

Guidelines for Installing Finished Floor Coverings

Hacker Floor Underlayments are non-structural, poured gypsum concrete floor underlayments that supply fire resistance and sound control while providing a durable, flat surface for finished floor coverings. These guidelines apply to FIRM-FILL® Gypsum Concrete, FIRM-FILL® 2010, FIRM-FILL® 3310, FIRM-FILL® High Strength, FIRM-FILL® 4010, GYP-SPAN® Radiant and FIRM-FILL® CMD. This guideline is not a warranty and should be used as a guideline only. The following procedures are critical to a successful finished floor installation. In all cases, the floor covering manufacturers recommendations supercede these guidelines.

Installation of Hacker Floor Underlayments

When working with Hacker Floor Underlayments, be sure to wear personal protective equipment. When user operations generate dust, take the proper precautions to avoid dust inhalation. Many Hacker Floor Underlayments contain crystalline silica, a known occupational carcinogen. See product Material Safety Data Sheets (MSDS) for more information.

Before, during, and after installation of a Hacker Floor Underlayment, building interior shall be enclosed and maintained at a temperature above 50°F (10°C) until structure and subfloor temperatures are stabilized. Provide continuous ventilation and adequate heat to remove moisture rapidly from the area until the underlayment is dry. Provide mechanical ventilation if necessary. Under the above conditions, a 3/4" (19mm) thick underlayment is usually dry in 5-8 days. Low temperatures, certain sands, poor ventilation and high humidity can lengthen the drying time. Refer to Hacker Industries, Inc.'s **Drying Condition Flyer**.

Recommended Guidelines

Check for Dryness

The recommended procedure to test for dryness is to use a moisture meter with a gypsum scale. Hacker Industries, Inc.'s recommends three moisture meters:

- Delmhorst BD-2100
- Delmhorst G-79
- Tramex CRH

The results should be reported to the general contractor for use by the flooring installer.

The floor goods manufacturer and/or the adhesive manufacturer will determine acceptable levels of dryness (see ASTM F2419; Standard Practice for Installation of Thick Poured Gypsum Concrete Underlayments and Preparation of the Surface to Receive Resilient Flooring).

Caution: Calcium chloride/moisture dome testing is not reliable for gypsum concrete moisture testing.

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Hacker TopCoat™ SP (Surface Prep)

Porosity of the floor is a prime factor in the drying rate of adhesives. This porosity factor may reduce the effective open time of the adhesive. An application of Hacker TopCoat™ SP prior to the installation of glue-down floor material will minimize the porosity of the underlayment. Before applying the Hacker TopCoat™ SP, the flooring installer shall test the underlayment for dryness; it must be fully dry. When preparing the gypsum floor underlayment to receive resilient floor coverings, install Hacker TopCoat™ SP per ASTM F2419; Standard Practice for the Installation of Thick Poured Gypsum Concrete Underlayments and the Preparation of the Surface to Receive Resilient Floor Coverings.

One gallon of concentrated Hacker TopCoat™ SP will cover approximately 1,050 sq. ft. (when diluted with 6-parts water to 1-part Hacker TopCoat™ SP Concentrate).

Make certain that the surface to receive the Hacker TopCoat™ SP is free of mud, oil, grease, and other contaminants. Dilute the sealant/primer according to manufacturer's instructions. For maximum results, the Hacker TopCoat™ SP shall be applied about 1-2 hours prior to adhesive application. Make sure the surface is completely dry so latex adhesives can achieve maximum bond. Perform a sample installation to test bond capability. Finished floor goods manufacturers may require a special adhesive or installation system; their requirements supersede these recommendations. For maximum results, apply Hacker TopCoat™ SP one to two hours before the application of adhesive. Contact the floor goods manufacturer and the adhesive manufacturer to determine the compatibility of products.

