

ARDEX GUIDE SPECIFICATION

ARDEX GS-4™

Self-Leveling Repair Underlayment for Distressed Gypsum and Wood Subfloors

SECTION 03 54 13 GYPSUM 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 ARDEX GS-4™ a self-leveling underlayment used for repairing and finishing above grade gypsum and wood subfloors prior to the installation of new floor covering.

- 1. ARDEX GS-4™ Premium Self-Leveling Repair Underlayment
- 2. ARDEX P 51™ Primer
- 3. ARDEX Feather Finish® Self-Drying, Cement-Based Finishing Underlayment

- B. Related Sections include the following:

- 1. Section 03 30 00, Cast-In-Place Concrete
- 2. Section 09 05 61.13, Moisture Vapor Emission Control
- 3. Division 09 Flooring Sections

1.3 REFERENCES

- A. ASTM C109M, Compressive Strength Air-Cure Only
- B. ASTM C348, Flexural Strength of Hydraulic-Cement Mortars
- C. ASTM F2170, Relative Humidity in Concrete Floor Slabs Using in situ Probes
- D. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
- E. ASTM D4263, Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method

1.4 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

1.5 QUALITY ASSURANCE

- A. Installation of the ARDEX product must be completed by a factory-trained applicator, such as an ARDEX LevelMaster[®] Elite, Choice Contractor or INSTALL Substrate Prep Certified Installer, using mixing equipment and tools approved by the manufacturer. Please contact ARDEX Engineered Cements (724) 203-5000 for a list of recommended installers.
- B. 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 ARDEX GS-4™ 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 5- or 10-year comprehensive warranty, depending on the system installed.

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. ARDEX GS-4™ is a gypsum-based material. Do not install in applications on or below grade or in any areas subject to high moisture conditions. Do not install below 50°F surface temperature. Install quickly if floor is warm and follow hot weather precautions available from the ARDEX Technical Service Department. Never mix with cement or additives other than ARDEX-approved products.

PART 2 - PRODUCTS

2.1 GYPSUM CEMENT UNDERLAYMENT

- A. Self-Leveling, Gypsum Cement-Based Underlayment

1. Acceptable Products:
 - a. ARDEX GS-4™; Manufactured by ARDEX Engineered Cements: 400 Ardex Park Drive, Aliquippa, PA, 15001, USA, www.ardexamericas.com
 - i. Gypsum: Requires two applications of ARDEX P 51™ Primer
 - ii. Wood: Undiluted ARDEX P 51™ Primer
2. Performance and Physical Properties: Meet or exceed the following values for material cured at 70°F (21°C) and 50 percent relative humidity:
 - a. Application: Barrel Mix or Pump
 - b. Compressive Strength: 5,500 psi (385 kg/cm²) at 28 days, ASTM C109M
 - c. Flexural Strength: 1,500 psi (105 kg/cm²) at 28 days, ASTM C348
 - d. VOC: 0

2.2 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.
 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.
- B. Crack and Joint Preparation
 1. Moving Joints and Moving Cracks – honor all moving joints such as expansion joints, isolation joints as well as all moving cracks up through the underlayment.
- C. Wooden subfloors: Prepare substrate in accordance with manufacturer's instructions.
 1. The wood subfloor either must be solid hardwood flooring; a minimum of 3/4" (19 mm) tongue-and-groove, APA-rated Type 1, exterior exposure plywood; or an approved OSB equivalent. The wood subfloor must be constructed according to prevailing building codes and must be solid and securely fixed to provide a rigid base free of undue flex. Any boards exhibiting movement must be properly fastened to create a sound, solid subfloor. The surface of the wood must be clean and free of oil, grease, wax, dirt, varnish, shellac and any contaminant that might act as a bond breaker. If necessary, sand down to bare wood. A commercial drum sander can be used to sand large areas. Do not use solvents, strippers or cleaners. Vacuum all dust and debris. Open joints should be filled with ARDEX FEATHER FINISH®. It is the responsibility of the installation contractor to

ensure that the wood subfloor is thoroughly clean and properly anchored prior to the installation of any ARDEX material.

