

EXACOR[®]

Underlayment Installation Manual



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NOTE: ALL INFORMATION CONTAINED IN THIS DOCUMENT ALSO APPLIES TO EXTREMEGREEN® BRANDED MAGNESIUM OXIDE CEMENT PANELS MANUFACTURED AFTER MARCH 30, 2020.

Installation Manual Overview

This manual is intended to provide general information to the designer, contractor, and end user. The following instructions will help you properly install EXACOR® panels as underlayment when used as the top layer in a two-layer assembly over wood structural panel subflooring. We urge you, and anyone installing this product, to read these instructions in their entirety prior to installation. This manual is general in nature and does not cover every installation condition. Proper installation shall be deemed to mean the most restrictive requirement specified by Huber Engineered Woods LLC (“Huber Engineered Woods”), applicable building code(s), engineer of record, architect of record, or other authority having jurisdiction (AHJ). You are fully and solely responsible for all safety requirements and code compliance. For additional information contact Huber Engineered Woods.

EXACOR® Underlayment Product Overview

EXACOR panels are fire resistant, high-density, magnesium oxide cement panels. When used as an underlayment layer on top of wood structural panel subflooring, EXACOR panels can displace the need for wet-laid gypsum underlayment in specific published fire-resistant rated and sound attenuation floor/ceiling assemblies.



Available Sizes & Dimensions

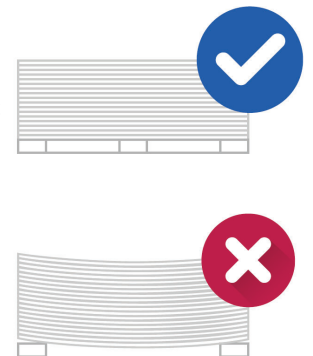
- EXACOR® underlayment panels are available in nominal 1/2-in. (12mm) and 5/8-in. (16mm) thicknesses. Panels are manufactured in nominal 48-in. face width and 96-in. length (1220mm x 2440mm).
- Panels feature a straight (square) edge profile.

Uses & Limitations

- Panels can be exposed to weather during construction for up to 200 days, depending on the warranty registration.¹
- Panels are intended for use as a replacement for wet-laid gypsum underlayment flooring in specific fire-resistant rated and sound attenuation floor/ceiling assemblies.
- Panels are for flooring applications only that will only be exposed to weather during construction. They are not intended for use on permanently exposed areas such as balconies, breezeways, decks or other outdoor or exterior flooring applications.
- Panels can be used in certain sound attenuation and fire-resistant rated assemblies. See **Sound Attenuation and Fire-Resistant-Rated Assemblies** section in this manual for details.
- Panels not approved for use on Type I or Type II buildings except as noted in ESR 4635.
- Always consult local building codes and designer of record for fire-resistant rated design requirements.
- Bare metal components in direct contact with EXACOR panels shall be inherently resistant to corrosion, coated for corrosion resistance (performance equal to or better than Class D, ASTM A153 Hot-Dipped Galvanized) or permanently separated by a non-metallic material.
- Project site should be kept clean. Using compressed air or similar tool, frequently blow off floors, walls, tools and other areas that may collect dust residue from cutting EXACOR panels.

Storage

- EXACOR panels must be stored in a covered, dry environment and remain in the manufacturer’s packaging.
- EXACOR panels shall be stored on the manufacturer’s pallets off the ground with full support underneath (image right). To protect edges from damage, do not store EXACOR panels vertically.
- To prevent the risk of injury, do not stack EXACOR panels higher than 6 units. Stacked units shall be level and aligned vertically.
- Panels should not be stored loosely or in standing water.
- When not contained in original packaging, cover EXACOR panels with a waterproof tarp or similar material when stored outdoors or on site to protect against weather, surface contamination, and construction traffic.

