

## **ARDEX GUIDE SPECIFICATION**

### **ARDEX TL-1400™ Self-Leveling Underlayment**

Portland Cement-based Self-Leveling Underlayment for Interior Applications

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## **SECTION 03 54 16 HYDRAULIC CEMENT UNDERLAYMENT**

### **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 a cement-based self-leveling underlayment formulated with a special blend of polymers used to level and smooth interior concrete, terrazzo, ceramic & quarry tile, metal, wooden substrates, and non-soluble adhesive residue on concrete prior to the installation of finished flooring on all grade levels.

- 1. ARDEX TL-1400™ Self-Leveling Underlayment
- 2. ARDEX P 51™ Primer
- 3. ARDEX P 82™ Ultra Prime

- B. Related Sections include the following:

- 1. Section 03 30 00, Cast-In-Place Concrete
- 2. Section 07 26 19, Topical Moisture Vapor Mitigation
- 3. Division 09 Flooring Sections

#### **1.3 REFERENCES**

- A. ASTM C 109M, Compressive Strength Air-Cure Only
- B. ASTM C348, Flexural Strength of Hydraulic-Cement Mortars
- C. ASTM E84, Surface Burning Characteristics of Building Materials

- D. ASTM F2170, Relative Humidity in Concrete Floor Slabs Using in situ Probes
- E. ASTM F1869, Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
- F. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring

#### 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. Installation of the ARDEX product must be completed by a factory-trained applicator, such as an ARDEX LevelMaster® Elite or Choice Contractor, using mixing equipment and tools approved by the manufacturer. Contact ARDEX Engineered Cements (724) 203-5000 for a list of recommended installers.
- B. Product must have a hydraulic cement-based inorganic binder content as the primary binder which includes portland cement per ASTM C150: Standard Specification for Portland Cement and other specialty hydraulic cements. Gypsum-based products are not acceptable.
- C. Manufacturer Experience: Provide products of this section by companies which have successfully specialized in production of this type of work for not less than 10 years. Contact Manufacturer Representative prior to installation.

- 1.6 WARRANTY ARDEX TL-1400™ installed as part of a floor system, shall be installed in conjunction with the recommended ARDEX Tile & Stone Installation Materials or WW HENRY Flooring Adhesive, as appropriate, to provide the ARDEX SystemOne 10-year comprehensive warranty.

#### 1.7 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.

## 1.8 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 HYDRAULIC CEMENT UNDERLAYMENT

#### A. Hydraulic Cement-based Self-Leveling Underlayment

##### 1. Acceptable Products:

- a. ARDEX TL-1400™; Manufactured by ARDEX Engineered Cements: 400 Ardex Park Drive, Aliquippa, Pa 15001 USA, (724) 203-5000, [www.ardexamericas.com](http://www.ardexamericas.com)
  - i. Primer Standard Porous Concrete: ARDEX P 51™ Primer
  - ii. Primer Extremely Absorbent Concrete: May require two applications of ARDEX P 51 to minimize the potential for pinholes forming in the ARDEX TL-1400.
  - iii. Primer Non-porous substrates such as burnished concrete, terrazzo, ceramic and quarry tile, epoxy coating systems, non-water soluble adhesive residue on concrete and concrete treated with silicate compounds: ARDEX P 82™ Ultra Prime

##### 2. Performance and Physical Properties: Meet or exceed the following values for material cured at 73° F +/-3°F (23° C +/-3°C) and 50% +/-5% relative humidity:

- a. Application: Barrel Mix or Pump
- b. Flow Time: 10 minutes
- c. Initial Set: Approx. 30 minutes
- d. Final Set: Approx. 90 minutes
- e. Compressive Strength: 4000 psi at 28 days, ASTM C109M.
- f. Flexural Strength: 1000 psi at 28 days, ASTM C78.
- g. VOC: 0 g/l

