

EXACOR™

Subfloor 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™ subfloor panels. 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™ Subflooring Product Overview

EXACOR subfloor panels are fire resistant¹, high-density, structural magnesium oxide cement panels. When used as a subfloor, EXACOR™ panels can replace plywood, OSB, and/or cement-based subflooring, and can remove the need for wet-laid gypsum cement underlayment. These instructions apply to nominal 3/4-in. (20mm) thickness.

Available Sizes & Dimensions

- EXACOR subfloor panels are nominally 3/4-in. thick by 48-in. face width and 96-in. length (20mm x 1220mm x 2440mm).
- Panels feature a shiplap, tongue-and-groove or straight edge profile. Tongue-and-groove edge profile along the 96 in. long edge will replace the shiplap edge profile in 2021.

Uses & Limitations

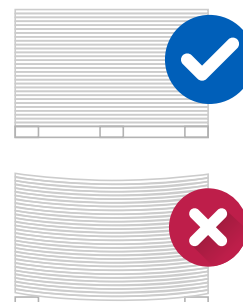
- Panels are intended for use in interior subflooring applications only. They are not intended for use on balconies, roofs, or other outdoor or exterior applications.
- Panels can be used in certain sound and fire rated assemblies. See **Sound and Fire-Resistant Assemblies** section in this manual for details.
- EXACOR subfloor panels are installed in a very similar fashion to traditional plywood, OSB and/or cement-based subfloor panels.
- Always consult local building codes and designer of record for fire-resistance design requirements.
- Always use corrosion-resistant (hot-dipped galvanized or better) fasteners when fastening EXACOR panels.

Storage

- EXACOR panels must be stored in a cool, dry environment and must remain in the manufacturer’s packaging.
- EXACOR panels must 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 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.

Precautions + Safe Handling

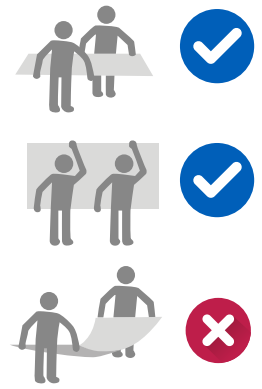
- Always consult the Safety Data Sheet (SDS) for safety, hazard, and first aid instructions.
- Wear appropriate personal protective equipment for the job. Suggested safety gear includes:
 - Gloves and long sleeves.
 - Dust masks and / or respirators to minimize dust inhalation during cutting, drilling, or notching.
 - Safety glasses and goggles.



1. Follow published fire-resistance rated assembly requirements and consult local building code and designer of record for fire-resistant design requirements.

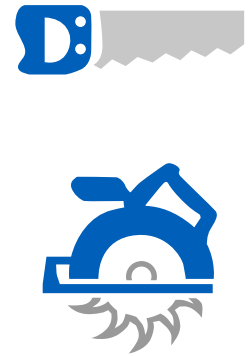
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- Use work practices that minimize the creation of dust. Adequate ventilation and/or collection for power saws and frequent jobsite cleanup are recommended.
- Wash hands after handling.
- Observe good industrial hygiene practices.
- Ensure that forklift 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, roto-zip, or equivalent hand tool. Carbide tip blades may provide longer service life when cutting EXACOR panels.



Physical Properties

Width & Tolerances	nom. 48-in. (1220mm)
	+/- 5/64-in. (2mm)
Length & Tolerances	nom. 96-in. (2440mm)
	+/- 5/64-in. (2mm)
Thickness & Tolerances	nom. 3/4-in. (20mm) +/- 1/16 in. (1mm)
Weight	approx. 4.50 lbs/sf
Edge Profile	Shiplap, Straight or Tongue & Groove
Surface Burning Characteristics (ASTM E84 /UL 723)	
Surface burning/smoke developed	0/0 ¹
Fire Resistance (ASTM E84)	Fire resistant ²
Water Vapor Permeable (ASTM E96 Method B)	≥ 13 perms ³
(ASTM E96 Method A)	≥ 5 perms ⁴
Mold Resistance (ASTM G21)	0/0/0 ⁵

1. ASTM E84 Standard Method for Surface Burning Characteristics of Building Materials conducted on 1/2-in and 3/4-in EXACOR™ panel thicknesses.
2. Follow published fire-resistance rated assembly requirements and consult local building codes and designer of record for fire-resistant design requirements. E84 Standard Test Method for Surface Burning Characteristics of Building Materials conducted on 1/2-in. and 3/4-in. EXACOR panel thicknesses.
3. ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials conducted on 1/2-in and 3/4-in EXACOR™ products.
4. ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials conducted on 1/2-in and 3/4-in EXACOR™ products.
5. ASTM G21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi conducted on 1/2-in EXACOR™ product.

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Structural Design Values

Maximum Allowable Uniform Loading (satisfies L/360 LL and L/240 TL deflection) based on 3-span condition

For Joists/Trusses spaced 16-in. oc ¹	60 psf LL / 90 psf TL
For Joists/Trusses spaced 19.2-in. oc ¹	50 psf LL / 75 psf TL
For Joists/Trusses spaced 24-in. oc ¹	40 psf LL / 60 psf TL

- Panels must span two or more joists with long dimension perpendicular to the floor framing.
- All panel edges to be supported by framing.

