

SECTION 03 54 16 – HYDRAULIC CEMENT UNDERLAYMENT

Product Summary:

- Ideal over concrete and wood subfloors.
- Fast application, fast-setting allows for quick return of normal trade traffic.
- Smooth crack-resistant surface.
- For more information, contact <Insert product representative here> or 800.874.4968 for technical questions.

Note to Specification Writer:

- This document is not intended to function as a standalone specification. It is intended to assist the specifier in inserting the proper language into the following recommended specification sections: 035416.
- USG Durock™ Brand UltraCap® Self-Leveling Underlayment is a fast-applying Portland cement based floor underlayment formulated for interior use over concrete and wood subfloors.
- Provides a minimum compressive strength of 5,000 psi (after 28 days of drying time), USG Durock™ Ultra-Cap® Self-Leveling Underlayment is mixed with water at the job site to yield a smooth and monolithic surface of up to 2 in. thick (deep fills up to 5 in.). A 1/4 in. thick underlayment weighs approximately 2.6 lbs./sq. ft. and has an approximate dry density of 125 lbs./cu. ft. Floor covering can be installed in two to three days, depending on underlayment thickness and drying conditions.
- USG Durock™ UltraCap® Self-Leveling Underlayment may assist in obtaining LEED credits 5.1 and 5.2.
- Reference USG literature CB575 for more information.

Sustainability Notes:

USG Durock™ Brand UltraCap® Self-Leveling Underlayment is defined as a “Low Emitting” material per California Department of Public Health CDPH/EHLB/Standard Method Version 1.1, 2010 (CA Section 01350) for school classroom, single-family residence, and private-office modeling scenarios, and meets USGBC’s LEED v4 emission requirements.

PART 1 - GENERAL

1.3 FIELD CONDITIONS

- A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ventilation, ambient temperature and humidity, and other conditions affecting underlayment performance.
1. Place gypsum cement underlayments only when ambient temperature and temperature of substrates is maintained between 50-90 deg F (10-35 deg C).

1.4 SUBFLOOR PREPERATION

- A. Subfloors must be clean and free of foreign substances, all holes and cracks to be filled before Durock Ultracap is applied.
- B. Concrete exhibiting signs of laitance, scaling, spalling and crumbling must be mechanically removed to achieve a clean substrate prior to installation of the underlayment.
- C. Concrete subfloor must be greater than 28 days for proper installation of Durock Ecocap.

1.5 QUALITY ASSURANCE

A. Performance Standards:

1. All flooring substrate products, unless indicated otherwise, shall be manufactured by a single source manufacturer; USG Corporation and installed by an approved installer.
2. Underlayments shall be installed according to manufacturer's instructions.
3. The finish surface of the installed underlayment shall be finished according to manufacturer's instructions.
4. Warranty of system is contingent upon installation according to product instructions.

PART 2 - PRODUCTS

2.2 HYDRAULIC CEMENT UNDERLAYMENTS

A. Hydraulic Cement Underlayment <INSERT MATERIAL DESIGNATION HERE>:

1. Basis of Design: Subject to compliance with project requirements, the design is based on the following: USG Corporation "USG Durock™ Brand UltraCap® Self-Leveling Underlayment".
 - a. Cement Binder: Portland cement based.
 - b. Compressive Strength: **5,000 minimum psi (34.5 MPa)** at 28 days when tested according to ASTM C 109 (modified).
2. Water:
 - a. Potable, free from impurities, cool, clean water and from a domestic source.
3. Product data:
 - a. Approximate Final Set ASTM C191: 60-100 minutes, light foot traffic 2-4 hours after set.
 - b. Floor Covering Application: 2-3 days, dry time depends on depth of pour.
 - c. Flow time: 15-20 minutes at **70° F (21 C)**.
 - d. Average Dry Density: **125-130 lb/cu. ft. (2,002-2,082 kg/m³)**.
 - e. Thickness: Featheredge to **2" (50 mm)** neat. Up to **5" (127 mm)** when extended.
 - f. Approximate Coverage: **23 ft² per bag at 1/4 in. depth. (2.13 m² per bag at 5mm depth)**.
 - g. Approximate Flexural Strength ASTM C348: minimum **1,000 psi (6.9 MPa)**.
 - h. Surface pH Range ASTM F710: 11.
 - i. Mixing Ratio **4.5-5.0 quarts (4.25 to 4.75 liters)** of water per **50 lb. (22.7 kg)** bag
 - 1) Slump Test: Underlayment mix shall be tested for a slump using a 1" x 2" cylinder resulting in a patty size of **5.75"- 6.75"** range. Slump shall be taken at the beginning of each installation to verify required mix. Slump should be tested periodically thereafter at a minimum of every **2500 sq. ft. (232.3 m²)** to verify it is being maintained.

B. Surface preparation and Underlayment Primer:

For primer application, the temperature, of the subfloor and the room must be maintained between **50°-95°F (10°-35°C)** for a period of 48 hours before and after application.

1. USG Durock™ Brand Primer-Sealer.
 - a. Coverage: **200-450 ft²/Ga. (18.5-42 m²/3.8l)** (Dilutions vary based on substrate type and condition.)
 - b. Drying Time: 2-3 hours.

2. Moisture Vapor Reducer: “USG Durock™ Brand RH-100™ Moisture Vapor Reducer”.
 - a. Moisture Vapor Emission Rate Gain (MVER) as defined by ASTM F1869: Up to 25 lbs/1000 ft² (11.3kg/92.9m²) per 24 hrs.
 - b. Relative Humidity as defined by ASTM F2170: Withstands Up to 100%.
 - c. Alkalinity: Resists up to 14 pH.
 - d. Solids Content: 100%.
 - e. Permeance (ASTM E96): 13 mil: .050 (grains/h/sq. ft./in. Hg).
 - f. Tensile Strength as defined by ASTM D638: 5,500 psi (37.9 MPa).
 - g. VOC: Zero.
 - h. Approximate Coverage: [375 sq. ft./3-gallon kit at 13 mil] minimum thickness [300 sq. ft./3-gallon kit at 16 mil].
 - i. Approximate Working Time: 15 minutes at 77°F (25° C).
 - j. Approximate Curing Time: 4 hours at 77°F (25° C).

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