



# Firm-Fill<sup>®</sup>

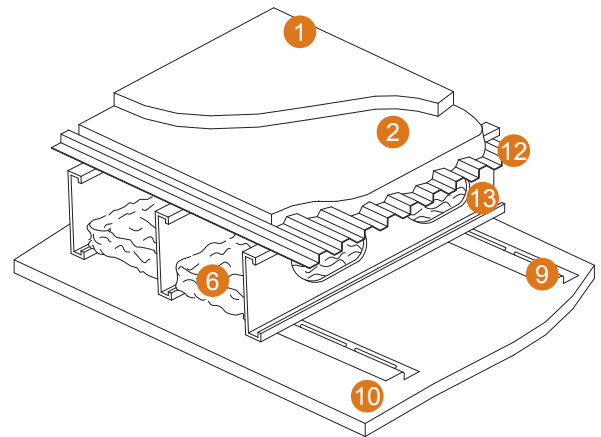
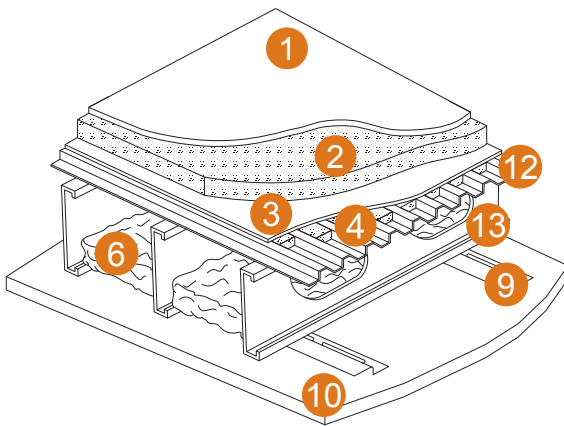
GYPSUM CONCRETE **CMD**

Build higher and faster with **FIRM-FILL<sup>®</sup> CMD** (corrugated steel deck) from Hacker Industries, Inc., the leader in pourable floor underlayments.

Designed for use in multi-family, commercial and institutional buildings with light-gauge steel framing and a corrugated steel deck, **FIRM-FILL<sup>®</sup> CMD** is a lightweight, high-strength gypsum concrete floor underlayment.

Installed at 1" above the top of the flutes (1-9/16" total), **FIRM-FILL<sup>®</sup> CMD** reduces dead loads, which can significantly lower costs.

- The lightweight solution for fast-track construction
- UL fire rated design floor/ceiling assembly G565, G568; 1, 1½ or 2 hour fire ratings
- Applied directly over primed corrugated steel deck
- Minimum compressive strength 3500 psi (24 MPa)
- Installed by trained Licensed Applicators

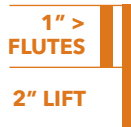


1 - FLOOR COVERING / 2 - **FIRM-FILL® CMD GYPSUM CONCRETE UNDERLAYMENT** / 3 - **FIRM-FILL® SCM OR HACKER SOUND MAT** / 4 - **FIRM-FILL® CMD GYPSUM CONCRETE UNDERLAYMENT TO FILL FLUTES** / 6 - BATT INSULATION / 9 - RESILIENT CHANNEL / 10 - GYPSUM WALLBOARD / 12 - 22 MSG GALVANIZED CORRUGATED STEEL DECK / 13 - 16 MSG GALVANIZED, CHANNEL-SHAPED, 9-1/4" (231MM) MIN. STEEL JOIST

	0 psi	1000 psi	2000 psi	3000 psi	4000 psi	5000 psi	6000 psi
Firm-Fill® Gypsum Concrete			<b>1200-2000 psi</b>				
Firm-Fill® 2010+			<b>2000-3200 psi</b>				
Firm-Fill® 3310+			<b>3000-3900 psi</b>				
Firm-Fill® High Strength			<b>2500-3800 psi</b>				
Firm-Fill® 4010+						<b>4000-5200 psi</b>	
Firm-Fill® CMD						<b>min. 3500 psi</b>	
Gyp-Span Radiant						<b>2000-3200 psi</b>	
True-Screed CLU						<b>up to 6000 psi</b>	



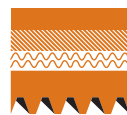
Use in cold-formed steel construction with a corrugated steel deck



Requires 1" over top of flutes; max. lift depth of 2"



Provides compressive strengths over 3500 psi (24.1 MPa)



Install with Hacker Sound Mat or FIRM-FILL® SCM for additional isolation



Contributes points to LEED® project certification



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	Minimum 12.8 lb/ft <sup>2</sup> (62.47 kg/m <sup>2</sup> ) at 1-9/16" (40 mm)	C472 M
Thickness	1" (25 mm) above the top of the flutes	
Compressive Strength	Minimum 3500 psi (24.1 MPa)	C472 M
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