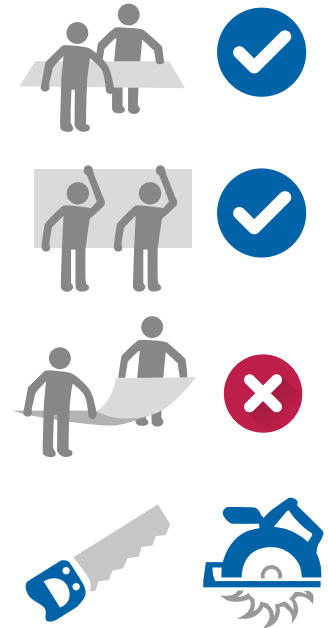


1. Limitations and restrictions apply. See applicable EXACOR Limited Warranty for details.



Precautions + Safe Handling

- Always consult the Safety Data Sheet (SDS) for safety, hazard, and first aid instructions.
- Wear appropriate personal protective equipment for the job. Suggested safety gear includes:
 - Gloves and long sleeves.
 - Dust masks and/or respirators to minimize dust inhalation during cutting, drilling, or notching.
 - Safety glasses or goggles.
- Use work practices that minimize the creation of dust. Adequate ventilation, dust collection for power saws and frequent jobsite cleanup are recommended.
- Wash hands after handling.
- Observe good industrial hygiene practices.
- Ensure that forklift or similar equipment is rated as capable of lifting and moving loads. Forks must extend completely under the entire load. Proper care and precautions should be taken not to damage panels and panel edges during handling.
- For Handling:
 - Two persons are recommended when loading or handling individual EXACOR® panels.
 - Panels are heavier than typical structural panels. Always use proper lifting techniques.
 - Hold panels with hands spaced apart along the long-edge of panel to prevent excessive bending/flexing (image right).



Cutting

- A fine-tooth handsaw, gypsum board (drywall) saw, or power saw are all recommended to cut EXACOR panels. For power saws, using a fiber-cement blade may result in cleaner edge cuts, less dust, and longer blade life. Support both ends of the board when cutting. Using compressed air or similar tool, blow EXACOR panel dust residue off tools frequently.
- To perform cut-outs in EXACOR panels, for plumbing, electrical outlets, light switches, etc., carefully measure and mark the location of the opening on the smooth side of the panel before making a cut. If using a jigsaw, drill a starter hole in the corner of the proposed cut-out and start cut from there. Alternatively, cut-outs can be removed using a hole saw, rotary tool, or equivalent hand tool. Carbide tip blades may provide longer service life when cutting EXACOR panels.
- For 1/2" thicknesses, panels may cut by scoring and snapping. Use a specialized scoring tool for best results.
- Do not cut panels wthat are stacked one on top of another. This can lead to scoring damage of the panel below.

Physical Properties

Product	nom. 1/2-in (12mm)	nom. 5/8-in (16mm)
Width & Tolerances	nom. 48-in. (1220mm) +/- 5/64-in. (2mm)	nom. 48-in. (1220mm) +/- 5/64-in. (2mm)
Length & Tolerances	nom. 96-in. (2440mm) +/- 5/64-in. (2mm)	nom. 96-in. (2440mm) +/- 5/64-in. (2mm)
Thickness & Tolerances	nom. 1/2-in. (12mm) +/- 1/16-in. (1.5mm)	nom. 5/8-in. (16mm) +/- 1/16-in. (1.5mm)
Weight	approx. 2.7 lbs/sf	approx. 3.3 lbs/sf
Edge Profile	Straight (Square) Edge	Straight (Square) Edge
Surface Burning Characteristics (ASTM E84 /UL 723)		
Surface burning/smoke developed	≤ 10 / ≤ 5	≤ 10 / ≤ 5
Fire Resistance (ASTM E119)	Fire resistant ¹	Fire resistant ¹
Water Vapor Permeable (ASTM E96 Method B) (ASTM E96 Method A)	≥ 13 perms ² ≥ 5 perms ²	≥ 13 perms ² ≥ 5 perms ²
Mold Resistance (ASTM G21)	0 Mold Growth Observed ³	0 Mold Growth Observed ³

1. EXACOR panels may be used in specific published fire-resistance-rated assemblies as tested in accordance with ASTM E119/ANSI UL 263. Follow published fire-resistance rated assembly requirements and consult local building codes and designer of record for fire-resistant design requirements.
 2. ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials conducted on 1/2" and 3/4" EXACOR™ products.
 3. ASTM G21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi conducted on 1/2" EXACOR™ product.

