

ARDEX GUIDE SPECIFICATION

ARDEX MC™ RAPID & ARDEX K 520™ Self-Leveling Concrete Topping – Non-Polished/Sealed

SECTION 03 01 30

Concrete Moisture Control & Polished Concrete Topping

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 single-coat, fast-curing, 100% solids epoxy moisture management system formulated to suppress excessive moisture vapor emissions in new or existing concrete prior to the installation of an ARDEX polished concrete topping finished to a specified finish using traditional dry concrete polishing techniques. Application of joint filler for both moving and non-moving cracks and joints. Application of a densifier and stain protector/guard to inhibit absorption of liquid into the surface, thereby minimizing the potential for discoloration due to staining. Application of topical and/or integral color. Furnish all labor, materials, equipment, and services necessary for the dry diamond grinding and polishing of the self-leveling floor in accordance with industry standards.

1. ARDEX ARDIFIX™ Two-Part, Low Viscosity Rigid Polyurethane Crack & Joint Repair
2. ARDEX ARDISEAL™ RAPID PLUS Semi-Rigid Joint Sealant
3. ARDEX MC™ Rapid One-Coat Moisture Control System for Concrete to Receive ARDEX Products - For Use as a Fast-Track Primer
4. ARDEX K 520™ Self-Leveling Concrete Topping with Aggregate Surface
5. ARDEX E 25™ Resilient Emulsion
6. Integral and Topical color
7. Stain and Wear Protection

- 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

1.3 REFERENCES

- A. ASTM C109M, Compressive Strength Air-Cure Only
- B. ASTM C348, Flexural Strength of Hydraulic-Cement Mortar
- 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

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: Provide written documentation from the manufacturer confirming that installer meets the qualifications as specified and is eligible for manufacturer's warranty. Provide project names, address, contact names, phone numbers of at least three projects of similar scope completed by the installer
- C. Maintenance Data: Provide instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under intended use. These instructions should contain precautions against cleaning products and methods that may be detrimental to finishes and performance.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Installer should be experienced in performing specified work similar in design, products, and scope of this project, with a documented track record of successful, in-service performance and with sufficient production capabilities, facilities, and personnel to produce specified work.
- B. Mock-Up: Before performing the work in this section, an on-site mock-up of the representative product and specified process, surface, finish, color, and joint design/treatments must be installed for review and approval. These mock-ups should be installed using the same Installer personnel who will perform work. Approved mock-ups may become part of completed work, if undisturbed at time of substantial completion. Mock-up must also include specified edge finish and approved by the Architect/owner's representative.
- C. Pre-Installation Conference:
 - 1. Prior to the installation of the ARDEX MC™ RAPID & ARDEX K 520™ an on-site conference shall be conducted to review specification requirements.
 - 2. The minimum agenda shall include a review of the site conditions, construction documents, schedule, installation procedures, protection procedures and submittals.

D. Warranty:

1. ARDEX MC™ RAPID: Certified applicator must file a pre-installation checklist with the manufacturer and receive written confirmation of the approval to proceed to obtain the extended ARDEX MC™ RAPID Warranty. Upon receipt and approval of the pre-installation checklist, a 25-year ARDEX MC™ RAPID Warranty is available for ARDEX LevelMaster Elite® Installers and a 20-year ARDEX MC™ RAPID Warranty is available for factory-trained installers.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver all materials in original containers, bearing manufacturer's labels indicating brand name and directions for storage, factory numbered and sealed until ready for installation.
- B. Store all materials in a dry, climate-controlled environment at a minimum of 50°F (10°C) and maximum of 85°F (29°C).
- C. Handle products in accordance with manufacturer's printed recommendations.

1.7 SITE CONDITIONS

- A. Observe the basic rules of concrete work. Do not install below 50°F (10°C) or above 85°F (29°C) surface temperature. Install quickly if floor is warm (above 70°F/21°C and up to 85°F/29°C) and follow warm weather precautions available from the ARDEX Technical Service Department (724) 203-5000. Never mix with cement or additives other than ARDEX approved products.
- B. Inspect the existing substrate and document unsatisfactory conditions in writing. Verify that surfaces and site conditions are ready to receive work. Correct unacceptable conditions prior to installation of System. Commencement of work constitutes acceptance of substrate conditions.
- C. Close areas to traffic during and after the ARDEX MC™ RAPID & ARDEX K 520™ installation.

PART 2 – PRODUCTS

2.1 MOISTURE VAPOR EMISSION CONTROL

- A. One-Coat Moisture Control System for Concrete to Receive ARDEX Underlayment's and Toppings
 1. Acceptable Products:
ARDEX MC™ RAPID; Manufactured by ARDEX Americas: USA, (724) 203-5000,
www.ardexamericas.com
 2. Performance and Physical Properties: Meet or exceed the following values for material cured at 70° F+/-3°F (21° C+/-3°C) and 50% +/-5% relative humidity:
 - a. Application: Manual

