



SECTION 03540 [03 54 13]

Cementitious Underlayment

LEVELROCK® UltraArmor™ Floor Underlayment

PART 1 - GENERAL

Notes to Architect are highlighted in red*

1.01 SUMMARY

A. Description of Work: Work of this section includes self leveling underlayment for interior finish flooring but is not limited to, the following:

1. LEVELROCK® UltraArmor™ Floor Underlayment covering normal project conditions and applications.
2. Division 3 Section “Concrete Toppings” applied over various substrates.
3. Division 9 Section sound control, patching, and leveling compounds applied with finish flooring.

1.02 REFERENCES

- | | |
|---------------|--|
| A. ASTM C472 | Compressive Strength |
| B. ASTM C33 | Sand Aggregate |
| C. ASTM D4263 | Standard test method for indicating moisture in concrete |
| D. ASTM F2419 | Standard test method for installation of thick poured Gypsum concrete and preparation of surface to receive resilient flooring |
| E. ASTM E492 | Impact Insulation Class (IIC) |
| F. ASTM E90 | Sound Transmission Class (STC) |

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. See Section 9 for acceptable flooring materials including vinyl, tile, wood, and laminates.

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1.04 SUBMITTALS

A. Product Data: Submit manufacturer's specifications and installation instructions with project conditions and materials clearly identified or detailed for each required product or system.

B. Acoustical Data: Submit sound tests according to IBC code criteria ASTM E492 (IIC) and ASTM E90 (STC)

1. Submit in writing that all sound tests or data provided has been tested according to UL (Underwriters Laboratory) fire resistance design number.

1.05 SYSTEM REQUIREMENTS

A. Performance Requirements:

1. LEVELROCK® UltraArmor™ Floor Underlayment

- a. Minimum compressive strength 3,500-5,000 psi.
- b. Minimum density 118-124 pounds per cubic foot.

****Note: The following may be eligible for USGBC LEED Credits (MR 4.1 & 4.2)****

2. LEVELROCK® UltraArmor™ Floor Underlayment

- a. Minimum compressive strength 3,500 psi.
- b. Minimum density 118 pounds per cubic foot.
- c. Manufactured at Gypsum, OH with recaptured gypsum

****Note: The following is for 2003 IBC Acoustical requirements Section 1207****

1207.2 Air-borne sound. Walls, partitions, and floor/ceiling assemblies separating dwelling units from each other or from public or service areas shall have a sound transmission class (STC) of not less than 50 (45 if field tested) for air-borne noise when tested in accordance with ASTM E90.

1207.3 Structure-borne sound. Floor/ceiling assemblies between dwelling units or between a dwelling unit and a public or service area within the structure shall have an impact insulation class (IIC) rating of not less than 50 (45 if field tested) when tested in accordance with ASTM E492.

3. Sound Control

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

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

1.06 QUALITY ASSURANCE

A. Performance Standards:

1. All materials, unless otherwise indicated, shall be manufactured by United States Gypsum Company and shall be installed in accordance with its current printed directions and by a USG LEVELROCK® Authorized Applicator.

2. Product compatibility: Manufacturer's of underlayment and finished flooring system certify in writing that products are compatible.

3. Underlayment mix shall be tested for a slump using a 2" (i.d.) x 4" cylinder resulting in a patty size of 8"-9 1/2".

4. At least one set of three molded cube samples shall be taken from each day's pour or every 10,000 square feet which ever is less during the underlayment application. Cube shall be tested in accordance with ASTM C472.

1.07 DELIVERY, STORAGE AND HANDLING

A. All materials shall be delivered in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure from the elements. Damaged or deteriorated materials shall be removed from the premises.

1.08 PROJECT CONDITIONS

A. Before, during, and after installation of product, building interior shall be enclosed, with adequate ventilation and heat maintained at a temperature above 50 F to 110 F to allow for drying of product.

1.09 COORDINATION

A. Coordinate application of underlayment with requirements of floor-covering products and adhesives, to ensure compatibility of products.

PART 2 - GENERAL

2.01 PRODUCTS AND MANUFACTURERS

A. Manufacturer: USG Corporation

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1. 550 W. Adams St, Chicago, IL 60661; Telephone: 800-USG-4YOU
(874.4968);

www.levelrock.com

2.02 MATERIALS

A. Proprietary products/systems: Poured flooring underlayment and topping products, including the following:

1. LEVELROCK® UltraArmor™ Floor Underlayment:

- a. Material: Gypsum Cement.
- b. Minimum Compressive Strength (ASTM C472): 3,500psi. (Avg. 3,500 - 5,000) psi (17.24 – 22.06) MPa.
- c. Nominal Average Density: 118 pounds per cubic foot
- d. At ¾” thick weights 7.5 pounds per square foot

*****Note: The following is for 2003 IBC Acoustical requirements Section 1207*****

B. Proprietary products/systems: Optional- Sound Control that does not negate the fire rating and can be specified by a UL design. Acoustical performance is dependant on system design and construction. Values shown represent typical improvements. Systems tested in accordance with ASTM E90 (STC) and ASTM 492 (IIC)

1. LEVELROCK® SRM-25™ Sound Mat

- a. Additional 8-13 IIC points
- b. Additional 4-7 STC points

2. LEVELROCK® SRB™ Sound Board

- a. Additional 5-8 IIC points
- b. Additional 2-3 STC points

2.03 ACCESSORIES

1. LEVELROCK™ Brand Primer

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a. Material Standard: Comply with specifications outlined in manufacturer's Applicator Manual for wood and concrete.

2. Mix Water:

a. Material Standard: Potable, free from impurities and from domestic source.

