Engineered Insulation
Interior Installation Guide

Concrete or Masonry Walls

Cold Exterior Walls

Concrete Floors

Concrete Ceilings

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Methods of Attachment for Concrete Walls

1. Adhesive attachment for concrete or masonry walls is the fastest and strongest method for installing panels. The hundreds of interlocking dovetails on the back of the stud are mechanically locked to the concrete. The benefit of the adhesive method is that it can flatten out the wall by floating over uneven surfaces, spanning up to 3/8” gaps.

2. Mechanical attachment can be used in place of adhesive when the concrete surface is unsuitable for a proper adhesive bond. Install concrete screws 12” o.c. through the studs and into the concrete wall. Do not use powder actuated nail guns which may crack the InSoFast studs.

3. Adhesive attachment can be supplemented with concrete screws. For a straighter wall, wait until the adhesive has set before installing mechanical fasteners.

**PL Premium Construction Adhesive 3X by Loctite is the approved adhesive.**
(one 28 oz. tube covers 50 S.F. of panels - uneven surfaces may decrease coverage)

This installation manual primarily shows the use of adhesive attachment.
Installing InSoFast Panels over Below Grade Concrete or Masonry Walls

Wall Prep

It is up to the installer to determine the suitability of adhesive for the application of the InSoFast panels. Clean and remove dirt, debris, or loose paint from the wall that could affect the adhesive bond. If you are unsure of the suitability of the wall, perform an adhesive test. See https://www.insofast.com/explore/adhesive-attachment.html for details on performing this test.

This is your last chance to fix any issues before covering the walls.

Start in a Corner

Start in the corner with a full InSoFast panel, tongue side up. The “InSoFast” logo must face outward toward the installer. The ribbed side of the studs must be in contact with the concrete wall. The front of the UX 2.0 panel has the exposed smooth front face of the stud showing. The EXi 2.5 panel has recessed studs that are indicated on the front face of the panel. The exposed finished face of the EXi 2.5 panel is completely white. See video for more details: https://youtu.be/bWK-LN-MD61Q

Run a 3/8” bead of PL Premium 3X along the ribbed dovetail gluing surface of the studs on the back of the first panel. Apply an extra bead of adhesive directly to the foam within 2” of the corner of the wall. Set the panel on the floor and press it against the wall.

It is normal for panels to float out from the wall and feel spongy until the adhesive sets. Verify the proper amount of adhesive by pressing the panel to the wall and pulling back. The adhesive should cover the entire width of the stud. The adhesive is able to span gaps and will float over irregularities in the wall. Rough or uneven surfaces will require more adhesive.

Start the second row by cutting a panel to create the staggered or running bond pattern. The vertical seams should not match up. Convenient cutting lines are located 16” from the ends of the panel.

Continue installing the panels to the next corner. Cut the last panel 1/4" less than the exact measurement needed. To eliminate waste, use the cut portion of the panel to turn the corner.

If you notice that the horizontal seams are not tight your floor may be uneven. See Advanced Installation: Adjusting Panels for Uneven Floors.
**Inside Corners**

To prevent the panels from buckling out, do not cut the panels tight to the corner. Leave a 1/4” gap. Use the cut off piece to turn the corner and start the next wall. It is best to leave another 1/4” gap to fill with spray foam after all the panels are installed.

**Outside Corners - with Corner Bead**

Cut the panel flush or square with the corner. Run a bead of adhesive 2” from the cut end on the backside of the panel. Use the cut off piece of the panel to continue around the corner and overlap the first piece. Run two beads of adhesive at 1” and at 3” from the cut end on the backside of the second piece. This secures the lap joint and bonds the panel to the concrete.

Install a sheet metal corner flashing “L” angle with PL Premium 3X. Hold in place temporarily with duct tape. This provides for easy drywall and corner bead attachment using screws.

**Installing Top Row of Panels**

It is important to seal the top row of panels. When installing the last row of panels, add a line of spray foam 2” down from the top of the panel before pressing into place. An alternate method is to use spray foam the top edge once the panels have been installed.

**Intersecting Walls**

It is best to install the InSoFast panels on the exterior wall before installing the intersecting partition walls. This provides a continuous thermal and moisture seal for the wall. Secure the partition wall with a bead of PL Premium 3X along the wood stud that butts into the InSoFast panels. Concrete screws may be used in place of adhesive. The top and bottom plates are secured to the ceiling and floor.

