

## **ARDEX GUIDE SPECIFICATION**

### **ARDEX ERM™ Exterior Ramp Mortar & ARDEX CD™ Concrete Dressing Polymer-Modified, Cement-Based, Horizontal Structural Patch and Repair; and Overlay**

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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 trowel-grade repair mortar for horizontal patch and repair [horizontal overlay] of existing substrate.
  - 1. ARDEX ERM™ Exterior Ramp Mortar
  - 2. ARDEX CD™ Concrete Dressing and ARDEX CD FINE™ Concrete Dressing
  - 3. ARDEX CG™ Concrete Guard™ High Performance, High Solids concrete Sealer
- B. Related Sections include the following:
  - 1. Section 03 30 00, Cast-In-Place Concrete

###### **1.3 REFERENCES**

- A. ASTM C 109, Compressive Strength
- B. ASTM C 293, Flexural Strength
- C. ASTM C 469, Modulus of Elasticity
- D. ASTM C 157, Length Change
- E. ASTM C 1202, Chloride Permeability
- F. ICRI Technical Guideline No. 03732 Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays

### 1.3 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

### 1.4 QUALITY ASSURANCE

- A. 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.

### 1.5 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° and Protect from direct sunlight.
- C. Handle products in accordance with manufacturer's printed recommendations.

### 1.6 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. Single-component, polymer-modified, cement-based repair mortar, containing Portland cement, graded specialty aggregates, dry acrylic polymer and integral corrosion inhibitors.
  - 1. Acceptable Products:
    - a. ARDEX ERM™; 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 73° F (23° C) and 50 percent relative humidity:

- a. Application: Trowel.
- b. Working Time: 25 – 45 minutes.
- c. Compressive Strength: 7,000 psi (48.3MPa) at 7 days, 8200 psi (56.58 MPa) at 28 days, ASTM C109.
- d. Flexural Strength: 1,200 psi (8.3 MPa) at 7 days, 1,500 psi (10.3 MPa) at 28 days, ASTM C78.
- e. Modulus of Elasticity in Compression:  $3.67 \times 10^6$  psi at 28 days, ASTM C469, modified.
- f. Shrinkage: less than 0.06% at 7 days, less than 0.08% at 28 days, ASTM C157, air cured.
- g. Rapid Chloride Permeability: 820 Coulombs, at 28 days, ASTM C1202.
- h. Low -slump, non-sagging.
- i. Color: Concrete gray.
- j. Combustibility: Non-combustible, both before and after use.

## 2.2 CONCRETE OVERLAY

A. The cement-based, polymer-modified concrete resurfacing material.

1. Acceptable Products:

- a. ARDEX CD™ Concrete Dressing or ARDEX CD FINE™ Concrete Dressing
  - i. Primer: ARDEX CG™ Concrete Guard™ Clear (Diluted 1:1). Allow primer to dry thoroughly, a minimum of 3 hours. Required for overlay only.
  - ii. Sealer: ARDEX CG™ Concrete Guard™ High-performance, high solids, water-borne acrylic concrete sealer

2.3 WATER: Water shall be clean, potable, and sufficiently cool (not warmer than 70°F).

## 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 ¼” (6 mm) 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 ¼” (6 mm) 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. All cracks and spalls must be repaired prior to installing the dressing.

B. Joint Preparation

1. Moving Joints – honor all expansion and isolation joints up through the underlayment. A flexible sealing compound such as ARDEX ARDISEAL™ may be installed.
2. Saw Cuts and Control Joints – fill all non-moving joints with ARDEX ARDIFIX™ Joint Filler.