3. Sand Aggregate:

a. Sand shall meet ASTM C33 as well as specifications outlined in manufacturer's applicator manual.

4. Fast Track Primer Sealer

a. Material Standard: Comply with specification outlined by the manufacturer Sika Flooring Division.

2.04 REPAIR

1. FastFinsh™ Floor Patch

a. High polymer-modified blend of engineered cements

PART 3 - EXECUTION

3.01 EXAMINATION

A. Site Verification of Conditions:

1. Wood or Concrete substrate shall be structurally sound, properly fastened, and dry. Contractor shall clean subfloor to remove mud, oil, grease, and other contaminating factors before arrival of the authorized applicator.

2. Wood substrate:

a. Limit design of subfloor and framing to a minimum L/360

b. Wood should be APA rated T&G or back blocked at joints.

3. Concrete substrate.

a. Verify concrete has been properly cured for at least 28 days and is dry. Perform moisture test outlined in, ASTM F1869. Proceed with installation only after substrates do not exceed a maximum moisture-vapor-emission rate of 3 lbs. of water/ per 1000 sq. ft. (1.36 kg of water/100 sq. m) in 24 hours prior to underlayment installation. b. If concrete contains more than 3 lbs. of water / per 1000 sq. ft. the application of a moisture mitigation system is required.

4. Radiant Heat Applications (wood and concrete subfloors)

During and for two weeks after the installation of UltraArmor floor underlayment, radiant heat systems should be turned off. The application of Levelrock floor underlayment primer to the subfloor is necessary to provide maximum bond between the underlayment and subfloor. Radiant Heat Applications should be installed in two lifts.

5. Corrugated steel deck

When used on corrugated steel deck, Levelrock™ CSD™ floor underlayment primer must be applied at full strength.

6. Do not proceed with installation until unsatisfactory conditions are corrected.

3.02 REQUIREMENTS

A. Leak Prevention:

1. Fill cracks and voids in subfloor where leakage of slurry could occur using compressed building insulation, a suitable quick-setting patch material or caulk.

B. Priming subfloor:

1. Prime substrate according to manufacturer's recommendations. Instructions and the number of coats will vary depending on application.

a. Wood substrate: LEVELROCK™ Primer (concentrate, ready mix, or powdered).

b. Concrete substrate: LEVELROCK™ Concrete Primer

C. Application:

1. Installation shall not begin until the building is enclosed, including roof, windows, doors, and any other apertures.
2. Install in accordance with reference standards and manufacturer's instructions and as required to comply with seismic requirements.

3.03 GENERAL INSTALLATION REQUIREMENTS

A. Mixing Proportions:

1. Mix design shall be proportioned, not to exceed 1.4 cubic feet of sand per 80lb bag, to provide an average compressive strength of 3,500 psi or greater with a density of 118 pounds per cubic foot.

2. Underlayment mix shall be tested for slump using a 2 inch (i.d.) x 4 inch cylinder resulting a patty size of 8"-9 1/2".

B. Application:

1. Pour floor topping to recommended thickness. Immediately spread and screed product to a smooth surface. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.

a. Wood: Minimum thickness 3/4", 1.4 mix design.

b. Concrete: Minimum thickness 1/2", 1.0 mix design.

Note: When using a sound mat or board to improve acoustical performance*

1. When application requires a sound mat or board, the installation of a perimeter isolation strip is required prior to pouring floor topping. Refer to product literature or Applicator Manual for details.

a. SRM-25 Sound Mat: Minimum thickness 1"

b. SRB Sound Board: Minimum thickness 3/4"

*****Note to architect: Additional quality control measures are outlined below*****

1. At least one set of three (3) molded cube samples shall be taken for every 10,000 sq. ft. Cubes shall be tested in accordance with ASTM C472.

2. If requested by the architect/owner, field control cubes samples may be tested by independent laboratory. Selection of independent laboratory shall be agreeable to the architect/owner and USG/authorized applicator. Copy of compressive test results shall be made available to USG/authorized applicator

3.04 INSTALLATION OF FINISH FLOOR

A. General Requirements:

1. Damaged areas of the underlayment must be repaired prior to applying any sealer or treatment.

2. Heavily soiled floors need to be cleaned and free from paint, dirt, dust, or foreign matter. The use of oil based sweeping compounds is prohibited.

3. Approved bond test should be conducted prior to applying sealers as recommended by application and by the manufacturer.

4. Fasteners to be installed in underlayment must be designed for use in concrete or masonry systems.
5. Follow manufacturer's recommendations regarding moisture levels and vapor retarders before proceeding with installation of finish floor system.
6. Floor must be dry prior to installation of finished floor or application of floor coatings. Check dryness by taping an 18" x18" section of plastic and checking for condensation or discoloration after 16 – 24 hours. (ASTM D4263) or use a Protimeter® SM Survey Master following floor underlayment recommendations.
7. Preventative maintenance, cautions, and procedures.

B. Resilient Floor Applications:

1. Follow floor-covering and or adhesive manufacturer's guidelines for:
2. Proper application and procedures (ASTM F2419).
3. Adequate curing or setting time prior to allowing traffic on finished floor.
4. Proper trowel selections regarding porous-non porous substrates.

C. Ceramic Tile Applications:

1. Install ceramic tile, marble, porcelain, granite, natural stone in accordance with TCNA (Tile Council of North America, Inc.) printed recommendations.

D. Wood Flooring Applications:

1. Install hardwood, laminated, and engineered wood flooring according to NOFMA (National Wood Flooring Association) or manufacturer's printed recommendations.

END OF SECTION