



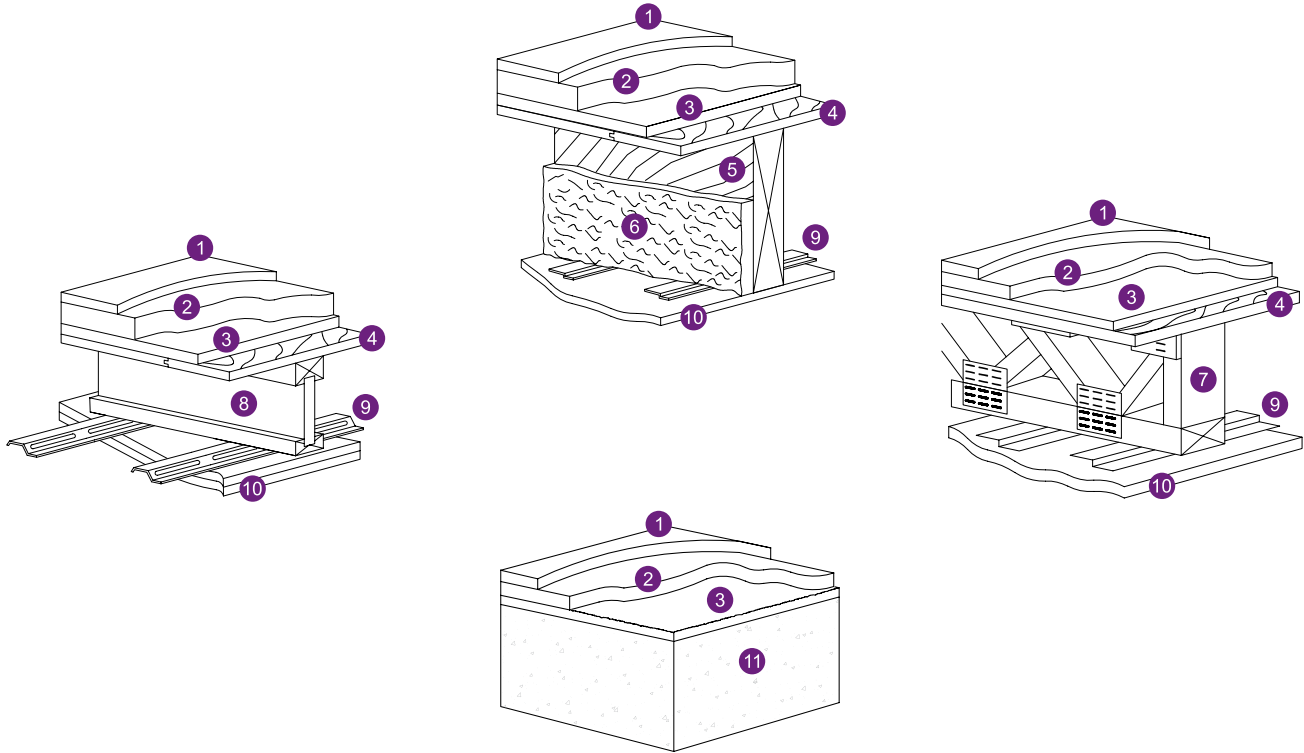
Firm-Fill[®]

GYPSUM CONCRETE **3310+**

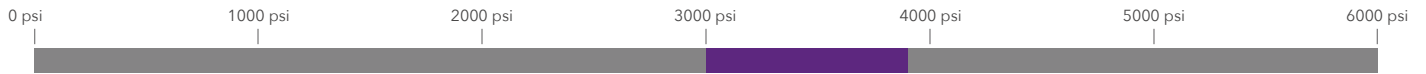
FIRM-FILL[®] 3310+, a premium poured floor underlayment from Hacker Industries, Inc., delivers best in class performance with compressive strengths from 3000-3900 psi.

Ideal over wood or concrete subfloors in multi-family, hospitality, and renovation projects, **FIRM-FILL[®] 3310+** maximizes sound control and creates an enhanced surface for finished floor coverings.

