

## **SECTION 03 54 00**

### **CAST UNDERLAYMENT**

#### **PART 1 GENERAL**

##### **1.01 SUMMARY**

- A. Section Includes: Concrete floor underlayment applied over previously placed base slabs, for leveling, skimming and patching, at all areas within the project that receive new flooring.

##### **1.02 REFERENCE STANDARDS**

- A. ASTM International.
  - 1. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens).
  - 2. ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortar.
  - 3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

##### **1.03 SUBMITTALS**

- A. Product Data describing materials, mix design, and methods of mixing, placing, curing and protecting self-leveling underlayment.
- B. Samples: Only as requested.
- C. Certification of installer's qualifications including list of projects.

##### **1.04 QUALITY ASSURANCE**

- A. Installer Qualifications: Installer shall be licensed or otherwise certified by self-leveling underlayment manufacturer and shall use manufacturer's approved mixing and pumping equipment.

##### **1.05 DELIVERY, STORAGE AND HANDLING**

- A. Deliver materials in their original, unopened packages, and protected from exposure to elements.
- B. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by self-leveling underlayment manufacturer.
- C. Remove damaged or deteriorated materials from premises

##### **1.06 SITE CONDITIONS**

- A. Existing Conditions: Concrete surfaces, upon which self-leveling underlayment will be applied, shall be sound, rigid, and clean. Surfaces shall be free of dirt, dust, cement laitance, oil, grease, bond-breaking or curing compounds, latex compounds, paint spots, or any water-soluble material.
- B. Environmental Requirements:

1. Before, during and after installation of self-leveling underlayment, building interior shall be enclosed and maintained at a temperature of above 40 degrees Fahrenheit and below 100 degrees Fahrenheit until structure and subfloor temperature stabilized.
2. Provide, as required, continuous heat and adequate ventilation to rapidly remove moisture from area until self-leveling underlayment is dry.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Self-Leveling Underlayment:
  1. Description: High strength, non-structural, pumpable, cement mixed with sand meeting following requirements:
    - a. Material: Hydraulic cement
    - b. Dry Density: Approximately 125 pcf.
    - c. Compressive Strength: Up 5,500 psi at 28 days per modified ASTM C109/C109M.
    - d. Flexural Strength: 1260 psi at 28 days per ASTM C348.
    - e. Tensile Strength: 720 psi at 28 Days per ASTM C190.
    - f. Surface Burning Characteristics: Flame spread 0, fuel contribution 0, smoke development 0, per ASTM E84.
  2. Product: Maxxon Corp.'s "Level-Right Self-Leveling Floor Underlayment"; or equal.
- B. Mix water: Potable, free from impurities.
- C. Concrete Primer: As recommended by self-leveling underlayment manufacturer.
- D. Sand: As recommended by self-leveling concrete floor underlayment manufacturer.
- E. Sealer: As recommended by self-leveling underlayment manufacturer.

### **2.02 MIXING**

- A. Mix self-leveling underlayment materials in accordance with the manufacturer's instructions and recommendations, using manufacturer required equipment.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine subfloor surfaces before starting installation work. Verify that subfloor is structurally sound. Correct any defective surfaces or conditions which may interfere with proper execution of the work.
- B. Do not start work until unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Cleaning of Subfloor:
  1. Steel troweled concrete, concrete sealed with curing compounds, or slick or smooth substrate surfaces must be shot blasted or scarified.
  2. Clean subfloor surfaces of dirt, dust, oil, fat, grease, and any other conditions which may impair bond of self-leveling underlayment system.
  3. Vacuum clean subfloor surfaces where conditions permit

- B. Leak Prevention: Fill cracks and voids with a quick setting patching or caulking material where leakage of self-leveling underlayment could occur.
- C. Expansion Joints: Allow joints to continue through self-leveling underlayment at the same width.
- D. Protect adjacent surfaces from damage which could be caused by the work of this section.

### **3.03 PRIMING**

- A. Prime concrete subfloor surfaces with primer before application of self-leveling underlayment.
- B. Apply by spray or roll as recommended by the manufacturer or his authorized representative.
- C. Permit primed surfaces to dry before applying self-leveling underlayment.

### **3.04 INSTALLATION**

- A. Install self-leveling underlayment system in accordance with the manufacturer's specifications, installation instructions, and recommendations, employing only workers skilled and experienced in the installation of this type of work.
- B. Place self-leveling underlayment from featheredge to 3/8 inch thickness in one pour.
- C. Install self-leveling underlayment from 0 to 3 inches in thickness.
- D. Spread and float self-leveling underlayment to a smooth surface.
- E. Place self-leveling underlayment as continuously as possible until installation is complete so that no self-leveling underlayment slurry is placed against underlayment that has obtained initial set, except at authorized joints.
- F. All surfaces shall finish true to 1/8 inch in 10 feet on a straight-edge in any direction, with maximum height and low variance occurring in not less than 20 feet, and with 1/16 inch maximum tolerance in any running foot.
- G. Drying:
  - 1. Provide continuous ventilation and adequate heat to remove moisture from area of installation until self-leveling underlayment sets.
  - 2. Provide mechanical ventilation as necessary to enhance drying process.

### **3.05 PREPARATION FOR INSTALLATION OF GLUE DOWN FLOOR GOODS**

- A. Sealing: Seal all areas that are to receive glue down floor goods according to self-leveling underlayment manufacturer's printed recommendations. Clean and seal any floor areas where surface has been damaged regardless of floor covering to be used.
- B. Where floor goods manufacturers require special adhesive or installation systems, their requirements supersede these recommendations.

### **3.06 SITE QUALITY CONTROL**

- A. Slump tests: Test self-leveling underlayment mix as it's being pumped using 2 inch by 4 inch cylinder resulting in a patty size of 9-1/2 inches plus or minus 1 inch diameter

- B. Field Samples:
  - 1. Take at least one set of 3 molded cube samples from each day's pour during self-leveling underlayment installation.
  - 2. Test cubes as recommended by self-leveling underlayment manufacturer in accordance with modified ASTM C109/C109M.
  - 3. Provide copies of Test results to University's representative and Contractor.
  
- C. Test for Dryness: Tape 24 by 24 inch sections of plastic or high density rubber mat to the surface of the underlayment. After 48 - 72 hours, if no condensation occurs, underlayment is considered dry. Perform test 5 to 7 days after pour.

### **3.07 PROTECTION**

- A. Protection from Heavy Loads: During construction, place temporary wood planking over self-leveling underlayment wherever it will be subject to heavy wheeled or concentrated loads.

**END OF SECTION**