



Firm-Fill®

Gypsum Underlayments

1. Product Name

- Firm-Fill® Gypsum Concrete Underlayments

Types

- Firm-Fill® "Super Blue" Gypsum Concrete
- Firm-Fill® 2010+
- Firm-Fill® 3310 Classic
- Firm-Fill® 3310+
- Firm-Fill® High Strength
- Firm-Fill® 4010+
- Firm-Fill® CMD (Corrugated Metal Deck)
- Gyp-Span® Radiant

2. Manufacturer

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3. Product Description

Basic Use

Hacker Industries Inc.'s Firm-Fill® brand Gypsum Concrete Underlayments (GCU) are solid, cost-effective solutions designed for use in multi-family housing, hospitality and commercial buildings. Firm-Fill® GCU satisfy demanding acoustical ratings and fire codes while providing a smooth, flat, quick drying surface for finished floor coverings. Install over Firm-Fill® SCM (Sound Control Mats) to create a system that will dramatically improve acoustical performance and provide a quiet living space. Firm-Fill® GCU can also be poured over corrugated metal deck, correct concrete problems in light commercial, renovation and repair projects, and be used with radiant heat systems. All Firm-Fill® GCU and Firm-Fill® SCM meet ASTM F2419, ICC-ESR 3386 and IAPMO ER-474, are listed in over 105 UL fire-rated designs and achieves 1, 2, and 3-hour fire ratings.



Composition, Materials and Proprietary Additives

A formulated gypsum cement mixed with sand and water on the job site to create a lightweight slurry, known as gypsum concrete.

Features and Benefits

- Lightweight; high-strength
- Code approvals: IAPMO ER-474, ICC-ESR-3386, LA City RR 24540, HUD and 105 UL Ratings
- Meets and exceeds ASTM F2419
- Sound tests performed at NVLAP-accredited laboratories
- Performs well in renovation and new construction
- Surface hardness three hours after pouring
- Compressive strength up to 5200 psi
- Creates a smooth, flat, crack-resistant surface
- Designed for installation over wood and concrete subfloors
- Stiffens the subfloor to eliminate nail pops and squeaks
- No shot blasting or surface prep required
- Rapid installation; up to 30,000 square feet installed per day
- Expert application with consistent quality; installed only by trained, Licensed Applicators
- Specify with Firm-Fill® SCM acoustical control mats for improved acoustical performance

Options/Accessories

- Firm-Fill® SCM-125
- Firm-Fill® SCM-250
- Firm-Fill® SCM-400
- Firm-Fill® SCM-750
- Firm-Fill® Reinforcement

Table 1—US UL and Canadian ULC Ratings

UL									
G561	J966	L206	L505	L515	L525	L535	L545	L556	L585
G565	J991	L208	L506	L516	L526	L536	L546	L557	L590
G568	J994	L209	L507	L517	L527	L537	L547	L558	L592
J917	K906	L210	L508	L518	L528	L538	L548	L559	L593
J919	L001	L211	L509,	L519	L529	L539	L549	L570	L598
J920	L004	L212	L510	L520	L530	L540	L550	L574	M502
J924	L005	L501	L511	L521	L531	L541	L551	L560	M506
J927	L006	L502	L512	L522	L532	L542	L552	L562	M508
J931	L201	L503	L513	L523	L533	L543	L553	L563	M512
J957	L202	L504	L514	L524	L534	L544	L555	L571	M513
ULC									
L003	L511	M500	M503	M506	M508	M514	M520		
L201	L512	M501	M505	M507	M509	M518			

Options/Accessories (cont.)

- Hacker Sound Control Mat (SCM) Tape
- Hacker Perimeter Isolation Strip
- Hacker Floor Sealer
- Hacker Primer
- Hacker TopCoat™ SP (Surface Preparation)

4. Technical Data**Applicable Standards****ASTM International**

- **ASTM E84** Standard Test Method for Surface Burning Characteristics of Building Materials
- **ASTM C472** Modified Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete
- **ASTM F2419** Standard Practice for Installation of Thick Poured Gypsum Concrete Underlayments and the Preparation of the Surface to Receive Resilient Flooring
- **ASTM E11** Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves

UL

- Please see Table 1

Approvals**ICC**

- **ICC-ESR 3386**

Tile Council of North America

- **2012 Tile Council of North America Handbook** - Installation Methods F180, F200, RH111, and RH12

IAPMO

- **UES-474**

Federal, State and Local Governments

- City of Los Angeles **RR No. 24540**
- U.S. Department of Housing and Urban Development **FHA-HUD-1255**

5. Installation**Preparation of Subfloor****Prior to Installation**

- Subfloor must be structurally sound (L/360), broom clean, dry and free from oil, grease, paraffin, laitance, wax or other contaminants before the arrival of the Hacker Licensed Applicator. Please note that any loose materials that are lighter than water will float to the top of the Firm-Fill® GCU.
- Leak Prevention: All cracks and voids shall be filled with a quick-setting patching or taping compound or equal where leakage could occur.
- Before installation over concrete or wood, the General Contractor (GC) shall inspect and approve the condition of the subfloor and test the existing subfloor for moisture and stability.

