
SECTION 03 54 00
CAST UNDERLAYMENT**PART 1 GENERAL****1.1 SECTION INCLUDES**

- A. Liquid-applied self-leveling floor underlayment as required by new finish flooring manufacturer, where existing finish flooring is being removed down to existing concrete slab and new finish flooring is to be provided. See drawings for locations.
 - 1. Use cementitious type at all locations unless noted otherwise.

1.2 REFERENCE STANDARDS

- A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2013.
- B. ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars; 2014.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2014.

1.3 SUBMITTALS

- A. Product Data: Provide manufacturer's data sheets documenting physical characteristics and product limitations of underlayment materials. Include information on surface preparation, environmental limitations, and installation instructions.
- B. Certificate: Certify that products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Applicator Qualifications: Applicator must be a factory-trained applicator, such as an ARDEX LevelMaster® Elite or Choice Contractor, using mixing equipment and tools approved by the manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Keep dry and protect from direct sun exposure, freezing, and ambient temperature greater than 105 degrees F.

1.6 MOCK-UP

- A. Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Prepare mock-up in location designated by Professional.
 - 2. Area: 6 ft by 6 ft.
 - 3. Do not proceed with underlayment work until workmanship of mock-up has been approved by Professional.
 - 4. Mock-up may remain as part of the Work.

1.7 FIELD CONDITIONS

- A. Do not install underlayment until floor penetrations and peripheral work are complete.
- B. Maintain minimum ambient temperatures of 50 degrees F 24 hours before, during and 72 hours after installation of underlayment.
- C. During the curing process, ventilate spaces to remove excess moisture.

PART 2 PRODUCTS**2.1 MANUFACTURERS**

- A. Basis of Design - Cementitious Underlayment: Provide ARDEX Engineered Cements; ARDEX K 15 or ARDEX V-1200 with ARDEX MC ULTRA: www.ardexamericas.com.

2.2 MATERIALS

- A. Cast Underlayments, General:
1. Conform to applicable code for combustibility or flame spread requirements.
 2. Cementitious Underlayment: Blended cement mix, that when mixed with water in accordance with manufacturer's directions will produce self-leveling underlayment with the following properties:
 - a. Compressive Strength: Minimum 4000 psi after 28 days, tested per ASTM C109/C109M.
 - b. Flexural Strength: Minimum 1000 psi after 28 days, tested per ASTM C348.
 - c. Density: 125 lb/cu ft, nominal.
 - d. Final Set Time: 1-1/2 to 2 hours, maximum.
 - e. Thickness: Capable of thicknesses from feather edge to maximum 3-1/2 inch.
 - f. Surface Burning Characteristics: Flame spread/Smoke developed index of 0/0 in accordance with ASTM E84.
 3. Aggregate: Where required by underlayment manufacturer, dry, well graded, washed silica aggregate, approximately 1/8 inch in size and acceptable to underlayment manufacturer.
 4. Reinforcement: Galvanized metal lath complying with recommendations of underlayment manufacturer for specific project circumstances.
 5. Water: Potable and not detrimental to underlayment mix materials.
 6. Primer: Manufacturer's recommended type.
 7. Joint and Crack Filler: Latex based filler, as recommended by manufacturer.

2.3 MIXING

- A. Site mix materials in accordance with manufacturer's instructions.
- B. Add aggregate for areas where thickness will exceed 1-1/2 inch. Mix underlayment and water for at least two minutes before adding aggregate, and continue mixing to assure that aggregate has been thoroughly coated.
- C. Mix to self-leveling consistency without over-watering.

PART 3 EXECUTION**3.1 EXAMINATION**

- A. Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum byproducts, or other compounds detrimental to underlayment material bond to substrate.
- B. Contractor shall perform RH moisture testing of existing slabs indicated to receive self-leveling underlayment prior to the installation of self-leveling underlayment. If test results indicate that a moisture mitigation system will need to be provided, per the underlayment manufacturers requirements, the contractor shall notify the Professional before proceeding with the underlayment work.

1. Moisture mitigation system: If required the moisture mitigation system shall be ARDEX MC ULTRA as manufactured by ARDEX.

3.2 PREPARATION

- A. Concrete: Mechanically prepare steel troweled concrete to create a textured surface necessary to achieve the best bond; acceptable methods include bead blasting and scarifying. Do not use acid etching.
- B. Wood: Install metal lath for reinforcement of underlayment.
- C. Remove substrate surface irregularities. Fill voids and deck joints with filler. Finish smooth.
- D. Vacuum clean surfaces.
- E. Prime substrate in accordance with manufacturer's instructions. Allow to dry.
- F. Close floor openings.

3.3 APPLICATION

- A. Install underlayment in accordance with manufacturer's instructions.
- B. Pump or pour material onto substrate. Do not retemper or add water.
 1. Pump, move, and screed while the material is still highly flowable.
 2. Be careful not to create cold joints.
 3. Wear non-metallic spiked shoes while working in the wet material to avoid leaving marks.
 4. Place to indicated thickness, with top surface level to 1/8 inch in 10 ft.
 5. Place before partition installation.
 6. Where additional aggregate has been used in the mix, add a top layer of neat mix (without aggregate), if needed to level and smooth the surface.
 7. If a fine, feathered edge is desired, steel trowel the edge after initial set, but before it is completely hard.

3.4 CURING

- A. Once underlayment starts to set, prohibit foot traffic until final set has been reached.
- B. Air cure in accordance with manufacturer's instructions.

3.5 PROTECTION

- A. Protect against direct sunlight, heat, and wind; prevent rapid drying to avoid shrinkage and cracking.
- B. Do not permit traffic over unprotected floor underlayment surfaces.

END OF SECTION 03 54 00