- b. Material Requirements on CSP 3 Prepared Concrete: Approx. 250 - 270 sq. ft. (25 m²) per mixed unit for 10 mils, and approx. 170 – 190 sq. ft. (16 – 18 m²) per unit for 14 mils
- c. Permeability (ASTM E96): ≤ 0.06 perms
- d. 14 pH solution (ASTM D1308): No effect
- e. Working Time: 20 minutes
- f. Pot Life: 20 minutes
- g. VOC: 19.9 g/L, A+B, ASTM D2369 Walkable: Minimum of 4 hours
- h. Prime and Install Underlayment: Minimum 4 hours, maximum 24 hours

2.2 SEALED CONCRETE TOPPING

A. Portland Cement-based Self-Leveling Topping

Acceptable products include:

1. ARDEX K 520™ Self-Leveling Concrete Topping; ARDEX Americas; USA; (724) 203-5000; www.ardexamericas.com
 - a. Water: Shall be clean, potable and sufficiently cool (not warmer than 70°F/21°C)
2. Performance and Physical Properties: Meet or exceed the following values for material cured at 70°F (20°C) and 50% relative humidity:
 - a. Flow Time: 10 minutes
 - b. Compressive Strength: 6,800 psi (476 kg/cm²) at 28 days, ASTM C109M
 - c. Flexural Strength: 1,300 psi (91 kg/cm²) at 28 days, ASTM C348
 - d. VOC: 0
 - e. Color: Gray

B. Low Viscosity Rigid Polyurethane Crack and Joint Repair; ARDEX ARDIFIX™; Manufactured by ARDEX Americas; USA; 724-203-5000, www.ardexamericas.com

C. Semi-Rigid Joint Sealant; ARDEX ARDISEAL™ Rapid Plus Semi-Rigid Joint Sealant; Manufactured by ARDEX Americas; USA; 724-203-5000, www.ardexamericas.com

D. Topical Color: As selected by Architect

E. Resilient Emulsion: ARDFEX E 25™ Resilient Emulsion; Manufactured by ARDEX Americas; USA; (724) 203-5000, www.ardexamericas.com

F. Integral color

1. As selected by Architect. Powder or liquid pigments can be utilized for integral pigmentation. The pigments must be suitable for use with a cementitious product.

G. STAIN & WEAR PROTECTION: As specified by Architect, a protective sealer that is appropriate for the intended use and wear of the surface must be used.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions under which materials will be installed. Do not proceed with installation until unsatisfactory conditions are corrected.
- B. Verify that existing concrete has cured a minimum of 28 days before installing ARDEX Concrete Toppings and meets the strength requirement of a minimum compressive strength of 3000 psi, a minimum density of 100 pcf and a minimum tensile strength of 200 psi.
- C. Conduct pre-installation conference, per Section 1.5 C.

3.2 PREPARATION

- A. 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. Acid etching and the use of sweeping compounds and solvents are not acceptable.
- B. Concrete shall be mechanically prepared to achieve a concrete surface profile (CSP) 3 in accordance with ICRI standards
- C. Prior to beginning the installation, the relative humidity within the concrete can be measured (ASTM F2170). No standing water shall be present.

3.3 CRACK & JOINT TREATMENT

- A. Joint Preparation: Honor all moving cracks and all joints, including expansion joints, isolation joints and control joints (saw cuts), up through the ARDEX Toppings.
 - a. All dormant cracks must be pre-filled with ARDEX ARDIFIX™ in strict accordance with the installation instructions provided by the ARDEX Technical Department. Once the dormant cracks have been properly filled, broadcast sand to refusal, and allow these areas to cure thoroughly. Remove all excess sand prior to proceeding with the ARDEX MC™ RAPID installation.
 - b. All joints, including control joints, expansion joints and isolation joints, and moving cracks must be honored up through the ARDEX MC RAPID, the ARDEX Topping and the sealer by installing a fully flexible sealing compound designed specifically for this use, such as ARDEX ARDISEAL RAPID PLUS.

3.4 APPLICATION OF ARDEX MC™ RAPID:

- A. Coordinate installation with adjacent work to ensure proper sequence of construction. Protect adjacent areas from contact due to mixing and handling of materials.
- B. Mixing: Comply with manufacturer's printed instructions and the following.
 - 1. Each individual 22 lb. (10 kg) unit contains separate, pre-measured quantities of hardener (Part B) and the resin (Part A). After opening each container, stir the individual components thoroughly before blending. The hardening agent (Part B) is added to the resin (Part A).
 - 2. Pour all the hardener into the resin portion and stir thoroughly for a minimum of 3 minutes using a low-speed drill and an epoxy mixing paddle. Once mixed, pour some of the epoxy back into the hardener container, stir for 10 seconds, and then pour all the contents back into the resin container. Mix for an additional 30 seconds before applying.
- C. Application: Comply with manufacturer's printed instructions and the following.
 - 1. Apply the freshly mixed ARDEX MC™ RAPID at a minimum thickness of 14 mils as specified in the technical data sheet to the prepared concrete surface in a uniform direction with a short-nap paint roller or notched squeegee with back-rolling for smoother surfaces, and a longer nap roller for more uneven substrates. Sand broadcast to refusal while the ARDEX MC RAPID is still in a fresh state.
 - 2. When broadcasting the sand, use a NIOSH-approved dust mask in conformance with OSHA requirements regarding the handling of sand (crystalline silica).
 - 3. Following the application of MC RAPID and sand broadcast, install the selected ARDEX Topping as outlined in the technical data sheet.
 - 4. It is not necessary to re-test the substrate for moisture emissions prior to installing the coating or floor covering.

