

ARDEX GUIDE SPECIFICATION

ARDEX LW™ Lightweight, Fast-Setting, Concrete Fill System

Portland Cement-based Self-Leveling Underlayment for Interior Applications over Concrete Substrates

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 lightweight, fast-setting, Portland cement-based system for filling indoor concrete prior to the installation of a leveling course. ARDEX LW is designed for use over concrete substrates as a lightweight fill to receive a smoothing layer of an ARDEX underlayment.
 - 1. ARDEX LW™ Lightweight, Fast-Setting, Concrete Fill System
 - 2. ARDEX K 520™ Self-Leveling Concrete Topping
 - 3. ELEMIX® Beads (To purchase ELEMIX beads, please contact www.syntheonic.com or 412-749-0442)
 - 4. ARDEX P 51™ Primer
 - 5. ARDEX K 15® Premium Self-Leveling Underlayment
 - 6. ARDEX K 13™ Premium Self-Leveling Underlayment
 - 7. ARDEX V 1200™ Self-Leveling Underlayment
- B. Related Sections include the following:
 - 1. Section 03 30 00, Cast-In-Place Concrete
 - 2. Section 090561.13, Moisture Vapor Emission Control
 - 3. Division 09 Flooring Sections
- C. REFERENCES

1. ASTM C 109M, Compressive Strength Air-Cure Only
2. ASTM F2170, Relative Humidity in Concrete Floor Slabs Using in situ Probes
3. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used. Include manufacturer's 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, such as an ARDEX LevelMaster® Elite or Choice Contractor or INSTALL Substrate Prep Certified Installer, 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.

1.5 WARRANTY: ARDEX LW™ with a selected ARDEX underlayment 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 comprehensive warranty, depending on the system installed.

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 HYDRAULIC CEMENT UNDERLAYMENT

A. ARDEX LW™ Lightweight, Fast-Setting, Concrete Fill System

1. Acceptable Products:

- a. ARDEX LW™, Manufactured by ARDEX Engineered Cements: 400 Ardex Park Drive, Aliquippa, PA 15001 USA, (724) 203-5000, www.ardexamericas.com
 - i. Primer Standard Porous Concrete: ARDEX P 51™ Primer diluted 1:1 with water
 - ii. Extremely Absorbent Concrete: ARDEX P 51™ Primer double priming method
 - iii. 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. Coverage: A 50 lb bag of ARDEX K 520 mixed with 1:1 ratio (approx. 5 gallons / 19 L) ELEMIX beads yields approx. 1 cu. ft of fill
 - b. Initial Set: Approx. 15 mins ASTM C191
 - c. Final Set: Approx. 1 hour ASTM C191
 - d. Compressive Strength (ASTM C109/mod Air cure only after 28 days):
 - 1. If ARDEX V 1200 is used: 4,500 psi (316 kg/cm2)
 - 2. If ARDEX K 13 is used: 5,300 psi (371 kg/cm2)
 - 3. If ARDEX K 15 is used: 5,500 psi (386 kg/cm2)

B. Hydraulic Cement-based Self-Leveling Underlayment

1. Acceptable Products:

- a. ARDEX K 15®, ARDEX K 13 and ARDEX V 1200; Manufactured by ARDEX Engineered Cements: 400 Ardex Park Drive, Aliquippa, PA 15001 USA, (724) 203-5000, www.ardexamericas.com
 - i. Primer for the smoothing course: ARDEX P 51™ Primer diluted 1:1 with water

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 substance 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. Substrates shall be inspected in accordance with 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 09 05 61.13, Moisture Vapor Emission Control and install the appropriate ARDEX Moisture Control System.
- B. Crack and Joint Preparation:
1. Moving Joints and Moving Cracks – honor all expansion, isolation joints and moving cracks up through the underlayment. A flexible sealing compound such as ARDEX ARDISEAL™ Rapid Plus Semi-Rigid Joint Sealant may be installed.
 2. Saw Cuts and Control Joints – fill all dormant control joints and dormant cracks with ARDEX ARDIFIX™ Low Viscosity Rigid Polyurethane Crack & Joint Repair or ARDEX FEATHER FINISH® Self-Drying, Cement-Based Finish Underlayment as recommended by the manufacturer.

