# SECTION 03 54 00

## CEMENTITIOUS UNDERLAYMENT

## APEX MULTI 25 - LIMESTONE CEMENT-BASED UNDERLAYMENT

## PART 1 – GENERAL

### 1.01 SUMMARY

A. Description of Work:

Provide and install Apex Multi Limestone Cement-Based Underlayment for interior flooring applications. Work includes, but is not limited to:

1. Self-compacting, free-flowing cementitious underlayment covering normal project conditions and applications.

2. Division 3 Section- “Concrete Toppings” applied over various substrates.

3. Division 9 Section-Finishes: “Acoustic Treatment”.

### 1.02 REFERENCES

A. Standards and Guidelines:

1. ASTM C472 - Compressive Strength of Cementitious Materials

2. ASTM F710 - Preparing Concrete Floors to Receive Resilient Flooring

3. ASTM C33 - Standard Specification for Concrete Aggregates

3. ASTM F2170 – Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs.

4. ASTM D4263 - Standard test method for indicating moisture in concrete

5. ASTM F2659-22 - Standard Guide for Preliminary Evaluation of Comparative Moisture Condition of Concrete, Gypsum Cement and Other Floor Slabs and Screeds Using a Non-Destructive Electronic Moisture Meter.

### 1.03 Submittals

Product Data: Submit Apex Minerals LLC specifications and installation instructions with project conditions and materials clearly identified or detailed for each required product or system.

### 1.04 System Requirements.

A. Performance Requirements:

1. Apex Multi 25 LIMESTONE CEMENT-BASED UNDERLAYMENT

 a. Compressive Strength - Typical range of 2,500 – 3,600 psi (17.2 - 24.8 MPa)

 b. Minimum Dry density - 115 pounds per cubic foot.

1. Sound Control

 a. Minimum Impact Insulation Class, 50 IIC (45 if field tested)

 b. Minimum Sound Transmission Class, 50 STC (45 if field tested)

### 1.05 QUALITY ASSURANCE

1. Performance Standards:
	1. All materials, unless otherwise indicated, shall be manufactured by Apex Minerals LLC and shall be installed in accordance with its current printed directions and by an Apex Minerals LLC Authorized Applicator.
	2. Underlayment mix shall be tested for a slump using a 2" (i.d.) x 4" (50 mm x 101 mm) cylinder resulting in a patty size of 8” to 9 1/2”.

### DELIVERY, STORAGE AND HANDLING

1. All materials shall be delivered in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure to the elements. Avoid ambient temperature below 40 degrees F. Do not allow bags to get wet. Products should not be used beyond self-life. Damaged or deteriorated materials shall be removed from the project.

### Conditions

1. The interior of the building must be enclosed, protected from sun and wind. Ambient and substrate temperatures must be maintained at a minimum temperature of 50 degrees F for 24 hours prior to the start of the installation and maintained during the installation for a period of seventy-two (72) hours after the installation of Apex Multi. Provide continuous ventilation and heat to remove excess moisture after installation until underlayment is dry.

## PART 2 – PRODUCTS

### 2.01 MANUFACTURER

A. Apex Minerals, 550w, Main Street, Boonton, New Jersey, 07005

### 2.02 MATERIALS

1. Apex Multi Limestone Cement-Based Underlayment
2. Primer: Apex Prime IT or Manufacturer-approved primer over wood and concrete substrates. The number of coats will vary depending on primer type and application.
3. Sand: Clean, washed concrete sand as per ASTM C33.
4. Water: Potable water, free of contaminants.
5. Optional Sound Control that does not negate the fire rating and is specified in UL design. Acoustic performance is dependent on system design and construction.

## PART 3 – EXECUTION

### EXAMINATION

1. Site Verification of Conditions:
	1. Installation shall not begin until the building is enclosed, including roof, windows, doors, and any other apertures.