General Recommendations

In all cases, floor covering manufacturer recommendations supercede these guidelines. Before applying a finished floor covering, ensure all surfaces are clean and free of dust, oil, dirt, paint, paraffin, laitance, etc. The use of sweeping compounds on Hacker Floor Underlayments is not recommended, as these products tend to contain oil, which can interfere with the bond of the Hacker Floor Underlayment and the adhesive or mortar used to attached the finished floor covering.

Resilient Flooring: Sheet Vinyl and Vinyl Composition Tiles

Follow the Recommended Guidelines on Page 1 to prepare the underlayment. If required by specific flooring manufacturer of resilient floor covering, install Hacker TopCoat™ SP prior to installation (Also see ASTM F2419 for recommended guidelines).

Prior to installation of the sheet vinyl or vinyl composition tiles, conduct a sample test to confirm bond capability.

Note: Pay particular attention to seaming when installing over underlayments, as you do not want water and dirt to accumulate in the seam areas.

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Ceramic, Quarry and Marble Tile

Follow the Recommended Guidelines on Page 1 to prepare the underlayment.

Hacker Industries, Inc. strongly suggests installing an anti-fracture membrane between the underlayment and tile as recommended by the membrane and setting material manufacturer. The anti-fracture membrane helps contain tile cracking caused by structural movement and may act as a waterproofing membrane. Install the membrane according to membrane manufacturers' recommendations. Reference the Tile Council of America (TCA) Handbook for Ceramic Tile Installation over gypsum concrete. Crack isolation and/or waterproof membrane as recommended by membrane and setting material manufacturer. See page 6 of these guidelines for a list of anti-fracture membrane manufacturers.

Movement Joints: Follow and adhere to expansion joint requirements found in the Handbook for Ceramic Tile Installation under EJ171 specification. Contact the Tile Council of America (TCA) at 864-646-8453 or www.tileusa.com for a copy of the handbook. See page 8 in this guide for a list of recommended anti-fracture and waterproofing membrane manufacturers.

The Hacker Floor Underlayment must be dry before the installation of these membranes, unless otherwise stated by the membrane manufacturer. Follow the respective membrane manufacturers' recommendations for installation of the membrane and of the latex modified thin set, if required.

Note: See TCA Methods: F180 Wood Subfloor; F200 Concrete Subfloor; RH111 Radiant Heat on Concrete; RH122 Radiant Heat on Wood Subfloor

Laminated Hardwood and Parquet Wood Flooring

Follow the Recommended Guidelines on Page 1 to prepare the underlayment. Insure Laminated Hardwood or Parquet Wood Flooring are acclimated to environment as per manufacturers recommendations prior to installation.

Glue Down Installations: The following adhesives from Bostik Findley, Inc. should be compatible. Consult manufacturer of adhesive.

- Ultra-Set™ Hardwood Premium Wood Flooring Urethane Adhesive
- Best Adhesive Wood Flooring Urethane Adhesive
- Fast-Tack Wood Flooring Urethane Adhesive

Before applying any adhesive, make sure the underlayment is clean and has passed a dryness test, detailed in the Surface Requirements on Page 1. Apply primers and adhesives according to the flooring and adhesive manufacturers instructions. Prior to installation, the flooring installer should conduct a sample test to confirm bond compatibility. Allow the test area to set for 72-hours before installing the flooring.

Guidelines for Installing Finished Floor Coverings (cont.)

Mechanical Attachment: Follow and adhere to the floor goods manufacturer's general and installation recommendations.

Floating Floors

Follow the Recommended Guidelines on Page 1 to prepare the underlayment and adhere to the floor goods manufacturer's general and installation recommendations. Insure Floating Floor goods are acclimated to environment as per manufacturers' recommendations prior to installation.

Solid Wood Flooring

Follow the Recommended Guidelines on Page 1 to prepare the underlayment. Keep in mind that wood is hygroscopic and the flooring installer must provide 3/4" perimeter gaps to allow for expansion. Insure Solid Wood Floor goods are acclimated to environment as per manufacturers recommendations prior to installation.