For existing interior walls, install the InSoFast panels up to the interior wall. Leave a 1/4” gap for spray foam.
Sealing and Stopping Air Infiltration

It is important to prevent air infiltration and air movement behind the wall panels that can lead to moisture issues.

Seal the joint where the panels meet the floor. This reduces air movement but also assists in moisture management.

Apply a continuous bead of adhesive or spray foam to seal the panels at the top of the foundation wall.

Use spray foam to seal any gaps, corners, penetrations, windows/openings, and outlet boxes.

Damaged panels with missing foam can be filled with spray foam.

It is not necessary to seal all the seams of the InSoFast panels.

Sealing the Rim Joist Area

A critical place to stop air infiltration in a home is the rim joist area at the top of the foundation. See https://www.insofast.com/explore/sealing-and-insulating-rim-joists.html for more options on sealing and insulating the rim joist.

Windows and Openings

When fitting panels to the furring or framing for openings, leave a 1/4” gap to fill with spray foam. Make sure that an additional bead of adhesive is placed on the backside of the foam along any cuts.

Electrical Installation

Install electrical boxes and wiring after the panels are installed and the adhesive has set. The InSoFast panels have vertical wiring chases 16” o.c. which are indicated on the front face of the panels. The horizontal wiring chase is 24” o.c. and located at the top of each panel. This horizontal chase is formed when the two panels are stacked together.

The UX 2.0 panel uses a 2-1/2” deep electrical box or 1-1/2” deep metal junction box with a 1” reducing mud ring for a single outlet. The EXi 2.5 panel uses a 3” standard depth electrical box. See https://www.insofast.com/explore/electrical-integration.html for additional information.
Installing Wiring and Electrical Boxes

To locate the cutout area for an electrical box, press a box firmly into the foam to make an impression and then cut out the foam with a utility knife.

It is best to run wiring before securing the boxes. Push or slide Romex wiring through the horizontal or vertical chases from box to box. If the wiring hangs up, bend over the sharp ends of the wire and crimp down. This makes it easier for the wiring to move through the chases. A fish tape is generally not needed to pull wiring through the raceways unless multiple wires are pulled at the same time.

Align the electrical box with a raceway or cut out a pathway in the foam to run wiring from the box opening to the horizontal or vertical raceway.

Electrical boxes are secured directly to the concrete wall using PL Premium 3X or concrete screws.

Seal around the box with expanding spray foam. This can also serve as the code required attachment for securing the wiring within 8” of an electrical box.

To run wiring around a corner, cut out a 4” piece of foam from each panel to access the horizontal raceway. Run wiring around the corner and then replace the foam pieces or fill the gap with spray foam.

Existing Outlets and Conduit

Install box extenders on the existing outlets if needed to reach the proper depth. To cut out for the box, press the panel over the outlet to make an impression onto the back of the panel. Cut out about 1/2” larger than the indentation. Fill the gap around the box with spray foam.

For existing conduit, firmly press the InSoFast panel against the conduit to transfer the location to the back. Remove the foam from the backside to accommodate the conduit by cutting along each side and then scraping out the foam with a chisel or screw driver.
Installing Drywall

A vapor barrier is not required when using InSoFast panels on the interior over concrete or masonry walls. As with all basement applications, it is recommended to use mold resistant drywall for basements.

Drywall is installed over InSoFast panels in the same way as traditional wood framing. Fasten drywall to the studs using standard coarse thread all-purpose drywall screws for wood.

Keep the drywall 1" off of the floor to prevent the wicking of moisture from the concrete.

InSoFast panels provide solid backing for drywall in corners and at partition walls. This eliminates the need for extra studs at the corners. If there is not an attachment stud in the corner, you can either float the drywall in the corner or apply a bead PL Premium 3X to the face of the panel. This bonds the drywall to the foam panel which is bonded to the concrete wall.

InSoFast panels are manufactured with fire retardant foam, however building codes require that all foam products be covered by a 15-minute thermal barrier, such as 1/2” drywall.

Installing Trim

Fasten baseboard and trim to the attachment studs using a finish nail gun, hand nails, or trim head screws.

Trim out windows with a drywall return or extension jambs with casing.

Hanging Pictures

Lightweight pictures can be hung on the wall by using a nail or a screw inserted through the drywall into the foam. For heavier pictures, use standard drywall anchors when a stud can not be located.

Installing TVs & Cabinets

Use a density scanning or metal sensing stud sensor to locate the studs or drywall screw heads. Install the TV mounting bracket or cabinets by screwing directly into the attachment studs using fasteners for wood.