### Preparation

1. The subfloor should be structurally sound, properly fastened, and dry. The subfloor must be clean and free of all dust, mud, oil, grease, and any other contaminants prior to pouring the underlayment. All cracks or voids should be filled.
2. Wood substrate: Limit design of subfloor and framing to minimum L/360 for live and dead loads. Wood panels must be securely attached to the floor joists with approved fasteners and properly spaced. Wood should be APA rated and T&G or back blocked at joints. Other wood products such as particle boards are not satisfactory as a subfloor.
3. Concrete substrate: Concrete must be structurally sound, dry, and free of surface contamination and must meet the live and dead load deflection standards of L/360. If the concrete is new verify it has been properly cured for at least 28 days and is dry. In 24 hours prior to underlayment installation. The substrate should be properly primed with Apex Prime IT or an approved primer. The concrete substrate must be tested for MVER (ASTM F1869-16) or RH (ASTM F2170). If the MVER or RH of the concrete substrate exceeds the floor covering manufacturer’s respective requirements for the finished floor system, the concrete should be treated with an approved moisture vapor barrier, before installing Apex Multi 25.
4. Apex Multi underlayment’s typically don’t require mechanical profiling of substrates over clean, well bonded, structurally sound substrates for pedestrian traffic areas. Ground in dirt, old loose flooring adhesive, and carpet backing, must be mechanically profiled. When high dynamic and point loads are anticipated, the substate must be profiled to a minimum ICRI CSP 3 to enhance bond to substrate, and a 3500-psi minimum compressive strength is required.
5. Apex Multi Underlayment’s should not be used to bridge moving cracks or expansion joints. All joints must be honored through to the surface.
6. Apex Multi Underlayment’s are not a wear surface and are not intended for use as a structural element. Products are for interior use only and should not be used in exterior areas.
7. Before, during and after installation of Apex Multi Underlayment’s the general contractor shall be responsible for ensuring that the building shall be ventilated and heated to a minimum of 50 degrees F (10 degrees C) until subfloor and ambient temperatures have stabilized. Temperature during and after installation shall be maintained until the material has completely cured.
8. Test Apex Multi Underlayment’s for dryness prior to installation of floor goods as per ASTM F2659-22. A reading of 4% or below on the concrete MC scale is considered acceptable for the installation of floor goods. All instructions or recommendations by the finished floor goods manufacturer supersede this recommendation.

### 3.03 GENERAL INSTALLATION REQUIREMENTS

1. Mixing Proportions:
	1. General Requirements: Mix proportions and methods shall be in strict accordance with product manufacturer’s recommendations.
2. Application:
	1. (Optional) Acoustic Sound Mat Installations: Install Acoustic Sound Mat following manufacturer’s recommendations and specifications including installation of Perimeter Isolation Strips at the perimeter of all areas receiving Acoustic Sound Mat (including doorframes) and around any protrusions through the installation. Adhere the foam perimeter isolation strip to the wall with adhesive tape.
	2. Pour Apex Multi Underlayment’s to recommended thickness. Immediately spread and screed product to a smooth surface. Expansion joints in all types of work shall be brought through the underlayment.
		1. Minimum Apex Multi Underlayment Depth:

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| Substrate | Depth of Pour |
| Wood | 3/4” (19 mm) |
| Acoustic Sound Mat | 3/4” (19 mm) or 1” (25 mm) |
| Concrete | 3/8” (10 mm) |

1. Drying:
2. The general contractor shall provide continuous ventilation and adequate heat as indicated in section 3.02.E above, to rapidly remove excess moisture from the area of the installation, until the underlayment is dry.

### Preparation for installation of floor covering.

1. Protection from Heavy Loads: During construction, place temporary wood planking over Apex Multi Underlayment’s when it will be subject to heavy wheeled or concentrated loads.
2. Underlayment must be dry prior to installing the finished floor. Follow flooring manufacturer recommendations regarding moisture levels and vapor retarders prior to installing finished floor.
3. There are many reference standards for the installation procedures and recommendations for finished flooring applications over underlayment’s. These include instructions from the manufacturers of the finished flooring, adhesives and thin set as well as national agency reference standards. The national standards are listed below:

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| Flooring Type | Reference Standard |
| Resilient  | ASTM F2419 |
| Ceramic Tile | TCNA F180 |
| Wood | NWFA Instructions |

1. Allow for adequate curing or setting time prior to allowing traffic on finished floor. Typically, 24 – 48 hours.

**END OF SECTION**