



EchoPanel Panel Installation Guide

Note: Please read the entire Installation Guide before application.

The installation guide is intended to provide installers with helpful information regarding EchoPanel Panels prior to installing the material. Kirei accepts no responsibility for installation actions taken or not taken. This installation guide is not intended to be an in-depth guide; installers' knowledge as experienced tradesman needs to be applied.

This installation guide serves only as a recommendation for installing and handling EchoPanel Panels. If you have questions about application or techniques, contact Kirei at www.kireiusa.com or 619.236.9924.

Directionality of EchoPanel Material

EchoPanel is produced from pre-colored PET fibers and has very consistent color match across production runs. During the manufacturing of EchoPanel, the PET fibers are layered with a slight directionality or grain. Due to this process, some fiber directionality and slight variation may be visible on the face of the material. The directionality of the grain is most evident in the heathered colorways, such as colors #442 and #542. In all solid colors, this grain may become more visible in certain installations based on panel orientation, light reflectivity and type of lighting.

If EchoPanel is cut into tiles or smaller panel sections, these pieces may have a directional surface finish. Kirei recommends the tiles or panel sections be cut with the fibers facing in one direction and are installed with desired fiber orientation to ensure best color matching.

Prior to installation, Kirei recommends visual inspection of the material oriented in the same arrangement as they will be installed for best fiber match results.

Cutting EchoPanel

EchoPanel panels can be cut to custom size and shape or trimmed to match site conditions. It is highly recommended that a test cut be done on scrap material to ensure acceptable results. Kirei will not take responsibility for any cuts done by anyone other than Kirei-approved vendors.

All cutting should be done on a very clean and evenly supported surface. Test cutting should be performed and evaluated well in advance of ordering material. For additional information, please contact Kirei.

If your project requires precision cut or abutted panels, compound angles, radius corners, curves, perforations, miter cuts or vee cuts, we highly recommend CNC knife cutting of panels to ensure clean edges and accurate cuts. Kirei can provide CNC panel cutting services. Please contact Kirei for more information or for a quote.



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Cutting and Drilling Guidelines

- Wear proper safety equipment.
- Always practice on pieces of scrap material before cutting parts.
- Use sharp, clean blades and bits with a slow, consistent feed rate.
- Hold sheet firmly while cutting to minimize vibration; use just enough clamp pressure to prevent vibration but not so much as to cause indentation.
- Feed against the rotation of the blade or tool.
- Don't cut or drill with a dull blade, cutter, or bit.
- If pre-drilling by hand, a tapered pilot bit works the best.
- Don't apply excessive clamping pressure.
- Don't use a blade with side-set teeth.
- Don't remove safety guards from equipment.

Sawing

EchoPanel may be cut with a variety of saw types, depending on the type and precision of cut required. Tool speeds and angle of cut should be such that the EchoPanel sheet does not melt from frictional heat. In general, the highest speed at which overheating of the tool or sheet does not occur will give best results.

A method of reducing heat is by making several passes while cutting or trimming the sheet rather than trimming "deep" through the sheet. It is important to keep cutting tools sharp at all times. For best results use fine-toothed blades such as those for high pressure laminate or plastics typically work best. High-speed or carbide-tipped tools are efficient for long runs and provide accuracy and uniformity of finish. Bring the blade to full speed before starting the cut. Secure the sheet during cutting operations to minimize vibration.

Track Saw

A recommended tool for precision straight cuts on site is a full length track saw such as the Festool TS 55 with 54 tooth Laminate Blade. Test cut prior to cutting finished goods.

Circular Saw

EchoPanel may be cut using a circular saw and a suitable full length guide. Select a new, fine tooth blade for cutting plastics or high pressure laminate. Test cut prior to cutting finished goods.

Band Saw

Band saws with fine tooth blades are best suited for detailed cuts. Completely clean saw and blade of all contaminants prior to use with EchoPanel. Test cut prior to cutting finished goods.

Note: When sawing, please ensure that all saws, equipment and blades are free from any contaminants including sawdust and grease which may soil the panels.