Mechanical Attachment: The flooring installer should attach the solid wood flooring according to instructions published by the National Oak Flooring Manufacturers Association, Inc. (NOFMA). Call NOFMA at 901-526-5016, or view their website at www.nofma.org. Refer to National Wood Flooring Association recommendations, www.nwfa.org.

Carpet and Pad

Hacker Floor Underlayments can be used with many different carpets, carpet pads, and adhesives.

Mechanical Attachment of Tackless Strips over Wood Subfloors: Nails must penetrate 1/4" into the substrate through the underlayment. If the underlayment is 3/4" (19mm) thick use "Acoustical Concrete" tackless strips like #20-451 manufactured by Roberts Consolidated Industries. For thicker underlayment, use filler nails every 12" to 18" (305mm to 457mm) O.C. The filler nail should be long enough to penetrate at least 1/4" into the subfloor.

Use an air compressor-driven automatic nailer to install diamond point nails through the tackless strip and underlayment. One type of nailer is the Duo-Fast Coil Gun (Model #1N-123; #1N-124; #1N-125) and the 1-1/4" (32mm) Duo-Fast #054 nails.

Note: When Hacker Floor Underlayments are poured over expanded or extruded polystyrene or over an acoustical matting product, mechanical attachment of tackless strips is not recommended. It is recommended that an adhesive system be used in these cases.

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Glue-Down Attachment of Tackless Strips: Follow the Recommended Guidelines on Page 1 to prepare the underlayment. Follow and adhere to the floor goods manufacturers' adhesive recommendations. Prior to installation, the flooring installer should conduct a sample test to confirm bond capability.

The following adhesives have been compatible with Hacker Floor Underlayments:

- Roberts 0167 Carpet Gripper Cement
- Hydroment 900, manufactured by Bostik
- Polyseamseal® All-Purpose Adhesive Caulk, manufactured by Darworth Co.

Glue-Down Attachment of Carpet and Pad: Follow the Recommended Guidelines on Page 1 to prepare the underlayment. Follow manufacturers recommendations for adhesives. Prior to installation, the flooring installer shall conduct a sample test to confirm bond compatibility.

Double Glue-Down of Carpet and Pad: Follow the Recommended Guidelines on Page 1 to prepare the underlayment. Follow manufacturers recommendations for adhesives.

Free-Lying Carpet Modules: Follow the Recommended Guidelines on Page 1 to prepare the underlayment. Hacker Industries, Inc. strongly recommends that all Hacker Floor Underlayments be sealed prior to installation. Install the carpet modules with 100% adhesive coverage. Follow the recommendations of the carpet modules manufacturer.

Wood or Metal Base Plates

Mechanical Attachment: Follow the Recommended Guidelines on Page 1 to prepare the underlayment. The flooring installer should shoot power actuated nails through the base plate and into the wood or concrete subfloor. The nail should be long enough to penetrate at least 1/2" (13mm) into the subfloor. If the underlayment is too thick for the nails to penetrate the subfloor, use one of the following adhesives in addition to the nailing:

- Hydroment 900, manufactured by Bostik
- Polyseamseal® All-Purpose Adhesive Caulk, manufactured by Darworth Co.
- PL 400, manufactured by Contech
- Any construction grade adhesive suitable for use with a cementitious underlayment.

Note: Base plates should not be mechanically fastened over a subfloor with a sound control mat or radiant heating system.

Guidelines for Installing Finished Floor Coverings (cont.)

Radiant Heat Systems

The temperature of the radiant heat system must be lowered before applying any floor covering, adhesive and/or floor covering. Allow thin set mortar to cure at least seven days before turning on hydronic or electric cable heat systems to allow material to hydrate adequately. Consult the Radiant Panel Association Guidelines.

Carpet and Pad: Follow the Recommended Guidelines on Page 1 to prepare the underlayment. Select a tackless installation and install system. Achieve appropriate heat transfer by using a low R-value carpet cushion. Consult the Radiant Panel Association Guidelines.