- Easy application, fast setting; light traffic can return within hours
- Over 100 UL Fire Rated Design listings; ICC-ES Legacy Report
- Can be poured before or after drywall, as specified
- Specify with FIRM-FILL[®] SCM acoustical control mats for improved acoustical performance
- Meets ASTM F2419 and Tile Council of North America F180, F200
- Installed by trained Licensed Applicators



1 - FLOOR COVERING / 2 - **FIRM-FILL® 3310+ CONCRETE UNDERLAYMENT** / 3 - FIRM-FILL® SCM OR HACKER SOUND MAT / 4 - PLYWOOD OR OSB / 5 - NOMINAL WOOD JOIST / 6 - BATT INSULATION / 7 - PARALLEL CHORD TRUSS / 8 - TJI® JOIST / 9 - RESILIENT CHANNEL / 10 - GYPSUM WALLBOARD / 11 - 6" CONCRETE



Firm-Fill® Gypsum Concrete	1200-2000 psi	Firm-Fill® 4010+	4000-5200 psi
Firm-Fill® 2010+	2000-3200 psi	Firm-Fill® CMD	min. 3500 psi
Firm-Fill® 3310+	3000-3900 psi	Gyp-Span Radiant	2000-3200 psi
Firm-Fill® High Strength	2500-3800 psi	True-Screed CLU	up to 6000 psi



High-strength for use over wood or concrete subfloors



Ideal for multifamily construction

3000-3900



Provides compressive strengths from 3000-3900 psi (20.6-26.8 MPa)



UL design listings for 1 to 2 hour fire ratings



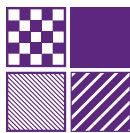
Fast installation & rapid set; walk on in 90 minutes



Installed by Hacker Industries' trained Licensed Applicators



Requires dry-in (building must be fully enclosed before installation)



Not a wear surface; requires finished floor covering



Deflection must not exceed L/360 live or dead load



Subfloor must be protected by vapor barrier if installed above crawl space



One component of an effective sound & fire control system



Wear appropriate personal protective equipment

SUBMITTAL FORM

TECHNICAL DATA	PROPERTIES	ASTM
Weight	7.6 lb/ft ² (37.1 kg/m ²) at 3/4" (19 mm)	C472 M
Thickness	Wood: 3/4" (19 mm) to 3-1/2" (89 mm); Concrete: 1/2" (13 mm) to 3-1/2" (89 mm)	F2419
Compressive Strength	3000 to 3900 psi (20.6 to 26.8 MPa)	C472 M
Thermal Performance	K-value of 2.8 BTU/(hr.ft.F°); R-value of 0.36 (ft ² .hr.F°)	C177
Fire Hazard Classification	Flamespread index 0; Fuel contribution 0; Smoke density 0	E84
Sand	1/8" (3 mm) or less washed plaster or masonry sand	C33
Flexural Strength	1200 psi (8.27 MPa)	C348

Benefits

- High-strength underlayment for use over wood or concrete subfloors
- Install over a FIRM-FILL[®] SCM or Hacker Sound Mat for additional sound isolation
- Contributes to excellent STC and IIC ratings
- UL fire-rated designs for 1 to 3 hour fire ratings
- Lightweight and crack-resistant
- Reduced amount of water for accelerated drying time
- Contributes points to LEED[®] project certification
- Creates a flat, durable, non-structural underlayment surface for finished floor coverings
- Installed only by trained Licensed Applicators across North America

Product Description

Specifically designed for new, thin laminates, this product's rapid set time allows light foot traffic in 90 minutes. This versatile, high quality floor underlayment is widely used as an alternative to lightweight concrete in multi-family, light commercial and hospitality projects. FIRM-FILL[®] 3310+ provides compressive strengths from 3000 to 3900 psi (20.6 to 26.8 MPa). Depending on compressive strength, it can be installed before or after drywall. To help keep projects on schedule and on budget, Licensed Applicators can install over 25,000 ft² of FIRM-FILL[®] 3310+ in one day.

FIRM-FILL[®] 3310+ is mixed on the job site with local sand (per ASTM C33) and water to create a lightweight slurry. Installed at a minimum of 3/4" thick, the underlayment weighs approximately 7.6 lb/ft² (37 kg/m²) with a dry density range of 107-120 pcf.

For new construction, FIRM-FILL[®] 3310+ is a cost-efficient way to maximize sound control and create a smooth, flat and high-strength surface for finished floor coverings. To achieve additional sound isolation, use FIRM-FILL[®] 3310+ with either a FIRM-FILL[®] SCM or Hacker Sound Mat.

Limitations

- Do not use FIRM-FILL[®] 3310+ 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[®] 3310+ shall exceed 3" in depth.
- FIRM-FILL[®] 3310+ is 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.

Installation

Before, during and after the installation of FIRM-FILL[®] 3310+, the building must be enclosed and the temperature maintained at a minimum of 50°F (10°C). Prior to the installation of FIRM-FILL[®] 3310+, the subfloor shall be structurally sound (L/360), broom cleaned, dry and free from oil, grease, paraffin, laitance, wax or other contaminants. Concrete subfloors shall be 28 days or older. For on-grade applications over concrete, measure the Moisture Vapor Emission Rate (MVER) per ASTM F1869. MVER shall not exceed 3 lb/1000 ft² per 24 hours. Prime wood subfloors with Hacker Floor Primer per recommended specifications before installing underlayment.