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Manual Trimming

EchoPanel can be readily cut or trimmed with a utility knife. Use a new, clean blade and change blade as needed to maintain high quality cuts. Use a straight edge as a guide. Hold the knife as vertically as possible and make long, continuous cuts in the same direction using a straightedge as a guide. Typically 3-4 passes are needed to safely cut through 12mm EchoPanel. Hand Trimming is not recommended for abutting panels.

CNC

CNC cutting with a drag knife or oscillating knife is the best way to ensure cutting of precision shapes, edges and dimensions. Kirei can provide custom CNC cutting. Please request information or a quote when ordering EchoPanel. Kirei will not take responsibility for any cuts done by other than Kirei approved vendors

Routing

Cutting or milling with a spinning router bit is not recommended due to frictional heat which can cause tearing and melting.

Trimming EchoPanel Print Panels

EchoPanel standard screen-printed print panels are not printed to the edges of the sheet and will have an approximate 1 cm unprinted border around the printed area of the panel for protection prior to installation.

This border should be trimmed prior to installation for most installs. Kirei recommends a mechanical trimmer such as a track saw or CNC cut to ensure a straight and vertical edge trim.

Since each panel is hand silkscreened, it is not currently possible to perfectly edge match screenprinted EchoPanel panels to create a single unbroken pattern across multiple panels. Please check the EchoPanel Prints spec sheet for detailed pattern repeat information.

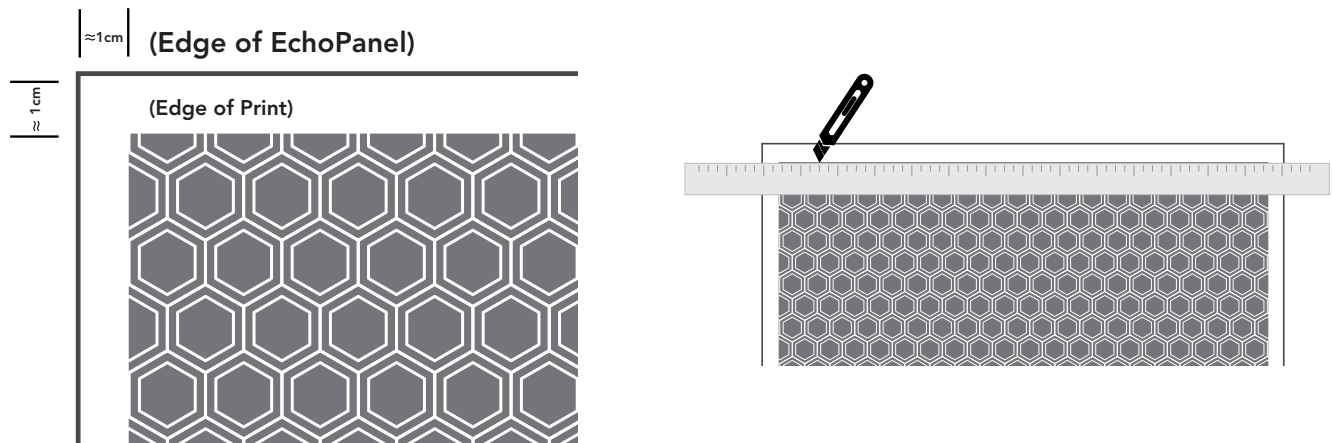


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Trimming EchoPanel Print Panels Cont.

For multiple panel installations we recommend the following:

- Reveals between panels by direct mounting to wall with reveal between panel or by mounting systems such as Wall Panel Systems (www.wallpanelsystems.net).
- Trim between panels such as aluminum or plastic t-mold (www.fryreglet.com).
- Strips of similarly colored solid color EchoPanel used as “dividers” between each panel to maintain color continuity between panels.
- Grout border between panels. We recommend Loctite PowerGrab Clear (Install at 3/16”-1/4” gap and caulk seam by masking off with blue tape – typically requires 2 passes).



EchoPanel Prints Panel Notes

Orientation

When selecting a color and pattern, please refer to the line sheet to verify both net sheet size and pattern orientation is suitable for your project.

Thickness

EchoPanel Prints are available in 7mm and 12mm thicknesses. Please verify that the pattern selected is available in the orientation that you require.