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

## PART 3 – EXECUTION

### 3.1 PREPARATION

- A. Concrete Subfloors: Prepare substrate in accordance with manufacturer's instructions.
  - 1. Prior to proceeding please refer to ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring. All concrete subfloors must be sound, solid, clean, and free of all oil, grease, dirt, curing compounds and any contaminant that might act as a bond breaker before priming. Mechanically clean if necessary using shot blasting or other. Acid etching and the use of sweeping compounds and solvents are not acceptable.
  - 2. All cracks in the subfloor shall be repaired to minimize telegraphing through the underlayment.
  - 3. Substrates shall be inspected in accordance with ASTM F1869 or ASTM F2170 and corrected for moisture or any other conditions that could affect the performance of the underlayment or the finished floor covering. For areas where moisture vapor emissions exceed the limits required by the floor covering manufacturer refer to Section 07 26 19, Topical Moisture Vapor Mitigation Systems and install the appropriate ARDEX Moisture Control System.
- B. Joint Preparation:
  - 1. Moving Joints – honor all expansion and isolation joints up through the underlayment. A flexible sealing compound such as ARDEX ARDISEAL™ Rapid Plus may be installed.
  - 2. Saw Cuts and Control Joints – fill all non-moving joints with ARDEX ARDIFIX™ Joint Filler or ARDEX SD-F™ FEATHER FINISH® as recommended by the manufacturer.
- C. Non-water soluble adhesive residues on concrete must first be tested to make certain it is not water-soluble. Water-soluble adhesives must be removed mechanically down to clean concrete. Non-water-soluble adhesives should be prepared to a thin, well-bonded residue using the wet-scraping technique as recommended by the Resilient Floor Covering Institute ([www.rfci.com](http://www.rfci.com)).
- D. Non-porous subfloors such as terrazzo, burnished concrete, epoxy coating systems, ceramic and quarry tile must be clean and free of all waxes, sealers dust, dirt, debris and any other contaminant that may act as a bond breaker. If necessary, clean by mechanical methods such as shot blasting.

### 3.2 APPLICATION OF ARDEX TL-1400™:

- 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 from contact due to mixing and handling of materials.
- C. Priming:
  - 1. Primer for standard absorbent concrete subfloors: Mix ARDEX P-51 1:1 with water and apply evenly with a soft bristled push broom. Do not leave any bare spots. Remove all puddles and excess primer. Allow to dry to a clear, thin film (min. 3 hours, max. 24

hours). Underlayment shall not be applied until the primer is dry. Primer coverage is approximately 400 to 600 sq. ft. per gallon.

2. Primer for extremely absorbent concrete subfloors: Make an initial application of ARDEX P-51 mixed with 3 parts water using a soft push broom. Do not leave any bare spots. Remove all puddles and excess primer. Allow to dry thoroughly (1 to 3 hours) before proceeding with the standard application of primer as described above for standard absorbent concrete.
3. Primer for non-porous subfloors such as burnished concrete, terrazzo, ceramic and quarry tile, epoxy coating systems, non-water soluble with silicate adhesive residue on concrete and concrete treated with silicate compounds: Prime with ARDEX P-82 Ultra Prime. Follow the mixing instructions on the container and apply with a short-nap or sponge paint roller, leaving a thin coat of primer no heavier than a thin coat of paint. Do not leave any bare spots. Remove all puddles and excess primer. Allow to dry to a clear, slightly tack film (minimum 3 hours, maximum 24 hours). Underlayment shall not be installed until primer is dry. Primer coverage is approximately 200 to 400 square feet per gallon. NOTE: If a suitable acrylic curing compound is used, test the surface for porosity. If the concrete is porous, prime with ARDEX P 51. If it is non-porous, prime with ARDEX P 82.
4. Minimum drying time for ARDEX P-82 Ultra-Prime over cutback adhesive is 18 hours.

D. Mixing: Comply with manufacturer's printed instructions and the following.

1. Add 5 quarts (4.75 L) of clean potable water per two 50-pound bag.
2. Mix using a ½" (650 rpm) low speed heavy-duty mixing drill with an ARDEX T-1 mixing paddle. Do not overwater.
3. For pump installations, ARDEX TL-1400™ shall be mixed using the ARDEX ARDIFLO™ Automatic Mixing Pumps. Contact the ARDEX Technical Service Department (888) 512-7339 for complete pump operation instructions.

E. Application: Comply with manufacturer's printed instructions and the following.

1. ARDEX TL-1400™ must be installed at a minimum thickness of 1/8" over the highest point in the floor, which typically results in an average thickness of ¼" over the entire floor. ARDEX TL-1400™ can be installed up to 1 ¼" thick and can also be tapered to as thin an application as the sand will allow to match existing elevations. If a true featheredge is needed, ARDEX recommends using ARDEX FEATHER FINISH for transitions.
2. Pour the liquid ARDEX TL-1400™ and spread in place with the ARDEX T-4 Spreader. Immediately use the ARDEX T-5. Wear non-metallic cleats to avoid leaving marks in the liquid ARDEX TL-1400™.

F. Curing

1. ARDEX TL-1400™ can be walked on in 2-3 hours after installation. Contact ARDEX Technical Services Department (888) 512-7339 for recommended installation times.

- A. Where specified, field sampling of the Ardex underlayment is to be done by taking an entire unopened bag of the product being installed to an independent testing facility to perform compressive strength testing in accordance with ASTM C 109/modified: air-cure only. There are no in situ test procedures for the evaluation of compressive strength.

### 3.5 PROTECTION

- A. Prior to the installation of the finish flooring, the surface of the underlayment should be protected from abuse by other trades by the use of plywood, Masonite or other suitable protection course.

**END OF SECTION**