



**Hacker Industries, Inc.**

**1. Product Name**

Hacker Floor Underlayments  
 FIRM-FILL® Gypsum Concrete  
 FIRM-FILL® 2010  
 FIRM-FILL® 3310  
 FIRM-FILL® High Strength  
 FIRM-FILL® 4010  
 GYP-SPAN® Radiant  
 Hacker Sound Mat II  
 Hacker Floor Primer  
 Hacker Floor Sealer

**2. Supplier**

Hacker Industries, Inc.  
 610 Newport Center Drive, Suite 250  
 Newport Beach, CA 92660  
 Phone (949) 729-3101  
 (800) 642-3455  
 Fax (949) 729-3108  
 (800) 906-8548  
 www.HackerIndustries.com  
 e-mail: info@HackerIndustries.com

**3. Product Description**

**BASIC USE**

Hacker Floor Underlayments (HFU) are lightweight, high strength, non-structural cementitious underlayments for use in residential, multi-family, commercial, and radiant heating projects for both new construction and renovation. Trained Licensed Applicators can install between 500 - 40,000 sq. ft. (46 - 3716 m<sup>2</sup>) per day. The finished products provide a superior crack-resistant surface that is sound-insulated and fire-resistant.

Since 1983, Hacker Industries, Inc. has provided the most cost effective and high strength underlayments in the industry. With the proven performance of over a billion sq. ft. installed nationwide, HFU are appropriate for use over concrete or wood substrates. With the proper preparation, virtually any type of finished floor covering can be installed over HFU.

**COMPOSITION & MATERIALS**

FIRM-FILL® Gypsum Concretes and GYP-SPAN® Radiant are mixed with washed masonry sand and potable water to form HFU.

**TYPES**

- FIRM-FILL® Gypsum Concrete –

Designed for use in multi-family housing for sound and fire ratings. Nominal average compressive strength (ASTM C472) is 1200 - 2000 psi (8.3 – 13.8 MPa).

- FIRM-FILL® 2010 – Additional surface hardness and higher compressive strength. Nominal average compressive strength (ASTM C472) is 1600 - 2500 psi (11.0 - 17.2 MPa).
- FIRM-FILL® 3310 – Provides an exceptionally smooth, hard, premium surface over wood subfloors. Nominal average compressive strength (ASTM C472) 2000 - 3300 psi (13.8 - 22.8 MPa).
- FIRM-FILL® High Strength – Formulated for topping or resurfacing concrete floors and planks. Nominal average compressive strength (ASTM C472) 2500 - 3800 psi (17.2 - 26.2 MPa).
- FIRM-FILL® 4010 – Offers superior bonding capabilities for thin capping of concrete floors. Nominal average compressive strength (ASTM C472) is 3500 - 5500 psi (24.1 -37.9 MPa).
- GYP-SPAN® Radiant – Designed for use in radiant floors in conjunction with heating cables or hydronic systems; enhanced thermal mass and heat transfer. Nominal average compressive strength (ASTM C472) is 2000 - 3200 psi (13.8 - 22.1 MPa).
- Hacker Sound Mat II – Sound abatement mat composed of 100% recycled rubber; dramatically increases STC and IIC ratings.

**APPLICATION THICKNESS**

Minimum application thickness of HFU is:

- Over wood - 3/4" (19mm) of HFU.
- Over concrete slabs – HFU may be feather edged to zero for transitions.
- Over radiant heat tubes - Minimum 3/4" (19mm) on top of radiant tubes.
- Maximum thickness – 3-1/2" (89mm).

**LIMITATIONS**

- Do not use HFU in exterior locations.
- Gypsum based systems shall not be used below grade, or where prolonged exposure to moisture is likely.
- HFU above crawl spaces must be protected by a vapor barrier.
- Subfloor must support design loads with maximum L/360 deflection.
- Do not apply less than 1-1/2" (38mm) of HFU on plastic vapor barrier.
- HFU require a finished floor covering.
- HFU are but one component of an effective sound and fire control system. Care must be taken in the installation of all construction 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.

**4. Technical Data**

**APPLICABLE STANDARDS**

ASTM International

- ASTM C33 Standard Specification for Concrete Aggregates
- ASTM C472 Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete
- ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- ASTM D4263 Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
- ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials

HACKER INDUSTRIES, INC. - Hacker Floor Underlayment Licensed Applicator Manuals.

**APPROVALS**

- ICC-ES Legacy Report ER-4147
- City of Los Angeles RR No. 24540
- Metropolitan Dade County, Florida #96-0516.03
- U.S. Department of Housing and Urban Development FHA-HUD-1255

**DENSITY**

105 - 130 pcf (1682 - 2082 kg/m<sup>3</sup>) minimum dry density

Underwriter's Laboratories, Inc. - UL® Fire Resistance Directory

**FIRE PERFORMANCE**

HFU are included in over 84 Underwriters Laboratories design listings including: J917, J919, J920, J922, J924, J927, J931, J957, J966, J991, J994, K906, L001, L004, L005, L006, L201, L202, L206, L208, L209, L210, L211, L212, L501, L502, L503, L504, L505, L506, L507, L508, L509, L510, L511, L512, L513, L514, L515, L516, L517, L518, L519, L520, L521, L522, L523, L524, L525, L526, L527, L528, L529, L530, L531, L532, L533, L534, L535, L536, L537, L538, L539, L540, L541, L542, L543, L544, L545, L546, L547, L548, L549, L550, L551, L552, L553, L555, L556, L557, L558, L559, L560, L562, L563. See UL® Fire Resistance Directory for illustrations of designs and fire resistance ratings.