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Installing EXACOR® Underlayment

General

- EXACOR® panels when used as underlayment must be installed in accordance with instructions contained in this Installation Manual and the applicable fire-resistant rated design assembly. Should these instructions contradict, the most stringent requirements shall govern.
- When EXACOR panels have been installed, HEW recommends laying a temporary sheet of plywood or OSB over the underlayment in all high traffic areas and in areas where point loads such as ladders and drywall carts will be present to protect the underlayment surface during construction.
- When fastening bottom plates of walls bearing on top of the EXACOR underlayment, attach using fasteners that are inherently resistant to corrosion or coated for corrosion resistance (performance equal to or better than Class D, ASTM A153 Hot-Dipped Galvanized) in accordance with the prescriptive nailing schedule below. Attachment may also be engineered by a licensed design professional. Bottom plates for engineered shear walls shall be constructed in accordance with the requirements of the engineer-of-record. All fasteners must penetrate into floor joist/truss, rim board/joist, or solid blocking.

Bottom Plate Attachment Through 1/2" EXACOR® Underlayment		
Application	Fastener Size	On Center Spacing
Unbraced Wall Panel Applications	two 0.131"x3.5" nails	12" o.c.
	two 0.162"x3.5" nails (16d common)	16" o.c.
Braced Wall Panel Applications	four 0.131"x3.5" nails	8" o.c.
	two 0.162"x3.5" nails (16d common)	8" o.c.

Panel Allowable Bearing Stress (F_c ⊥)

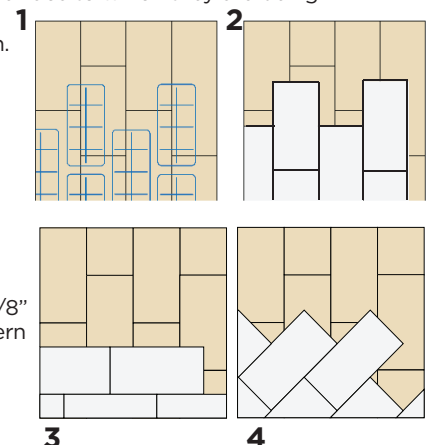
- Allowable bearing stress (F_c ⊥) is greater than or equal to the allowable bearing stress for OSB or plywood wood structural panels.

Subflooring:

- Wood structural panel subflooring shall be adequate to support the required design loads independent of the EXACOR underlayment and have a minimum floor span rating of 24 in. o.c. and a performance category of 23/32.
- Wood structural panel subflooring shall be installed in accordance with manufacturer instructions. Any flatness or surface quality requirements of the wood structural panel subflooring should be addressed prior to installing the EXACOR underlayment top layer.
- Wood structural panel subflooring shall be free of dust, debris, standing water or any other contaminants that would interfere with proper installation of EXACOR underlayment panels.
- EXACOR underlayment panels must be fully supported by wood structural panel subflooring below.
- DO NOT install EXACOR underlayment panels over the top of any designed expansion joints/gaps in the wood structural panel subfloor. Integrity of any designed expansion joints/gaps shall be maintained through EXACOR underlayment. See Temporary Expansion Joints tech tip in the Technical Library on huberwood.com for more information.
- Apply a continuous bead of adhesive under all edges and maximum 24-inch grid pattern in the middle (graphic 1). Adhesive grid pattern may need to be tighter than 24-inches for cut panels.
- Immediately after the application of adhesive, place the EXACOR underlayment panel into place and fastened within the open time stated by adhesive manufacturer. Offset all EXACOR panel edges by a minimum 4-inches from wood structural panel subfloor edges.
- EXACOR underlayment panels may be installed with the long dimension parallel (graphic 2), perpendicular (graphic 3), or diagonal (graphic 4) to the long dimension of the wood structural panel subflooring.
- Install EXACOR underlayment panels **smooth side up**. The rough, grid side must be in contact with the top surface of the wood structural panel subfloor.
- Ensure that EXACOR underlayment panels are flush against the top of the subfloor surface to which they are being fastened.
- Joists/trusses must be square and level to achieve a smooth and level floor installation. Replace or repair warped, bowed or crooked framing prior to subfloor installation.
- EXACOR underlayment panels should be butted tight to one another.