3.5 APPLICATION OF ARDEX K 520™

- A. PRIMING
 - 1. No additional priming is needed. The sand-broadcast surface of the ARDEX MC™ RAPID serves as the primer prior to the ARDEX Topping application.
- B. MIXING
 - 1. ARDEX K 520 is mixed two bags at a time. Add 5 quarts (4.73 L) of clean potable water per 50 lb. (22.7 kg) bag.
 - 2. Mix using a 1/2" (650 rpm) low speed heavy-duty mixing drill with an ARDEX T-1 mixing paddle. Mix thoroughly for approximately 2-3 minutes to obtain a lump-free mixture. Do not overwater.

3. Aggregate mix: For areas with thicknesses greater than 1" (2.5 cm), mix ARDEX K 520™ with washed and well-graded 1/8" - 3/8" (3 - 9.5 mm) pea gravel. Please note that the aggregate size must not exceed 1/3 the depth of the pour. Mix the ARDEX K 520 with water first, and then add 1 part aggregate by volume, mixing until the aggregate is completely coated. Do not use sand. If the aggregate is wet, reduce the amount of water to avoid overwatering. 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 EP 2000™ with sand broadcast in accordance with the technical data sheet. Allow the primer to dry for a minimum of 16 hours, then vacuum the surface to remove all loose sand prior to installing the neat coat of ARDEX K 520™.
4. When installing ARDEX K 520™ in high-stress areas subject to rolling loads such as rubber-wheel forklift traffic or similar usage, the addition of ARDEX E 25™ Resilient Emulsion is required to increase the resiliency of the ARDEX K520™. Please follow manufacturer guidelines for mixing instructions.
5. For pump installations, ARDEX K 520™ shall be mixed using the ARDEX ARDIFLO™ Automatic Mixing Pumps. Contact ARDEX Technical Services for more information.

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

1. ARDEX K 520™ may be installed at a minimum thickness of 1/4" (6mm). ARDEX K 520™ can be installed up to 1" (25 mm) over large areas neat, and up to 3" (7.5 cm) with the addition of proper aggregate. ARDEX K 520™ can also be tapered to match existing elevations. Install at a minimum thickness of 3/8" (9.5 mm) if being used as a polished topping.
2. Pour or pump the liquid ARDEX K 520™ and spread in place with the ARDEX T-4 Spreader. Use the ARDEX T-5 Smoother and featheredge and touch-up. Wear nonmetallic cleats to avoid leaving marks in the liquid ARDEX K 520™.

F. Curing

1. ARDEX K 520™ can be walked on in 2-3 hours. Dry time prior to sealer application varies by sealer type and thickness of application. Follow ARDEX recommendation for dry time prior to the installation of the sealer.

G. Sealing

1. The surface of ARDEX K 520™ must always be protected from staining agents and surface wear by applying a suitable protection system and must be suitable for the traffic of the installation space.
2. For areas to receive heavier traffic, as well as areas such as restaurants and food courts, sealing should be done using an appropriate wear protection coating. As the performance of coating systems varies greatly, the installer is responsible for assessing the suitability of these coatings.
 - a. If a waterborne sealer is to be applied at a thickness not-to-exceed a total of 20 mil (0.5mm), the coating can be applied as soon as the surface of the ARDEX K 520™ after 24 hours (at 70°F/21°C).

- b. When using a solvent-borne or 100% solids coating applied at a total thickness of 20 mils (500 microns) or less, the ARDEX K 520™ must cure for a minimum of 48 hours at 70°F (21°C).
 - c. When the total application thickness will exceed 20 mils (500 microns), the ARDEX K 520™ must cure 7 days at 70°F (21°C) and the surface of the ARDEX K 520™ must be shot blasted prior to the protection layer being installed.
3. Traffic can proceed as soon as the sealer / coating has cured in accordance with manufacturer recommendations. Drying time is a function of jobsite temperature and humidity conditions and the installation thickness. 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.

3.6 FIELD QUALITY CONTROL

- A. Where specified, field sampling of the ARDEX topping 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.

3.7 PROTECTION

- A. ARDEX K 520™ wear surfaces should be adequately protected from damage resulting from construction traffic or other use that can affect the finished floor: by the use of plywood or other suitable, breathable protection course.

3.8 MAINTENANCE

- A. Once installed, any finished floor surface requires routine cleaning and maintenance. After installing the initial coats of the sealer, the best way to ensure the long-term appearance of a newly installed floor is using a sacrificial floor finish (“wax” or “polish”) applied over the surface of the newly installed and sealed floor. All floor coatings will wear as a function of traffic and maintenance, and the use of a sacrificial coating avoids wear on the original sealer while providing a simple maintenance solution. Specific maintenance recommendations shall be provided by the installer performing the work of this section. Contact the Manufacturer of selected chemicals or ARDEX Technical Services Department for recommendations

END OF SECTION