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 or architect of record or other authority having jurisdiction. 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 poured gypsum cement flooring 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.
- Panels are intended for use as a replacement for poured gypsum cement 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. Frequently blow off floors, walls, tools and other areas that may collect dust residue from cutting EXACOR panels.

Storage

- EXACOR panels shall be stored in a cool, 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 11 feet high (6 units, level, aligned and stacked).
- Panels should not be stored loosely or near standing water.
- When not contained in original packaging, cover EXACOR panels with a waterproof material when stored outdoors or on site to protect against weather, direct sunlight, surface contamination, and construction traffic.

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. 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.
- 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-length 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.
- 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.
- Blow EXACOR panel dust residue off of tools frequently.

Physical Properties

<table>
<thead>
<tr>
<th>Product</th>
<th>nom. 1/2-in (12mm)</th>
<th>nom. 5/8-in (16mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width &amp; Tolerances</td>
<td>nom. 48-in. (1220mm) +/- 5/64-in. (2mm)</td>
<td>nom. 48-in. (1220mm) +/- 5/64-in. (2mm)</td>
</tr>
<tr>
<td>Length &amp; Tolerances</td>
<td>nom. 96-in. (2440mm) +/- 5/64-in. (2mm)</td>
<td>nom. 96-in. (2440mm) +/- 5/64-in. (2mm)</td>
</tr>
<tr>
<td>Thickness &amp; Tolerances</td>
<td>nom. 1/2-in. (12mm) +/- 1/16-in. (1.5mm)</td>
<td>nom. 5/8-in. (16mm) +/- 1/16-in. (1.5mm)</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 2.7 lbs/sf</td>
<td>approx. 3.3 lbs/sf</td>
</tr>
<tr>
<td>Edge Profile</td>
<td>Straight (Square) Edge</td>
<td>Straight (Square) Edge</td>
</tr>
</tbody>
</table>

Surface Burning Characteristics (ASTM E84 /UL 723)
- Surface burning/smoke developed: ≤ 10 / ≤ 5¹
- Fire Resistance (ASTM E119): Fire resistant²

Water Vapor Permeable (ASTM E96 Method B)
- ≥ 13 perms³

Water Vapor Permeable (ASTM E96 Method A)
- ≥ 5 perms³

Mold Resistance (ASTM G21)
- 0 Mold Growth Observed⁴

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¹. ASTM E84 Standard Method for Surface Burning Characteristics of Building Materials conducted on ½” and ¾” EXACOR™ panel thicknesses.
². 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.
³. ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials conducted on ½” and ¾” EXACOR™ products.
⁴. ASTM G21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi conducted on ½” EXACOR™ product.
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.

For 1/2" thickness:
• For NON-BRAZED wall panels, bottom plate nailing shall be corrosion-resistant (performance equal to or better than Class D, ASTM A153 Hot-Dipped Galvanized) minimum 2-16d common nails (3.5-inch x 0.162-inch) spaced at 16-inches on-center.
• For BRACED wall panels, bottom plate nailing shall be corrosion-resistant (performance equal to or better than Class D, ASTM A153 Hot-Dipped Galvanized) minimum 2-16d common nails (3.5-inch x 0.162-inch) spaced at 8-inches on-center.

For 5/8" thickness:
• Bottom plate attachment through 5/8" EXACOR panels used as floor underlayment must be engineered by a licensed design professional.

Panel Allowable Bearing Stress (Fc ⊥)

• Allowable bearing stress (Fc ⊥) 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 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.
• Immediately after the application of adhesive, place the EXACOR underlayment panel into place. 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, perpendicular or diagonal 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 a solvent or polyurethane-based construction adhesive that meets the requirements of APA AFG-01 or ASTM D3498.
• Apply 1/4-inch to 3/8-inch bead of underlayment adhesive to the top of the wood structural panel subfloor. 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.
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.
• Use deformed-shank nails that have a minimum shank diameter of 0.113-inches x min. 1.5-inches long. Clipped-head pneumatic nails are 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.

Repair
• Small divots and imperfections in EXACOR™ underlayment panels can be patched with an elastomeric 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 elastomeric 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 backer, uncoupling or crack isolation products. Fasteners used to attach tile backer 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). The use of an appropriate primer for fluid applied tile membranes is recommended. Follow all manufacturer’s requirements for installation.
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.