Adhesive:

- Ensure the proper underlayment adhesive is selected for the job. Huber Engineered Woods recommends AdvanTech™ subfloor adhesive but any solvent or polyurethane-based construction adhesive that meets the requirements of APA AFG-01 or ASTM D3498 may be used.
- Apply 1/4-inch to 3/8-inch bead of underlayment adhesive to the top of the wood structural panel subfloor. When using AdvanTech subfloor adhesive, use a minimum 3/8" diameter foam bead. Apply adhesive under all edges and maximum 24-inch grid pattern in the middle. Adhesive grid pattern may need to be tighter than 24-inches for cut panels. See graphic to the right for visual representation. Only apply enough adhesive for one panel at a time to prevent premature "skinning" of subfloor adhesive.
- Adhesive must be applied in accordance with the manufacturer's instructions.
- Mechanical fasteners must be used in addition to adhesive.
- Do not allow adhesive to form a "skin" prior to EXACOR panel installation and fastening.




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Fastening:

- Fasteners must be code-recognized and shall be inherently resistant to corrosion or coated for corrosion resistance (Electro-galvanized or better). Fasteners other than those used to attach EXACOR® underlayment to subflooring shall be Class D, ASTM A153 Hot-Dipped Galvanized or better.
- All fasteners shall be installed immediately after underlayment panel is laid in place on top of subfloor adhesive. Do not allow subfloor adhesive to skin, become firm or cure prior to installing all fasteners.
- Used deformed shank nails that have a minimum shank diameter of 0.113 inches x a minimum of 1.5 inches long. 0.113 inches x 2 inches long nails are acceptable. Clipped-head pneumatic nails are acceptable.
- The deformed shape of the nail shank must be deformed for the entire length of the nail. Example: if using ring shank nails, the entire length of the nail must have ring shank. Nails with only part of the shank of the nail being ring-shanked are not acceptable.
- Using fasteners meeting the requirements of this installation manual, fasten EXACOR panels at 6-inches on center at all edges and 12-inches on-center in the field. Fasteners must be located 1/2-inch from all panel edges and no closer than 2-inches from panel corners.
- All fasteners shall be flush or slightly driven below EXACOR panel surface.
- If using screws, edge distance shall not be less than 1-inch.

Nails

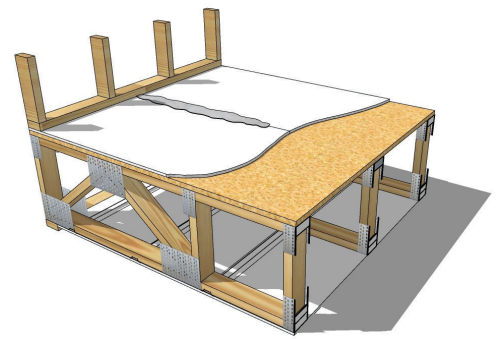
- Drive nails in straight and perpendicular to EXACOR panels and framing members.
- Nails shall be set flush or just below the panel surface.
- Start at one corner and work your way to the remaining edges.
- Code approved min. 1.5-in. deformed shank nails must be used when attaching nom. 1/2-in. (12.7mm) EXACOR subfloor panels to subflooring

Fastener	Fastener Length	Description	Application
	Min. #6 (0.113-in.) x min. 1.5-inch long ring shank nail	Performance equal to or better than Electrogalvanized	EXACOR® underlayment installed over the subfloor.

Panels and fasteners used to resist diaphragm loading have additional requirements. See Maximum Allowable Diaphragm Capacity section for more information.