Maximum Allowable Diaphragm Capacity (unblocked)

340 plf

- Based on Southern Pine 18-in. engineered truss floor framing spaced at 24-in. oc and fastened using 0.131-in. x 3-in. long hot-dipped galvanized ring-shank nails spaced 6-in. oc along panel edges and 12-in oc in the field.
- Diaphragm values are for wind controlled designs only; does not apply to seismic controlled projects.

A Note on Additional Blocking

- All EXACOR™ subfloor panel shiplap or square edges must be supported with framing or blocking unless a ¼-in. minimum thickness underlayment is placed over the subfloor. Panels with tongue and groove profiled edges are self-supporting and do not require additional blocking.
- Flatwise 2x blocking between framing members is an acceptable means to provide panel edge support.
- Blocking must be installed with the top surface flush with the top of floor framing members in order to provide uniform support for all subfloor panel edges. Install blocking in accordance with the requirements of applicable building code, joist/truss manufacturer, designer of record and other authority(ies) having jurisdiction.

Installing EXACOR™ Subflooring

General

- EXACOR subfloor panels must be installed in accordance with instructions contained in this Installation Manual and the applicable fire resistance rated design. Should these instructions contradict, the most stringent requirements shall govern.
- Shiplap and straight edge profiles require code-approved edge support. Panels with tongue and groove edges do not require additional edge support.
- Panels must be butted tight to one another.
- EXACOR subfloor panels shall not be installed less than 8 in. from exposed earth unless an approved method of protection against termites and decay is approved by the local building official.

Framing:

- Panels must span two or more joists with long dimension perpendicular to the floor framing. All 4 ft. (short) edges must be supported by framing below.
- Install EXACOR subfloor panels **smooth side up**. The rough, grid side must be in contact with the framing member.
- Framing width shall not be less than 1 1/2-in. wide for wood framing.
- Framing members shall be in plane of the adjacent framing. EXACOR panels will not correct out-of-plane irregularities in floor framing members.




Fastening:

- To attach panels to wood framing, always use a code recognized powder coated, stainless steel, or yellow zinc coated fiber-cement board or wood subfloor screws. Screws with nibs are recommended for improved counter-sinking.
- Wood and steel bugle head gypsum screws are not recommended for any subflooring applications.
- Fastening pattern must be 6-in. o.c. edge and 12-in. o.c. field spacing.
- Fasteners must be spaced 1/2-in. from all edges and no closer than 2-in. from a corner.

Screws

1. Maximum design loads for 16-in. oc and 19.2-in. oc support spacings are derived from structural information published in ICC-ES ESR-4634.

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Fastener	Fastener Length	Description	Application
	Min. #8 x 1 15/16-in. (49.21mm) Min. #12 x 1 3/4-in. (44.45mm)	Powder coated, yellow zinc or stainless steel corrosion resistant self-drilling subfloor screw	EXACOR™ subflooring to coldformed steel. Max. Steel Thicknesses: #8 - 16 gauge (54 mil) #10 & #12 - 12 gauge (97 mil)
	Min. #8 x 2-in. (50.8mm)	Powder coated, yellow zinc or stainless steel subfloor screw	EXACOR™ subflooring to wood framing and EWP-ply for multi-ply trusses.
	Min. #6 x 2-in. x 0.113-in. (50.8mm)	Powder coated, coated, or stainless steel Annular Ring Shank nail	EXACOR™ subflooring to wood framing. Stainless steel recommended.

- Install fasteners straight and perpendicular to subfloor panels and joists/trusses.
- Countersink screws just below the surface of the EXACOR™ subfloor panels. Do not overdrive screws.
- Start at one corner and work your way to the remaining edges.
- Code approved fasteners must penetrate framing members at least 1-in.
- Min. 2 in. screws must be used when attaching nom. 3/4-in.(20mm) EXACOR subfloor panels to wood framing.

Nails

- Drive nails in straight and perpendicular to EXACOR™ panels and framing members.
- Seat nails so head is countersunk in a shallow dimple formed by final blow of the hammer or nail gun.
- Start at one corner and work your way to the remaining edges.
- Nails must be spaced a maximum of 6 in. o.c.
- Code approved min. 2-in. Ring Shank nails must be used when attaching nom. 3/4-in. (20mm) EXACOR subfloor panels to wood framing.

Adhesive

- Ensure the proper subfloor 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.
- Framing must be clean and free from oil, dirt, and contamination.
- 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.

Best Practices

- Ensure that EXACOR subfloor panels are flush against the top of the joist/truss surface to which they are being fastened.
- Joists/trusses must be square and level to achieve a smooth and level floor installation. Replace warped, bowed or crooked joists/trusses.
- When EXACOR panels have been installed, HEW requires laying a temporary sheet of plywood or OSB over all high traffic areas and point loads such as ladders and drywall carts, to protect the subfloor surface during construction.