3.2 APPLICATION OF ARDEX GS-4™

- 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. Priming for gypsum substrates: Make an initial application of ARDEX P 51 mixed 3:1 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 thoroughly (1 - 3 hours). Install a second application of ARDEX P 51 mixed 1:1 with water. Allow primer to dry to a clear, thin film (min. 3 hours, max. 24 hours). Underlayment shall not be applied until the primer is dry.
 - 2. Priming for wood subfloor: Apply ARDEX P 51 at full strength (do not dilute). Apply directly to prepared wood with a short-nap or sponge paint roller, leaving a thin coat of primer. Do not leave any bare spots. Brush off puddles and excess primer. Allow to dry to a clear, thin film (min. 3 hours, max. 24 hours).
- D. Mixing: Comply with manufacturer's printed instructions and the following.
 - 1. Add 4 quarts (3.8 L) of clean potable water per two 50 lb. (22.7 kg) 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. Aggregate mix: For areas to be installed over 2" (5 cm) thick, aggregate may be added to reduce material costs. Mix ARDEX GS-4™ with water first, then add 1 part by volume of washed, dry, well-graded 1/8" to 3/8" (3 – 9.5 mm) pea gravel aggregate. Please note that the aggregate size must not exceed 1/3 the depth of the pour. Do not use sand. Note: The addition of aggregate will diminish the workability of the product and may make it necessary to install a neat coat to obtain a smooth surface. Allow the initial application to dry for 12 – 16 hours, and then prime this layer with ARDEX P-51 mixed 1:1 with water as stated above. Allow to dry to a clear, thin film (min. 3 hours, max. 24 hours). Ardex recommends a ¼" application of ARDEX GS-4™ neat to be installed as the finish coat.
 - 4. For pump installations, ARDEX GS-4™ 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 GS-4™ must be installed at a minimum thickness of 1/8" (3 mm) over the highest point in the floor, which typically results in an average thickness of 1/4" (6 mm) over the entire floor. ARDEX GS-4™ can be installed up to 2" (5 cm) over large areas neat, and up to 5" (12.7 cm) with the addition of proper aggregate. ARDEX GS-4™ can also be featheredged to match existing elevations. For applications over in-floor, hydronic radiant heating systems, the ARDEX GS-4™ must be installed over the tubes to a height that ensures that the tops of the tubes are covered with a minimum 1/4" of ARDEX GS-4™. To match existing elevations, ARDEX GS-4™ can be tapered to as thin an application as the sand in the material will allow. If a true featheredge is needed, ARDEX recommends using ARDEX FEATHER FINISH®.
2. Pour or pump the liquid ARDEX GS-4™ and spread in place with the ARDEX T-4 Spreader. Use the ARDEX T-5 Smoother and featheredge and touch-up. Wear non-metallic cleats to avoid leaving marks in the liquid ARDEX GS-4™.

F. Curing

1. ARDEX GS-4™ can be walked on in 2-3 hours. Floor coverings can be installed after the underlayment has dried thoroughly. Allow the installation to dry a minimum of 48 hours prior to mat testing in accordance with ASTM D4263. To do this, place a piece of heavy plastic or a smooth rubber mat down over a 2' X 2' area. After 24 hours, lift the barrier material and inspect for surface darkening. A darkened area indicates excessive moisture is still present, and further drying time is required. Repeat the above test at regular intervals until no darkening is observed.
2. Once the installation is deemed dry, prime the entire area with ARDEX P 51 mixed with 3 parts water by volume. Apply the primer as outlined in the Priming section. Allow drying to a clear, thin film (min. 3 hours, max. 24 hours) before applying the thin set mortar or adhesive and floor covering. The application of ARDEX P 51 will help ensure that the adhesive or setting material has sufficient open time prior to placing the floor covering.
3. Drying time is a function of jobsite temperature and humidity conditions. While a 1/4" (6 mm) thick installation may be dry enough for some types of floor covering after only a few days, additional drying time may be necessary for deeper installations or for the installation of more moisture-sensitive flooring. Low substrate temperatures and/or high ambient humidity will extend the drying time. Adequate ventilation and heat will aid drying. Forced drying can dry the surface of the underlayment prematurely and is not recommended.

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