## Benefits

- For use in cold-formed steel frame construction with a corrugated steel deck
- Install over a FIRM-FILL<sup>®</sup> SCM or Hacker Sound Mat for additional sound isolation
- Lightweight solution for fast-track construction
- Rapid set time; can be walked on in 2 hours
- Helps contribute points to LEED<sup>®</sup> project certification
- Creates a flat, durable surface for finished floor coverings
- Installed only by trained Licensed Applicators across North America

## Product Description

FIRM-FILL<sup>®</sup> CMD is designed for use in cold-formed steel frame buildings with a corrugated steel deck. FIRM-FILL<sup>®</sup> CMD provides minimum compressive strengths of 3500 psi (24.1 MPa).

FIRM-FILL<sup>®</sup> CMD is mixed on the job site with local sand (per ASTM C33) and water to create a lightweight slurry. A 1" (25 mm) application is required above the top of the flutes. Maximum thickness is 2" (51 mm) in one lift.

For residential and light commercial construction, FIRM-FILL<sup>®</sup> CMD is a cost-effective method to build higher and faster. FIRM-FILL<sup>®</sup> CMD creates a smooth, hard surface for finished floor coverings, while offering exceptional compressive strengths matched with superior acoustical control and fire resistance properties. For added sound isolation, use FIRM-FILL<sup>®</sup> CMD with a FIRM-FILL<sup>®</sup> SCM or Hacker Sound Mat.

## Limitations

When considering the use of this floor system, a licensed structural engineer shall first evaluate the building loads and framing system to determine whether this corrugated steel deck system is appropriate.

FIRM-FILL<sup>®</sup> CMD is not a structural element and does not provide any contribution to the floor diaphragm. The corrugated steel deck shall be designed to address all floor diaphragm requirements and must conform to the Steel Deck Institute Standards. Reference SDI Manual of Construction with Steel Deck. For additional requirements, contact Hacker Industries, Inc.

- 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.
- No single application of FIRM-FILL<sup>®</sup> CMD shall exceed 2" in depth.
- FIRM-FILL<sup>®</sup> CMD 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® CMD, the building must be enclosed and the temperature maintained at a minimum of 50°F (10°C). Prior to the installation of FIRM-FILL® CMD, the subfloor shall be structurally sound (L/360) and be broom cleaned, dry and free from oil, grease, paraffin, laitance, wax or other contaminants. Prime the corrugated steel deck with FIRM-FILL® CMD Primer per recommended specifications before installing underlayment.

Adequate ventilation shall be provided by the General Contractor (GC) to ensure proper drying of FIRM-FILL® CMD. 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® CMD 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:** Minimum 3500 psi\* (13.8 to 22.8 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)

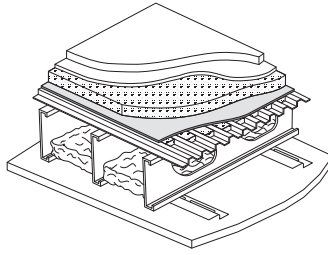
## Sound Test & UL Fire Rated Designs

### 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® CMD, were tested acoustically with the following floor assemblies and performed as noted.

## SUBMITTAL FORM



Firm-Fill CMD – Corrugated Steel Deck										
Subfloor Topping	Sound Mat	Subfloor	Insulation	Truss	Ceiling Isolation	Ceiling	Finish	Sound Rating		Report #
								STC	IIC	
1" (25 mm) FIRM-FILL® CMD Gypsum Concrete	1/4" (6 mm) Hacker Sound Mat II	14 mm deep 22 msg galvanized corrugated fluting steel decking	3-1/2" (89 mm) unfaced fiberglass batt insulation	Dietrich	Clark Dietrich RCSD Resilient Channel	1 layer 5/8" (16 mm) type C gypsum board	13 mm Quarry Tile Flooring Over 10 mm QT4010	61	--	5008041
							13 mm Quarry Tile Flooring Over 10 mm QT4010	--	58	7008100
Contributes points to LEED® certification.										

UL Fire Rated Designs	
<b>Steel Deck</b>	G230, G516, G524, G553, G561, G565, G566, G568, G587, G594, G595
<b>Steel Joist</b>	L524, L527, L539, L543, L549, L551, L552, L564, M505, M511, M513, M515, M534

## Related Products

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

## Warranty

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

## Submittal Approvals

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Project Name

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Contractor/Architect

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Signature

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Date

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### PRODUCT INFORMATION

See [www.HackerIndustries.com](http://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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