Repair

- Small gaps and divots in EXACOR subfloor panels can be patched with an elastomeric 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.
- To repair a small (<2 sq. inches) hole, first clear the hole of any remaining loose material. Fill the hole with another EXACOR subfloor panel, or elastomeric patching compound as needed to completely fill the hole. If the hole is part of a fire assembly, fire-caulking or other sealant acceptable for fire assembly design must be used to seal the penetration.
- For larger repairs (>2 sq. inches), the area around the damage must be replaced with a new piece of EXACOR subfloor. Replacement panels must be no less than 24-in. in width and cover a minimum of two floor spans (three floor joists). Add nominal 2x blocking at the panel seams to support edges.

Product Application

Finish Floor Coverings

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Surface Preparation

- To prepare the surface for finished floor coverings, remove all dust, dirt and debris from the EXACOR™ panel surface. Ensure 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.

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, underlayments, etc. Floating systems generally require a backer material such as foam or cork to be installed over the subfloor prior to installation or may feature a backer material pre-bonded to the flooring.

Carpet

Carpet and pad can be installed over EXACOR panels using adhesive tack strips. 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. Always use corrosion-resistant (hot-dipped galvanized or better) fasteners when attaching tile backer products to EXACOR panels. Do not install ceramic tile directly to the EXACOR™ subflooring panel surface. 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 over EXACOR subflooring in accordance with manufacturer's installation requirements. Vinyl sheet products and vinyl composite tile (VCT) are typically fully adhered applications. For adhered vinyl floor finishes, ensure substrate compatibility with finished flooring manufacturer and follow all installation requirements including any requirement for additional underlayment. For best results, it is recommended to patch and feather all seams and apply primer to the area to receive the floor covering.

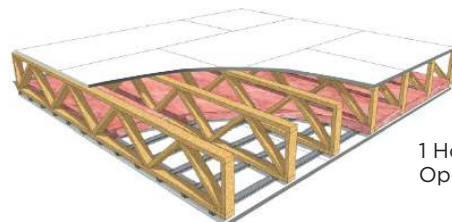
Sound and Fire-Resistant Assemblies

- Information below is for guidance and reference only. Consult the listing at www.ul.com for the complete report.
- Huber Engineered Woods currently does not support any EXACOR panel uses in ceiling applications, even if permitted in the full UL report.
- EXACOR panels can be used as part of an assembly to meet or exceed STC/IIC requirements for dwelling separations.

Fire Resistance:

EXACOR panels are fire resistant¹ as tested in accordance with ASTM E84. They also score a 0-flame spread and 0-smoke developed rating when tested in accordance with ASTM E84.¹

1. Follow published fire-resistance rated assembly requirements and consult local building codes and designer of record for fire-resistant design requirements. E84 Standard Test Method for Surface Burning Characteristics of Building Materials conducted on 1/2-in. and 3/4-in. EXACOR panel thicknesses.

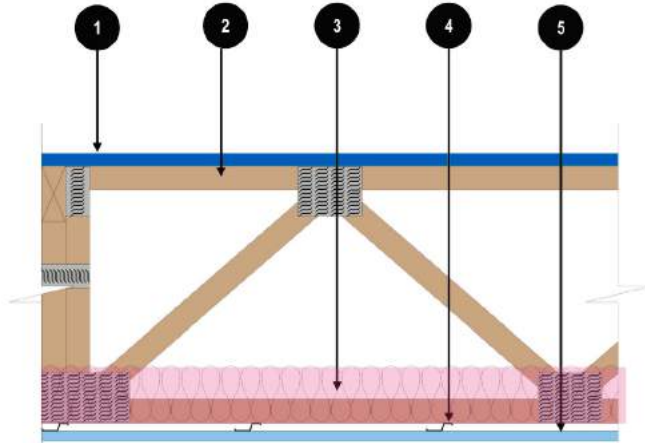


1 Hour Fire-Resistant
Open Web Floor System

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UL 263 Design No. L601: 1 Hour Fire-Resistant Assembly

To Open Web Wood Trusses



1 Hour Assembly - Type C Gypsum Ceiling

Key:

- 1 Nom. 3/4-in. (20mm) EXACOR™ subfloor
- 2 Min 16 in. deep 2x4-in. trusses at max 24-in. o.c.
- 3 3 1/2-in. thick R-13 glass fiber batt insulation
- 4 1/2-in. deep resilient channels at 12-in. o.c.
- 5 One layer 5/8-in. type C gypsum panel

Sound Ratings Including Additional Components^{1,2}

- 6 Luxury Vinyl Plank
- 7 Sound Control Underlayment

STC: 58 | IIC: 50

- 1. Batt insulation shall be 6.25-in. R-19 Glass Fiber Insulation and wood trusses shall be 18" deep to achieve STC and IIC sound ratings.
- 2. Minimum thickness of 5.5 mm Luxury Vinyl Plank flooring (loose laid) on top of 2 mm thick sound control underlayment having a density > 1000 kg/m³.



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