3.2 APPLICATION OF ARDEX ERM™ :

- 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. Add 6.5 pints (3.0 L) of clean potable water per 55-pound (25 kg) bag.
  3. Mix using a ½” to ¾” (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. Avoid over-mixing.
  4. For application depths greater than 2 inches, and up to 8”, add up to 40 pounds (18.1 kg) clean, uniformly graded, saturated-surface-dry 3/8-inch aggregate per bag, as directed by manufacturer.
  5. Do not add water beyond manufacturer’s instructions. Do not add additional powder.
- 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 ERM™.
4. Apply scrub coat of repair mortar into substrate to ensure intimate contact and establish bond.
5. Apply ARDEX ERM™ while scrub coat is wet. Consolidate and trowel to the desired finish.
6. ARDEX ERM™ can be installed to a minimum thickness of 1/4 inch up to 2" (6 mm to 5 cm) neat or up to 8" thick with the proper addition of aggregate. Alternatively, ARDEX ERM™ can be applied in 2" (5 cm) lifts up to 8" (20 cm) without the addition of aggregate when each lift is allowed to take initial set and then scored on top prior to the application of the subsequent lift.

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 standard C309 may be used. Do not use solvent-based curing compounds.
3. Allow ARDEX ERM™ to cure a minimum of 72 hours prior to the installation of ARDEX CD™ Concrete Dressing.

F. Cleaning: Remove excess material before material cures. If material has cured, remove using mechanical methods which will not damage substrate.

### 3.3 APPLICATION OF ARDEX CD™ CONCRETE DRESSING

A. Mixing:

1. Add 2.5 quarts (2.4 L) of clean potable water per 20-pound (9 kg) bag.
2. Mix using a 1/2" (12 mm, 650 rpm) low speed heavy-duty mixing drill with an ARDEX T-2 ring mixing paddle. Mix to a uniform, lump-free consistency. Do not overwater.

B. Application:

1. To avoid pinholes, dilute ARDEX CG™ Concrete Guard with water in a 1:1 ratio. Apply with a short nap pain roller.
2. ARDEX CD™ and ARDEX CD FINE™ shall be installed using traditional concrete repair techniques, to include the use of a steel trowel and/or broom to achieve the desired finish. ARDEX CD™ and ARDEX CD FINE™ may also be applied using a squeegee or hopper gun.

2. Use the least amount of material possible to obtain complete coverage over the concrete surface. For maximum coverage, use the flat trowel application technique and then broom-finish. Work in areas small enough so that you can reach the newly applied surface easily to apply the broom finish without walking on it. Broom finish as you go but certainly before the dressing takes a firm set (usually 10-15 minutes depending upon jobsite conditions). Maintaining a “wet edge” as you work will help to minimize natural color variations that can occur between sections.
3. On vertical surfaces such as walls or stair faces, trowel, brush or spray the dressing using a hopper gun directly onto the prepared area. Smooth or brush the material to the desired finish.
4. The surface of the dressing can be broom finished as work proceeds.
5. As is the case with all concrete surfaces in general, ARDEX CD™ and ARDEX CD FINE™ should be sealed with a waterborne, breathable concrete sealer such as ARDEX CG™ Concrete Guard™ to resist damage from standing water, salt, oil as well as staining and marking. Sealing of the ARDEX CD™ or ARDEX CD FINE™ can proceed as soon as the surface of the dressing has hardened sufficiently to resist damage from the sealing installation.

#### 3.4 SEALING WITH ARDEX CG™ CONCRETE GUARD™

- A. **Mixing:** The contents of the ARDEX CG™ container must be thoroughly stirred just prior to use to ensure a uniform consistency. For best results, mix with a mechanical mixing paddle and low speed drill.
- B. **Installation:**
  1. ARDEX Concrete Guard should be applied in two thin coats, allowing 2-4 hours between coats, depending upon atmospheric conditions. (Back-rolling is recommended when spraying to prevent puddling.)
  2. When outdoors, do not apply if rain, fog, or extremely high humidity is expected within 6-8 hours or if freezing temperatures could occur within 24 hours of application. Do not apply on surfaces under 50°F or over 90°F.
  3. Allow ARDEX Concrete Guard to cure a minimum of 24 hours before normal traffic, and a minimum of 72 hours before heavy traffic.
- C. **Maintenance:** In order to attain maximum life from the dressing, it is essential that the surface be properly sealed and protected. Reseal as required depending upon traffic volume and conditions.

**END OF SECTION**