Hacker Industries, Inc.

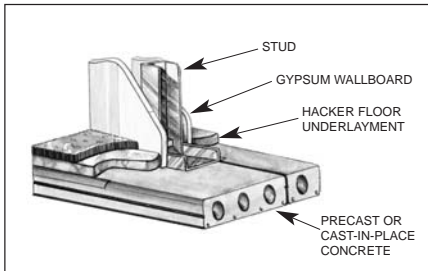


Figure 1: Concrete Systems

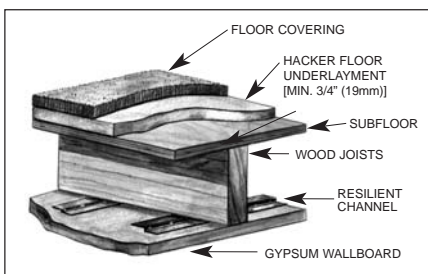


Figure 2: Wood Systems

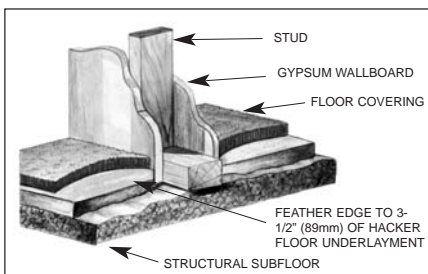


Figure 3: Renovation

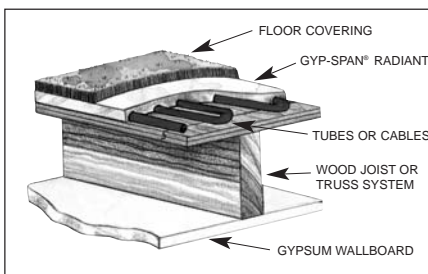


Figure 4: Radiant Systems

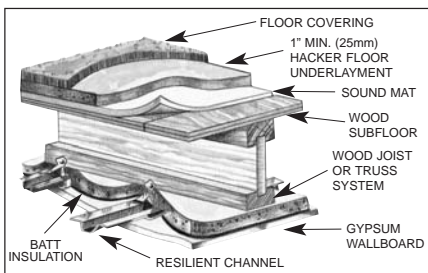


Figure 5: Sound Mat

**FIRE HAZARD CLASSIFICATION**  
ASTM E84: Flamespread Index, 0; Fuel Contribution, 0; Smoke Density, 0.

**ACOUSTICAL PERFORMANCE**  
HFU produce superior STC (Sound Transmission Class) and IIC (Impact Isolation Class) ratings. INR Rating is 0+ (zero plus). Additional sound reduction is achieved using HFU and Hacker Sound Mat II.

**5. Installation**

**SITE CONDITIONS**

Material shall be delivered in original, unopened bags. Material shall be stored away from prolonged exposure to harmful environmental conditions and at a minimum temperature of 50°F (approx. 10°C). Do not allow bags to get wet.

Building temperature shall be maintained before, during and after installation at a temperature above 50°F (approx. 10°C) until subfloor, ambient temperature, and humidity have stabilized. Maintain temperature during and after installation until material has completely dried.

**PREPARATION**

General Contractor shall confirm the subfloor is structurally sound and conditions are suitable for installation of floor underlayment. Limit design of the subfloor at a maximum of L/360. Subfloor must be broom cleaned, and free of oil, grease and other contaminants.

**APPLICATION**

Prior to installation of HFU the building must be enclosed including roof, windows and doors. Install HFU after radiant heat tubing has been put in place. Provide constant ventilation to remove moisture from the area until the underlayment is completely dry.

The following tests shall be performed in conjunction with the installation of HFU:

**Field Samples:** Perform field tests in strict accordance with ASTM C472-modified using 2" (51mm) split brass molds.

**Slump Test:** HFU shall be tested for slump as they are being installed using a 2" (51mm) by 4" (102mm) cylinder. The patty size shall be as specified by Hacker Industries, Inc.'s literature.

**Dryness Test:** Prior to the installation of finished floor goods, Hacker Industries, Inc. recommends that a moisture test be done per ASTM D4263-83 Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method. Moisture testing can also be done using a Delmhorst BD-2100 electronic moisture meter with a gypsum scale.

**PROTECTION**

During construction, place temporary wood planking in areas subject to heavy-wheeled traffic or concentrated loads.

**BUILDING CODES**

Installation of HFU must comply with applicable local, state and national code requirements.

**6. Availability & Cost**

HFU are only installed by Licensed Applicators. Contact Hacker Industries, Inc. for the applicator(s) in your area.

**7. Warranty**

The supplier offers a limited warranty that the material is free from manufacturing defects and, when properly prepared and installed under recommended conditions, will attain the minimum physical specifications listed herein. Hacker Industries, Inc.'s, obligation shall be limited to the replacement of the bagged product only and is subject to notice and inspection requirements.

*This warranty is in lieu of all other warranties expressed or implied including the warranties of merchantability and fitness for a particular purpose and all other obligations or liabilities.* (Contact Hacker Industries, Inc. for a full warranty statement.)

**8. Maintenance**

Please contact Hacker Industries, Inc. or your Licensed Applicator.

**9. Technical Services**

For design and technical support, contact Hacker Industries, Inc. at (800) 642-3455.

**10. Filing Systems**

- First Source™
- Sweet's Catalog Files
- www.HackerIndustries.com
- Additional product information, specifications and specs on disk are available from Hacker Industries, Inc.