Using Portable Adhesion Testers
- G. ASTM C 309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

- H. ICRI Technical Guideline No. 03732 Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays
- I. ICRI Technical Guideline No. 03730 Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion

#### 1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used. Include manufacturer's Material Safety Data Sheets.
- B. Qualification Data: For Installer

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: The manufacturer shall be a company with at least five years experience and regularly engaged in the manufacture and marketing of products specified herein.
- B. Installation of the ARDEX product must be completed by a factory-trained applicator using mixing equipment and tools approved by the manufacturer. Please contact ARDEX Engineered Cements (724) 203-5000 for a list of recommended installers.

#### 1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in original packaging, labeled with product identification, manufacturer, batch number and shelf life.
- B. Store products in a dry area with temperature maintained between 50° and 85° F (10° and 29° C) and Protect from direct sunlight.
- C. Handle products in accordance with manufacturer's printed recommendations.

#### 1.7 PROJECT CONDITIONS

- A. Do not install material below 50° F (10° C) surface and air temperatures. These temperatures must also be maintained during and for 48 hours after the installation of products included in this section. Install quickly if substrate is warm and follow warm weather instructions available from the ARDEX Technical Service Department.

## **PART 2 - PRODUCTS**

### **2.1 REPAIR MORTAR**

- A. Portland cement-based structural repair mortar with built in corrosion inhibitor for horizontal, vertical, and overhead applications for exterior and interior concrete above, on or below grade.
  - 1. Acceptable Products:
    - a. ARDEX FDX™; Manufactured by ARDEX Engineered Cements: 400 Ardex Park Drive, Aliquippa, Pa 15001 USA 724-203-5000
  - 2. Performance and Physical Properties: Meet or exceed the following values for material cured at 70° F (20° C) and 50% relative humidity:
    - a. Application: Trowel.
    - b. Working Time: 20 – 40 minutes.
    - c. Compressive Strength: 4800 at 7 days, 6000 psi at 28 days, ASTM C39.
    - d. Flexural Strength: 700 psi at 7 days, 750 psi at 28 days, ASTM C293.
    - e. Modulus of Elasticity in Compression:  $3.9 \times 10^6$  psi at 28 days, ASTM C469, modified.
    - f. Splitting Tensile Strength: 400 psi at 7 days, 600 psi at 28 days, ASTM C496.
    - g. Direct Tensile Bond: 210 psi at 28 days, ASTM D 4541
    - h. Color: Concrete gray.
    - i. Combustibility: Non-combustible, both before and after use.

## **PART 3 – EXECUTION**

### **3.1 PREPARATION**

- A. General: Prepare substrate in accordance with manufacturer's instructions. Prior to proceeding with any repair, please refer to the International Concrete Repair Institute's ICRI 03730 Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion; ICRI 03732 Guideline for Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays; and the American Concrete Institute's ACI 546R-04 Concrete Repair Guide for general guidelines for concrete repair.
  - 1. All concrete and masonry substrates must be sound, solid, dry, and completely free of all oil, grease, dirt, curing compounds and any substance that might act as a bond breaker. Overwatered, frozen or otherwise weak concrete surfaces must also be cleaned down to sound, solid concrete by mechanical methods such as scarifying, scabbling or similar in accordance with ICRI 03732 before priming. Acid etching and the use of sweeping compounds and solvents are not acceptable.
  - 2. The repair area must be saw cut in a basic rectangular shape at least 1 1/2" in depth. The cuts should be made at 90° angle, and should be slightly keyed. Chip out the concrete inside the cuts to a minimum depth of 1 1/2" until the area is squared or box shape.

3. Mechanically prepare surface to obtain an exposed aggregate surface with a minimum surface profile of approximately 1/16" (1.5 mm).
4. For cases with exposed reinforcing steel, mechanically clean the steel to remove all rust and any other contaminants in accordance with ICRI 03730. Prime the steel with ARDEX Bonding & Anti-Corrosion Agent™ prior to proceeding with repair. For further details, please refer to the ARDEX Technical brochure.

B. Joint Preparation

1. Moving Joints and Cracks – honor all expansion and isolation joints up through the ARDEX FDX™. A flexible sealing compound suitable for the application may be installed. ARDEX ARDISEAL™ RAPID PLUS may be installed for interior applications only.
2. Saw Cuts and Dormant Cracks - greater than 1/16" (1.6mm) should be filled with ARDEX ARDIFIX™ joint filler prior to installing ARDEX FDX™.

3.2 INSTALLATION OF ARDEX FDX™ FULL DEPTH EXTENDED REPAIR MORTAR:

- A. Examine substrates and conditions under which materials will be installed. Do not proceed with installation until unsatisfactory conditions are corrected.
- B. Coordinate installation with adjacent work to ensure proper sequence of construction. Protect adjacent areas and landscaping from contact due to mixing and handling of materials.
- C. Mixing: Comply with manufacturer's printed instructions and the following.
  1. Precondition components to temperature of 70° plus or minus 5° F (21° plus or minus 2.5° C) prior to mixing.
  2. Pre-dampen the inside of a pail or inside of a clean mortar mixer, and remove any excess water.
  3. Add 6.5 pints (3.08 L) of clean potable water, and then add one-third of an 80-pound (36.4 kg) bag. Once this is blended in, add the next third and so on until all of the material is added.
  4. Mix using a 1/2" to 3/4" (12 to 19 mm) low speed heavy-duty mixing drill with a heavy gauge square box (butterfly) mixing paddle. Forced action mortar mixers are also suitable. Mix to a uniform, lump-free consistency. For both mixing methods, avoid over mixing, which may entrap air. If additional water is required, you may add up to 8 oz. (0.24L) of additional mix water per bag. Do not overwater.
- D. Application: Comply with manufacturer's printed instructions and the following.
  1. Do not apply in freezing conditions or during precipitation.
  2. Comply with manufacturer's guides for hot and cold weather application.

3. Dampen substrate to fill concrete pores with water. Remove ponding, glistening, or surface water (saturated surface dry). Alternatively, ARDEX P 71™ Primer can be used in accordance with the ARDEX Technical brochure. Do not allow the concrete or ARDEX P 71™ to dry before installing ARDEX FDX™. If ARDEX BONDING & ANTI-CORROSION AGENT is specified as a primer, follow the application instructions in the ARDEX Technical Brochure.
  4. When overlaying, apply scrub coat of repair mortar into substrate to ensure intimate contact and establish bond. Apply ARDEX FDX™ while scrub coat is wet. Consolidate and trowel to the desired finish.
  5. When pouring into closed forms, the repairs can be vibrated to ensure full contact and to establish bond with the substrate, as well as ensure proper consolidation. Avoid over-vibration.
  6. Steal trowel the mortar to the desired finish once it takes its initial set.
  7. ARDEX FDX™ can be installed from a minimum of 1 ½” up to 8” neat (38mm to 20.3 cm).
- E. Curing:
1. Keep surface damp for 48 hours with continuous light water-fogging or curing blanket.
  2. If no coating or sealer is to be applied, a water-based curing compound meeting ASTM C309 may be used. Do not use solvent-based curing compounds.
  3. Allow to cure a minimum 72 hours before applying any final coatings or sealers.
- F. Cleaning: Remove excess material before material cures. If material has cured, remove using mechanical methods that will not damage substrate.

**END OF SECTION**