Repair

- Small divots and imperfections in EXACOR® underlayment panels can be patched with an appropriate floor patching compound that is intended to be used over concrete/masonry substrates. Following patching compound manufacturer’s recommendations for gap filling limitations and applications. Use minor sanding to smooth patched surfaces.
- For damage that creates a hole through the panel, cut around damaged area and remove all loose dirt and debris. Replace damaged area with a patch piece of EXACOR panel cut to size to fit the removed section. Adhere and fasten securely to subfloor. Use appropriate patching compound to provide a smooth transition around edges of repair.
- If a hole goes through both the EXACOR underlayment panel and the wood structural panel subfloor, repair the wood subfloor first in accordance with manufacturer’s instructions, and then the underlayment panel.



Finish Floor Coverings

Surface Preparation

- To prepare the surface for finished floor coverings, remove all dust, dirt and debris from the EXACOR underlayment surface. Ensure panel surface is free from water, oil, grease and other contaminants.
- Ensure that fasteners used to install EXACOR panels sit flush or just below the panel surface.
- Identify and correct any imperfections in the surface of the panels and repair any damage in accordance with these instructions.
- As with any surface to receive floor finishes, EXACOR panels should be flat and free from excessive high and low areas. For the purposes of these instructions, a floor is considered to be flat when the difference in height between two points does not exceed 3/16-inch in 10-feet or 1/8-inch in 6-feet. Floor flatness requirements may vary depending on type of floor covering. Follow all finish flooring manufacturer requirements. If finish flooring type requires substrate flatness tolerances to be more restrictive, consider using a quality self-leveling product.
- HVAC system should be running at end-use conditions for a minimum of 48-hours prior to finish floor installation.

Floor Coverings

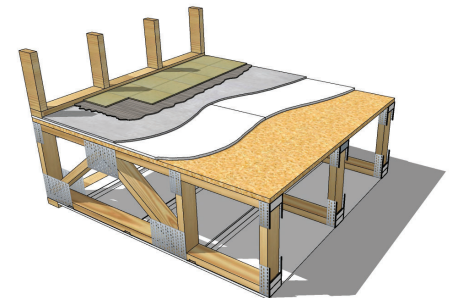
General Note: Before applying any floor covering, check flooring manufacturer's installation requirements and compatibility with substrate. Follow all flooring manufacturer's requirements for primers, adhesives, mortars, self-levelers, underlayments, etc.

Carpet

Carpet and pad can be installed over EXACOR panels using tack strips. Ensure nails in tack strips are long enough to penetrate into the wood subflooring or use hotmelt glue adhesive to secure strips to the surface of EXACOR panels. For commercial carpet tile, or other adhered carpets, follow all flooring manufacturer's requirements for adhesives, primers and substrates. For best results, the use of a primer is recommended.

Ceramic Tile

EXACOR panels are not intended to be used as a replacement for tile underlayment (backer board, uncoupling membrane, crack isolation, etc.). Follow flooring manufacturer's requirements for the installation of tile underlayment and tile floor covering. Fasteners used to attach tile underlayment products to EXACOR panels shall be inherently resistant to corrosion or coated for corrosion resistance (performance equal to or better than Class D, ASTM A153 Hot-Dipped Galvanized).



Engineered Wood Flooring

Engineered wood flooring can be installed over EXACOR underlayment panels in floating or adhered applications. Follow all flooring manufacturer's requirements for adhesives, primers and underlayments.

Vinyl

Vinyl products such as luxury vinyl plank (LVP), and luxury vinyl tile (LVT) may be installed as floated or adhered systems over EXACOR underlayment in accordance with manufacturer's requirements. Vinyl sheet products and vinyl composition tile (VCT) may be installed in fully adhered applications. For adhered vinyl floor finishes, ensure substrate compatibility with finished flooring manufacturer and follow all installation requirements. For best results, it is recommended to patch and feather all seams and apply primer to the area to receive the floor covering.

Sound Attenuation and Fire-Resistant-Rated Assemblies

EXACOR underlayment has been evaluated in specific fire-resistance rated designs in accordance with ASTM E119/ANSI UL 263. Please refer to the EXACOR Sound & Fire Assemblies Handbook for additional information. Follow all local building code requirements for fire-resistance rated construction.



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