Priming

- Prime wood subfloors with one coat of Hacker Floor Primer (diluted 1:4 with water) using one gallon (3.8 L) per 500 square foot. (47 m²).
- Hacker Floor Primer is not always required over concrete substrates. Multiple coats may be required over porous concrete or plank. The Hacker Licensed Applicator can give specific recommendations. (Note: For rehabilitation work or pours over old and/or porous concrete, consult a Licensed Applicator or Hacker Industries, Inc., for recommended preparation.)



Properties	Mesurement	Test
Weight	7 - 7.8 lbs/ft ² at 3/4" (19 mm)	ASTM C472M
Thickness	3/4" (19 mm) (minimum over wood) to 3 1/2" (89mm)	—
Compressive Strength	2000 - 5200 psi	ASTM C472M
Thermal Performance	K-value of 2.8 Btu/ft ² ·h·°F; R-value of 0.36 ft ² ·h·°F/Btu	ASTM C177
Fire Hazard Classification	Flamespread index 0; Fuel Contribution 0; Smoke Density 0	ASTM E84, ASTM E136
Sand	1/8" (3 mm) or less washed plaster or masonry sand	ASTM E11

Mixing Instructions

- A. Mix water and sand as specified per 80 pound (36.3 kg) of Firm-Fill[®] GCU. Do not over water. Water amount will change with wetness of sand.
- B. Firm-Fill[®] GCU mix proportions and methods shall be in strict accordance with Hacker recommendations.

Underlayment Application

A. Scheduling:

- 1. Installation of Firm-Fill[®] GCU shall not begin until the building is enclosed, including roof, windows, doors and other openings.
- 2. 7-10 working days notice is recommended. Installation can be scheduled before or after drywall, depending on the psi.

B. Application:

- 1. The minimum thickness of Firm-Fill[®] GCU varies with the type of subfloor. Over wood subfloors, a minimum of 3/4-inch (19mm) is required when no Firm-Fill[®] SCM is installed. Over concrete, a minimum of 1/2-inch (13mm) is required when no Firm-Fill[®] SCM is installed. Minimum thickness over Firm-Fill[®] SCM varies with thickness of sound control mat.
- 2. Install Firm-Fill[®] GCU at specified thickness by placing contents of bags, sand and water into the approved high-speed mixing device and blend for a minimum of one minute. Firm-Fill[®] GCU shall be pumped onto floor areas, spreading and screeding to a smooth surface. Place as continuously as possible until installation is complete so that no Firm-Fill[®] GCU slurry is placed against Firm-Fill GCU that has obtained its initial set, except at authorized joints.
- 3. Firm-Fill[®] GCU is suitable for interior applications only and must be covered by a finished floor covering.

C. Protection: After installation, temporary protection shall be placed by the GC wherever the floor underlayment will be subject to wheeled or concentrated loads. The GC shall not place concentrated loads such as pallets of material, drywall, taping compounds, paint, or any heavy items, which may cause deflection, in the middle of the floor, or in corridors.

D. Drying: The GC shall provide continuous ventilation and adequate heat to rapidly remove moisture from the area until the underlayment is dry. Approximately 7-10 days is required for

Acoustical Performance

NVLAP-accredited laboratories have performed sound tests on Firm-Fill[®] GCU and Firm-Fill[®] SCM, over a variety of floor/ceiling assemblies. The results of these sound tests show that Firm-Fill[®] products meet the rigorous standards required to reduce noise pollution between units. Please see Hacker Industries, Inc. Acoustical Guidelines for test results.

Installation

Firm-Fill[®] GCU and Firm-Fill[®] SCM installation must be completed by a Licensed Applicator, using approved mixing and pumping equipment.

Materials

- A. Underlayments: Firm-Fill[®] GCU, as supplied by Hacker Industries, Inc.
- B. Subfloor Primer: Hacker Floor Primer or approved equal.
- C. Acoustical Control Mats: Firm-Fill[®] SCM, as supplied by Hacker Industries, Inc.
- D. Sand: Well graded washed plaster, masonry sand, or concrete sand, meeting the requirements of Hacker Industries, Inc. Sand Guidelines.
- E. Water: Potable and free from impurities.
- F. Hacker TopCoat[®] SP or Hacker Floor Sealer, if specified.

complete drying. If necessary, the GC shall provide mechanical ventilation and heat. The building interior must have a minimum ambient temperature of 50°F (10°C). Daily ventilation is mandatory regardless of exterior weather conditions. Avoid items or debris laying on top of the Firm-Fill® GCU, which will hamper ventilation. Do not install finished floor coverings until the Firm-Fill® GCU has been tested for dryness and acceptable moisture levels. To avoid potential problems during the drying process, the GC shall consult Hacker Industries, Inc.'s website or Drying Conditions Flyer for additional information concerning drying of this product.