Adequate ventilation shall be provided by the General Contractor (GC) to ensure proper drying of FIRM-FILL[®] 3310+. If necessary, the GC shall provide mechanical ventilation. Depending on thickness and drying conditions, the underlayment should dry within 10 to 14 days. To avoid potential problems during the drying process, the GC shall consult Hacker Industries, Inc.'s Drying Conditions Flyer and information contained on Hacker Industries, Inc.'s website for additional information concerning drying of this product. After installation, temporary wood planking shall be placed by the GC wherever the floor underlayment will be subject to wheeled or concentrated loads.

Finished floor coverings can be installed when the FIRM-FILL[®] 3310+ is completely dry. Consult flooring contractor for recommended procedures to test for dryness and acceptable levels of moisture. Reference Hacker Industries, Inc.'s Guidelines for Installing Finished Floor Coverings. This guideline is not a warranty and shall be used as a guideline only. See ASTM F2419.

Product Data

Approximate Compressive Strength per ASTM C472 Modified: 3000 to 3900 psi* (20.6 to 26.8 MPa)
Approximate Dry Density (aggregated): 107 to 120 pcf

**Note: Compressive strengths published herein were achieved under controlled laboratory conditions. Actual field results may differ due to environmental conditions, regional sand variations, or inconsistent proportioning of field-applied water, sand and Hacker Floor Underlayment, as well as differences in mixing/pumping equipment.*

Compliance

- ICC-ES ER-4147
- City of Los Angeles Research Report No. 24540
- FHA-HUD MR 1255
- Tile Council of North America (F180, F200, RH111, RH122)

Sound Test & UL Fire Rated Designs

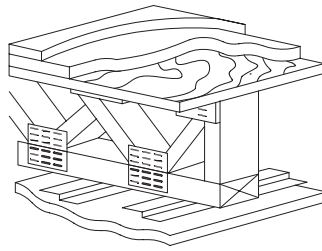
PURPOSE STATEMENT/DISCLAIMER

These guidelines are designed to provide the architectural and building communities with detailed performance data on Hacker Industries, Inc.'s comprehensive portfolio of sound attenuation tests and UL Fire Rated Designs. The tests for the assemblies included in these guidelines were conducted in a laboratory setting per ASTM C177, E84, E90, E492 and E2179. These guidelines are not warranties and should be used as guidelines only. The architects' and general contractors' recommendations supersede these guidelines. Field performance may vary. Subject to express Warranty stated on Hacker Industries, Inc.'s website.

Hacker Industries, Inc. regularly performs acoustical and fire (UL) testing to ensure performance standards for our products. Firm Fill[®] gypsum concretes, including Firm Fill[®] 3310+, were tested acoustically with the following floor assemblies and performed as noted.

Related Products

SUBMITTAL FORM



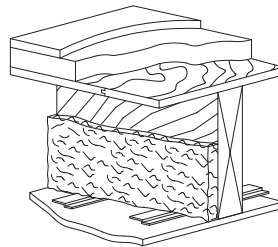
Firm Fill® 3310+ – Open Web										
Subfloor Topping	Sound Mat	Subfloor	Insulation	Truss	Ceiling Isolation	Ceiling	Finish	Sound Rating		Report #
								STC	IIC	
3/4" (25mm) FIRM-FILL® Brand Gypsum Concrete	None	3/4" (19 mm) oriented strand board	3-1/2" (89 mm) unfaced R-13 fiberglass insulation	18" (457 mm) L/360 open web truss	Clark Dietrich RCSD resilient channel	5/8" (16 mm) type C gypsum board	Bare ¹	54	--	5005002
							Bare	51	--	D6435.29
							Carpet and Pad	52	75	D6435.30
							Wood Laminate ²	--	52	7004018
							2 mm Vinyl Sheet ³	--	54	7004025

¹ Assembly varies from above in the following: Subfloor topping: 1" FIRM-FILL® Brand Gypsum Concrete; Subfloor: 23/32" oriented strand board; Insulation: None

² Assembly varies from above in the following: Subfloor topping: 1" FIRM-FILL® Brand Gypsum Concrete; Subfloor: 23/32" oriented strand board

³ Assembly varies from above in the following: Subfloor topping: 1" FIRM-FILL® Brand Gypsum Concrete; Subfloor: 23/32" oriented strand board; Insulation: 9" (229 mm) fiberglass batt insulation

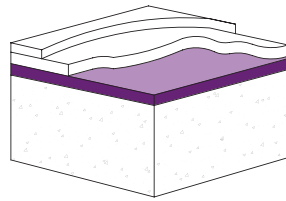
UL Fire Rated Designs	
Open Web	L521, L528, L529, L534, L542, L546, L550, L558, L563, L574, L576, L577, L579, L583, L585, L592, M500, M503, M508