Laminated Hardwood and Parquet Wood Flooring: These flooring systems are ideal for radiant systems. The systems are very stable and resist expansion and contraction while improving the overall performance of radiant systems. Follow the Surface Requirement steps on Page 1 to prepare the underlayment. Follow and adhere to floor goods manufacturers' adhesive recommendations. Consult the Radiant Panel Association Guidelines.

Floating Floors: Follow the Recommended Guidelines on Page 1 to prepare the underlayment. The flooring installer should install boards glued edge to edge and float on a 1/8" (3mm) foam pad. Consult the Radiant Panel Association Guidelines.

Solid Wood Flooring: Nail-down sleeper system. Install tubing between 2" x 4" sleepers, which are attached to the subfloor. Pour Hacker's GYP-SPAN Radiant between the spaces around the tubes to provide a thermal mass. GYP-SPAN Radiant must be 3/4" minimum above the outside diameter of the tubes. Follow the Surface Requirement steps on Page 1 to prepare the underlayment. When dry, install a vapor barrier and nail boards to the sleepers. Be careful not to puncture the radiant heating tubes when nailing down a solid wood floor. This system offers limited insulation above the radiant system. For best results, refer to the radiant heat system manufacturers' recommendations. Consult the Radiant Panel Association Guidelines.

Note: The floor surface temperature should never exceed 85°F (29°C) when laminated, parquet or solid wood floors are installed over radiant heat systems.

Sheet Vinyl and Sheet Vinyl Composition Tiles: According to resilient industry recommendations, the floor surface temperature should never exceed 85°F (29°C). During adhesive and tile installation, lower the floor temperature. Consult Radiant Panel Association Guidelines and/or manufacturer of flooring material to be used prior to installation for specific requirements.

Guidelines for Installing Finished Floor Coverings (cont.)

Warning: When working with Hacker Floor Underlayments, be sure to wear personal protective equipment. When user operations generate dust, take the proper precautions to avoid dust inhalation. Many Hacker Floor Underlayments contain crystalline silica, a known occupational carcinogen. See product Material Safety Data Sheets (MSDS) for more information.

Notice: Hacker Industries, Inc. shall not be liable for incidental and consequential damages, directly or indirectly sustained, not for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to the replacement of the bagged product only. Any claim shall be deemed waived unless made in writing to Hacker Industries, Inc. within thirty (30) days from the date it was or reasonably should have been discovered.

Safety: Follow good safety and industrial hygiene practices during handling and installation of all products and systems. Take necessary precautions and wear personal protective equipment if needed. Refer to MSDS and related literature on product before specification and/or installation.

Anti-Fracture and Waterproof Membrane Manufacturers

Amorin Industrial Solutions (Acousticork R12)	(800) 558-3206
Bostik Inc. (Hydroment Ultra-Set Advanced).....	(800) 726-7845
Carlisle Waterproofing (CCW Under-Tile Membrane)	(888) 229-0199
C-Cure (Pro-Red963) (UltraCure971).....	(800) 895-2874
Custom Building Products (Red-Guard)	(800) 272-8786
Laticrete International (Laticrete 9235 Membrane)(HydroBan).....	(800) 243-4788
Mapei (Mapelastic) (Mapelastic HPG).....	(800) 42-MAPEI
Mer-Kote Products (Mer-Krete BFP) (Mer-Krete Hydro-Guard 2000)	(800) 851-6303
Noble Company (Nobleseal TS)(NoblesealSIS).....	(800) 878-5788
Protecto Wrap (AFM Anti-Fracture Membrane)	(877) 271-9661
Schluter Systems, Inc. (Schluter DITRA Matting)	(800) 472-4588
TEC Specialty Products (HydraFlex.....)	(800) 832-9023
(Triple Flex Waterproofing & Crack Isolation Membrane)	

* For crack-isolation and waterproof membrane recommendations, contact floor covering manufacturer. Hacker Industries, Inc. does not guarantee the performance of these products. Contact these manufacturers for warranties. *