Follow up with an additional concrete screw as necessary to fasten the TV mounting bracket or cabinets through the panel directly into the concrete wall. It is not necessary for the concrete screw to go through an attachment stud.
Advanced Installations

Adjusting Panels for Uneven Floors
After installing the second row, the horizontal seams should be tight. If there is a gap, duct tape the lower panel and pull it tight to the upper panel. The adhesive is repositionable for about 20 minutes. This will create a gap at the floor that can be filled with spray foam. The next rows will install correctly.

Sloping Floors
InSoFast panels can be cut to fit sloping floors. Place a panel on the low side. Measure the distance from the ceiling to the top of the panel. On the other end of the wall, measure down from the ceiling the same distance. Snap a line between the two marks. Lay out the panels against the line to determine how much needs to be trimmed off of the bottom of the panels to match the slope of the floor.

Rubble Stone Foundations- Bowed Walls – Out of Plumb Walls
InSoFast panels are not suitable for every project. It is up to you to decide if you have the skills necessary to tackle leveling a wall using advanced techniques. All walls must be repaired and stabilized structurally before you begin.

InSoFast panels can be installed on walls that are out of plumb, bowed, or are made from rubble stone. It is up to you to determine if InSoFast is the right fit for you and your project. See https://www.insofast.com/explore/uneven-walls.html.

Minimizing Waste for Odd Height Walls
InSoFast panels can be used to minimize waste for odd height walls such as 7’ or 9’ high. When panels are cut in half lengthways to fit, half of the pieces are left without a groove. Install the pieces with the groove first. To install the pieces without grooves, trim off the tongue of the panels on the wall and replace with a bead of adhesive. Then set the cut panels without grooves on top.

InSoFast Plus Additional Insulation
If a higher R-Value is required, sheet foam can be added over top the InSoFast panels. Use enough fasteners or adhesive to hold the sheets in place.

Mark the stud location on the floor, ceiling, and at board edges to easily locate the InSoFast studs when installing drywall.

Use standard coarse thread all-purpose drywall screws for wood of sufficient length to penetrate 1/2” into the stud.
Perimeter Drainage Systems

When the basement floor is broken out for a new perimeter drainage system, InSoFast panels can be installed before the new replacement concrete is poured. This allows moisture to travel directly down the wall into the drain tile system. It is important to seal the InSoFast panels at the top of the wall, at corners, and at all penetrations to prevent soil gases from entering the house. See insofast.com for detailed drawings on soil gas mitigation.

If the drainage system is easily trimable, such as a dimpled drainage mat, cut the material close to the floor. Install a “Z” flashing along the floor or seal the InSoFast panels to the floor.

If you have an existing perimeter drainage system that comes up above the concrete floor, slide a “Z” flashing into the top of the drainage system. Start the InSoFast panels on top of the flashing. Fill in the lower part below the flashing with scrap InSoFast panels or spray foam.

If you have a radon mitigation system in place, consult a professional before installing a perimeter drainage system.
Installing InSoFast Panels over Above Grade Framed Walls

InSoFast panels can be installed over an existing wood framed walls with existing drywall or lath and plaster. It is not necessary to remove drywall to install InSoFast. It is preferred to go right over the existing drywall. The drywall functions as an air and vapor barrier and will increase sound proofing qualities and the performance of your wall.

InSoFast panels can be used over above grade framed walls such as lookout or walkout walls in a basement. Do not install InSoFast panels over below grade framed walls in a basement.

Wall Prep

Remove baseboard, window trim, electrical outlet covers, and heat registers. Install wood furring around openings so that they are flush with the face of the InSoFast panels. See page 2.

Electrical

When using existing electrical boxes, install a box extender. After the InSoFast panels are installed, new outlets can be added. Wiring can be run from the knockout in the box extender to the new electrical box, utilizing the electrical raceways in the InSoFast panels. Foam can be cut out as necessary to access raceways.

Screw through the back of the box into an existing wall stud or to the InSoFast stud using face mounting steel stud boxes, available in metal or plastic. See Electrical Page 5.

Heating

Baseboard style wall registers can be extended before the panels are installed. Use a pre made sidewall metal register head.
Panel Layout

Mark the existing stud locations on the wall. Align the InSoFast studs with the framing.

The recommended screw pattern is 12” o.c. with a fastener length sufficient to penetrate into the existing framing. If the framing is not 16” o.c., you can supplement with adhesive or screws with plastic washers for foam board.

A stud is not required in the corners since the drywall is backed solid. Adhesive may be used in the corner for additional support.