Firm Fill® 3310+ – Nominal Wood										
Subfloor Topping	Sound Mat	Subfloor	Insulation	Truss	Ceiling Isolation	Ceiling	Finish	Sound Rating		Report #
								STC	IIC	
3/4" (19 mm) FIRM-FILL® Brand Gypsum Concrete	None	3/4" (19 mm) oriented strand board	3-1/2" (89 mm) R-13 fiberglass insulation	9-1/4" (235 mm) 2x10	Clark Dietrich RCSD Resilient Channel	5/8" (16 mm) type C gypsum board	Bare	56	--	E3149.01
							Carpet and Pad	57	75	E3149.02
							Carpet and Pad ¹	51	76	E4054.01

UL Fire Rated Designs	
Nominal Wood	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, L519, L520, L522, L523, L525, L526, L532, L533, L535, L536, L537, L540, L541, L545, L557, L569, L588, L590, L593, L598, M504, M517, M519, M530, M531, M517
I-Joist	L518, L530, L538, L547, L556, L570, L581, L589, M502, M506, M512

SUBMITTAL FORM



Firm Fill® 3310+ – Concrete Assembly										
Subfloor Topping	Sound Mat	Subfloor	Insulation	Truss	Ceiling Isolation	Ceiling	Finish	Sound Rating		Report #
								STC	IIC	
1-1/4" (32 mm) FIRM-FILL® Brand Gypsum Concrete	3/8" (10 mm) FIRM-FILL® SCM-400 Sound Control Mat	6" (152 mm) concrete	None	None	None	None	Bare	52	--	5014051
							Bare	--	50	7014063
							Sheet Vinyl	--	50	7014064
							Bare	--	Δ 23*	7014091

*Tested in accordance with ASTM E2179 - Standard Test Method for Laboratory Measurement of Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors.

UL Fire Rated Designs	
Concrete	J917, J919, J920, J924, J927, J931, J957, J991, J994

FIRM-FILL® SCM sound control mats, Hacker Floor Primer, Hacker TopCoat™ SP and Hacker Floor Sealer are available for use with FIRM-FILL® 3310+. Contact Hacker Industries, Inc. at (800) 642-3455 or info@hackerindustries.com or more information.

Warranty

Subject to express warranty stated on Hacker Industries, Inc.'s website.

Submittal Approvals

Project Name _____

Contractor/Architect _____

Signature _____

Date _____

PRODUCT INFORMATION

See www.HackerIndustries.com for current recommended product specifications and literature.

WARNING

When mixed with water, this product hardens and becomes extremely hot. DO NOT attempt to make a cast enclosing any part of the body using this material. Failure to follow these instructions may cause severe burns that may require surgical removal of affected tissue or amputation of limb. Portland cement is strongly alkaline. Direct contact can be corrosive and cause severe damage or chemical burns to eyes and wet, moist skin. Avoid contact with eyes and skin. Wear protective glasses and clothing. If eye contact occurs, immediately flush thoroughly with water for 30 minutes and seek medical advice. Inhalation of dust may be corrosive or cause chemical burns or irritation to nose, throat and respiratory tract.

Avoid breathing dust. Use a NIOSH/MSHA-approved dust respirator. Wash thoroughly with soap and water after use. Do not ingest. If ingested, call a physician. Product safety, call (800) 642-3455. **KEEP OUT OF REACH OF CHILDREN.**

TRADEMARKS

FIRM-FILL®, GYP-SPAN®, Let Our Products Floor You™ and the associated logos are trademarks of Hacker Industries, Inc. LEED® is a registered trademark of the U.S. Green Building Council.

WARRANTY

HACKER INDUSTRIES, INC. SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, DIRECTLY OR INDIRECTLY SUSTAINED, NOR FOR ANY LOSS CAUSED BY APPLICATION OF THESE GOODS NOT IN ACCORDANCE WITH CURRENT PRINTED INSTRUCTION OR FOR OTHER THAN THE INTENDED USE. OUR LIABILITY IS EXPRESSLY LIMITED TO REPLACEMENT OF DEFECTIVE GOODS. ANY CLAIM SHALL BE DEEMED WAIVED UNLESS MADE IN WRITING TO US WITHIN 30 DAYS FROM DATE IT WAS, OR REASONABLY SHOULD HAVE BEEN, DISCOVERED.

SAFETY FIRST

Follow good safety/industrial hygiene practices during installation. Wear appropriate personal protective equipment. Read specs, MSDS and literature prior to specification and installation.

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