3.2 APPLICATION OF ARDEX LW™

- A. Examine substrates and conditions under which materials will be installed. Do not proceed with installation until unsatisfactory conditions are corrected.
- C. Coordinate installation with adjacent work to ensure proper sequence of construction. Protect adjacent areas from contact due to mixing and handling of materials.
- D. Priming:

Note: It is critical to ensure that the ARDEX P 51 is dry prior to proceeding with the next installation step. To determine if the ARDEX P 51 is dry after a minimum of 30 minutes (max. 24 hours), pour water onto the surface of the primer in several areas and rub it with your finger. If the water remains clear, the primer is dry. If the water turns cloudy or milky, additional drying time is needed.

1. Primer for standard absorbent concrete subfloors: Dilute ARDEX P 51 1:1 with water and apply evenly with a soft push broom. Do not leave any bare spots. Remove all puddles and excess primer. Allow to dry to a clear, thin film (min. 30 mins, max. 24 hours). Underlayment shall not be applied until the primer is dry.
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 before proceeding with the standard application of primer as described above for standard absorbent concrete.

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

1. ARDEX K 520 is mixed 1 bag at a time. For each bag of ARDEX K 520 powder, add 5 quarts (4.73 L) of water. Put the water in the mixing drum first, then add one bag of ARDEX K 520 while mixing with an ARDEX T-1 mixing paddle and a ½" (12 mm) heavy-duty drill (min. 1,200 rpm). Mix thoroughly for approximately 1 minute to obtain a lump-free mix. **DO NOT OVERWATER!**
2. After initial mixing is complete, stop the drill. Fill the entire, empty ARDEX K 520 bag with ELEMIX beads (approximately 5 gal. / 19 L per bag) beads to the mix. Begin re-mixing and continue for 1 ½ minutes more to ensure that the materials are uniformly blended. When mixing, use a temporary lid or cap on the barrel to reduce bead overflow.
3. When mixing sanded materials, ARDEX recommends using the ARDEX DUSTFREE™ or a standard "gutter hook" vacuum attachment in combination with a wet/dry (Shop-Vac® style) vacuum and HEPA dust extraction vacuum system. Additionally, each bag should be handled with care and emptied slowly to avoid creating a plume of dust. Contact the ARDEX Technical Service Department for more details on ARDEX products and air quality management.
4. ARDEX K 520 remains workable for 5 – 10 minutes at 70°F. Pour the liquid mix onto the prepared concrete and begin screeding using a wood, magnesium or aluminum screed, as you would with normal concrete, bringing the cement paste to the surface to encapsulate the beads. NOTE: the screed rails must be installed ¼ - ½" (6 – 12 mm) low to accommodate the installation of the smoothing layer of ARDEX K 15, ARDEX K 13 or ARDEX V 1200.
5. Continue mixing, placing and screeding the fill as you would concrete. It is recommended that several mixing barrels and mixers used simultaneously to keep the process flowing smoothly. The fill will be ready to receive light foot traffic after 2 – 3 hours.

F. Preparation for Smoothing Course: Comply with manufacturer's printed instructions and the following.

1. The ARDEX LW base is not intended to be used for the direct installation of flooring. This layer must be topped with a minimum of ¼" of ARDEX K 15, ARDEX K 13 or ARDEX V 1200 prior to the installation of finish floor covering. To prepare the surface

to receive the smoothing layer, any loose or exposed ELEMIX beads should be removed from the surface of the deep fill layer. If needed, lightly sand the surface once it has cured for 12 – 16 hours. Once sanded, vacuum the surface thoroughly to remove all loose material. There should always be cement paste at the surface and all beads should be encapsulated. The removal of all loose beads will produce a more solid surface to receive the primer and smoothing course.

G. Thickness of Installation

1. The ARDEX LW™ system can be installed from ¾" (18 mm) to virtually any thickness in one application. Remember to leave the topping thickness at least ¼" – ½" (6 – 12 mm) below the finished elevation to account for the smoothing course.

H. Smoothing Course

1. Prime the surface of the prepared ARDEX LW deep fill layer with ARDEX P 51 Primer diluted 1:1 with water in accordance with the technical data sheet. Allow to dry to a clear, thin film (min. 30 mins, max. 24 hours). Underlayment shall not be applied until the primer is dry.
2. Install the neat layer of ARDEX K 15, ARDEX K 13 or ARDEX V1200 in accordance with the appropriate technical data sheet. This neat layer must be installed at least 1/4" (6 mm) thick. The finish flooring can be installed once the selected self-leveling underlayment has cured in accordance with its technical data sheet.

3.3 FIELD QUALITY CONTROL

- 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.

3.4 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