Preparation for Installation of Floor Coverings

- A. Sealing: Any areas where the underlayment surface has been damaged shall be repaired and sealed regardless of floor covering specified. Floor covering manufacturers' specifications and requirements supersede these recommendations.
- B. Floor Covering Procedures: Please see Hacker Industries, Inc.'s "Guidelines for Installing Finished Floor Coverings." The guideline is not a warranty, and shall be used as a guideline only. Also see ASTM F2419 for recommended procedures.

Limitations

- Shall not be used in exterior locations, below grade or where continuous exposure to moisture is likely.
- Shall not be used as a wear surface; must be covered by a finished floor covering.
- Structure shall be designed so that deflection does not exceed L/360 live or dead load
- Certain floor coverings, such as marble, limestone, travertine and wood, may have more restrictive deflection limits
- Consult the appropriate floor covering manufacturer for recommendations
- If installed above a crawl space, subfloor must be protected by a vapor barrier
- No single application of Firm-Fill® GCU shall exceed 3½ inches in depth
- Firm-Fill® GCU are but one component of an effective sound and fire control system

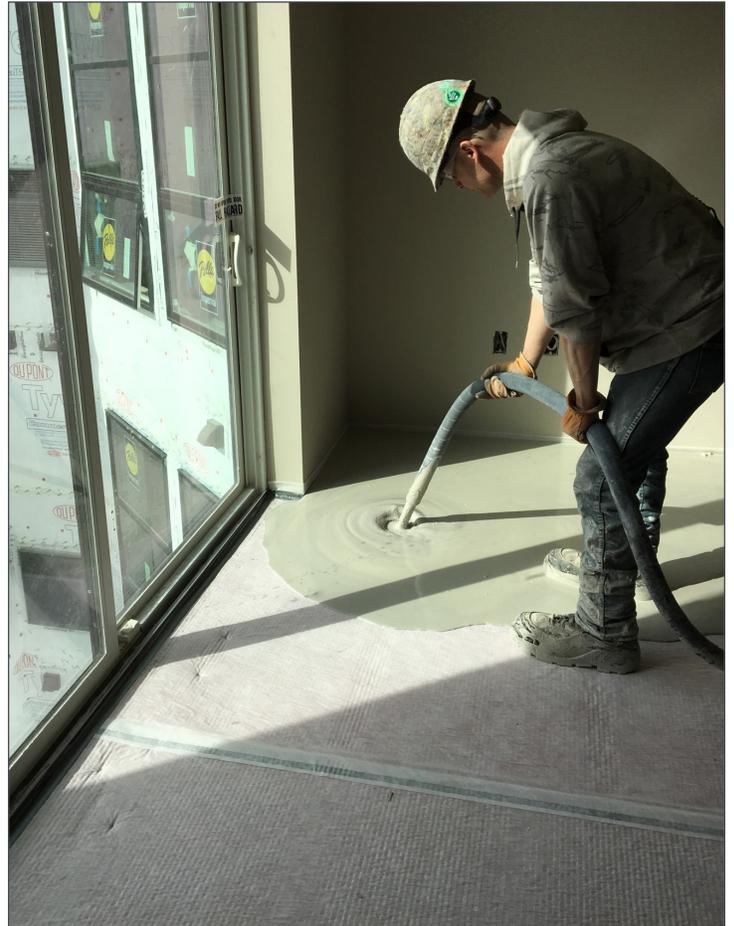
Care must be taken in the installation of all components to assure the ultimate design performance. Published acoustical and fire system tests were conducted under controlled laboratory or field conditions and reflect results applicable only to those specific assemblies.

6. Availability and Cost

Firm-Fill® GCU and Firm-Fill® SCM are available from trained, Licensed Applicators. Contact Hacker Industries, Inc. for the Licensed Applicator in your location. Cost information may be obtained from Hacker Industries, Inc. Licensed Applicators.

7. Warranty

Hacker Industries, Inc. offers a limited warranty. Contact manufacturer for details.



8. Maintenance

Contact Licensed Applicator or Hacker Industries, Inc. for maintenance.

9. Technical Services

Technical assistance, including on-site consulting, application supervision, product literature, test results, project lists, and assistance in preparing project specifications, is available by contacting Hacker Industries, Inc.

10. Filing Systems

- 4Spec
- BIMSmith
- CAD Details
- ConstructConnect
- Division 03 54 13 - Gypsum Cement Underlayment
- Division 09 80 00 - Acoustic Treatment
- Sweets
- Dodge