Lath and plaster walls may use the adhesive method. Follow the basement application. See page 3.

Air Sealing - Drywall - Openings - Trim

Follow instructions for concrete or masonry wall application. See Pages 5 - 7.
Installing InSoFast Panels over Above Grade Masonry or Brick Walls

InSoFast panels can be installed over above grade masonry or brick walls. These old plastered brick walls had no insulation.

Wall Prep
Loose plaster and wall paper were removed. Replacement windows were installed.

Installation
Follow installation instructions for below grade concrete or masonry wall application. See Pages 2 - 4.

Air Sealing - Electrical - Drywall
Follow instructions for concrete or masonry wall application. See Pages 5 - 7.
Installing InSoFast Panels over Concrete Ceilings

Installation
Install the InSoFast panels perpendicular to the planks in a staggered or running bond pattern. Install ceiling panels before installing InSoFast panels on the wall.

Mechanical Attachment
Install mechanical fasteners 12” o.c. (six per panel) into the recessed attachment points on the InSoFast stud that penetrate the concrete 1”.

Adhesive Attachment
Apply a 3/8” bead of PL Premium 3X on the backside of the studs which have the ribbed surfaces. Apply an additional bead of adhesive to the foam along any cuts. See Page 2.

Install one mechanical fastener in the center recessed attachment point to hold the panel in place until the adhesive has set.

The ultimate strength of a single bead of adhesive is over 800 pounds per foot which is equal to concrete screws 6” o.c. However, it is up to your local building code official to determine if additional mechanical attachment is required.

PL Premium 3X Stronger Construction Adhesive is the only recommended adhesive for adhering the InSoFast panels. Other formulas and brands may not work as expected.

Air Sealing - Electrical - Drywall
Follow instructions for concrete or masonry wall application. See Pages 5 - 7.
Installing InSoFast Panels over Concrete Floors

Floor Prep and Vapor Barriers
If you have a moisture issue, apply a concrete sealer that blocks moisture or install a vapor barrier on the concrete floor prior to installing the InSoFast panels.
If you have new construction with a vapor barrier already installed underneath the concrete slab, it is not necessary to put another vapor barrier on top of the concrete floor.
Avoid floor coverings that are not vapor permeable such as sheet vinyl floor covering when using wood subfloor material.

When Using InSoFast on Both Walls and Floors
Install the InSoFast panels on the wall first. This minimizes the chance of water getting on top of the subflooring in the event the wall leaks.

Installation Methods
There are four basic installation methods: floating, glue down, screwed down, and fully adhered. All applications are installed in a staggered running bond pattern.
The floating method is recommended for carpet, laminate, and wood floors. This is a simpler, quicker installation that makes the concrete floor feel softer and more comfortable.
The glue down method can be used for carpet, laminate, and wood floors.
The screw down method can be used for any flooring type.
The fully adhered method is recommended for tiled areas to create a solid base that eliminates movement.

Floating Installation
The floating method places the panels directly on the concrete without any adhesive. Interlock the panels together with the tongue and grooved edges in a staggered or running bond pattern.

Glue Down Installation
The glue down method bonds the panels in place with a 3/8” bead of PL Premium 3X along dove-tailed ribbing of each stud.

Screw Down Installation
Attach InSoFast panels to the concrete floor by installing concrete screws through the studs.

Fully Adhered Installation
For tile applications, the InSoFast panels are set in a bed of thin set tile adhesive with a notched trowel per manufacturer’s instructions.
**Interior Load Bearing Walls and Non-bearing Partition Walls**

Install InSoFast panels up to load bearing walls or existing interior partition walls. Non-bearing interior partition walls can be framed directly on top of the subfloor with no need for a treated bottom plate.

**Installing Subflooring**

Install subflooring with a gap for expansion per manufacturer’s instructions. Fasten with standard coarse thread all-purpose construction screws.

When panels are installed as a floating floor, it is important to layout the subflooring so that the long seams of the plywood do not line up with the seams in the InSoFast panels. The short seams of the plywood should land over the top of a stud.

**Uneven Floors**

Prior to installing panels, the low spots can be filled in with concrete patch or concrete floor leveler.

If you notice an area with excessive deflection after the subflooring has been installed, fill the void with adhesive or spray foam. Drill a hole through the subflooring and panel down to the void and inject PL Premium 3X or gap and crack spray foam. Using too much spray foam will cause a bulge in the floor. Avoid walking on this area until the adhesive or spray foam has set.
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