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Mounting EchoPanel

EchoPanel panels can be fixed to surfaces by adhesives or mechanical fasteners or hung using a variety of hanging hardware. For best acoustic results it may be desirable to leave an air gap behind the EchoPanel panels. This may be done with wood or other battens, standoffs, or by cutting strips of EchoPanel to use as furring strips.

Mechanical Fastening

EchoPanel can be fastened to surfaces using mechanical fasteners such as nails, screws or staples where appropriate. Ensure proper fasteners to match substrate are used. The benefit of using mechanical attachments is that they can be removed completely without leaving residue in order to allow the EchoPanel to be recycled fully.

Use the following guidelines when mechanically fastening EchoPanel:

- Clean all surfaces prior to fastening.
- Drill holes minimum 15mm center offset from each corner and slightly oversized to allow for thermal expansion and contraction.
- Insure drilled holes have smooth edges.
- Use washers for better load distribution and to prevent pull-through.
- Use metal inserts if frequent assembly/reassembly is required.
- Nails or screws should be fastened into battens or suitable substrates.
- Don't over tighten fasteners to avoid denting or pillowing EchoPanel surface.
- Don't use self-tapping screws to hang large panels.

EchoPanel Span Distance

EchoPanel, like most sheet panel products, has a tendency to flex over large spans. Although there is no set formula for acceptable span distance, it is reasonable to expect that placing attachment hardware between 6 to 12 inch spans both vertically and horizontally would cause the panel to remain rigid in most circumstances.

Drilling

EchoPanel Standard drills for wood or metal can be used; however, they require slower speeds to produce a clean, non-gummed hole. Optimum bit speed and applied pressure will depend on the hole size and sheet thickness desired. Drill speeds up to 1,750 rpm are best for smaller holes, while speeds as low as 350 rpm can work for larger holes. Tapered "pilot" drills work best for hand pre-drilling smaller holes.

Make sure EchoPanel is fully supported from beneath with a clean material that will not contaminate the EchoPanel while drilling. Be sure not to dimple the EchoPanel by pressing too heavily with a drill bit that is not capable of piercing the surface.

Drills used for plastics are suited to working EchoPanel; they should have two flutes, a point with an included angle of 60 to 90 degrees, and a lip clearance of 12 to 18 degrees.



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Wide, highly polished flutes are desirable since they expel the chips with low friction and thus tend to avoid overheating and consequent gumming. Drills with substantial clearance on the cutting edge of the flutes make smoother holes than those with less clearance. Drills should be backed out often to free chips.

Note: When drilling be sure to hold or clamp the sheet securely to prevent it from slipping and presenting safety hazard to the operator, but not so hard as to cause indentation.

Construction Adhesives

EchoPanel may be adhered to walls with adhesives, double sided tape or hook-and-loop removable products. There are many options with using adhesives; however these adhesives may leave some residue on the EchoPanel that must be removed when recycling the panels.

Recommended adhesives include:

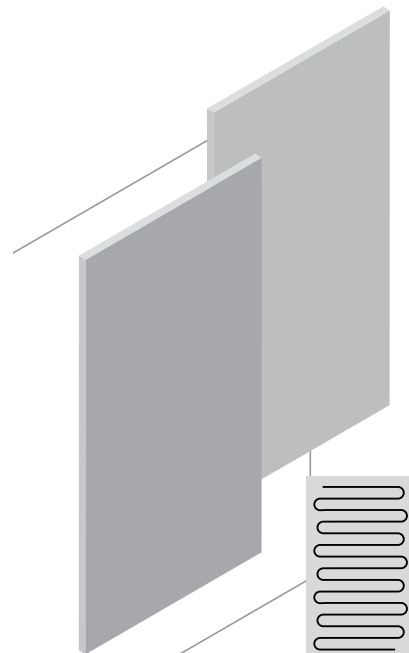
- Loctite PowerGrab Construction Adhesive
- Loctite PL 3X Premium Construction Adhesive
- Liquid Nails LN903 Heavy-Duty Construction Adhesive
- AFM Safecoat Almighty Adhesive (solvent free solution)
- ChemLink BuildSecure Construction Adhesive (solvent free solution)

*Note: **Do not use PVA Glue.** Follow manufacture instructions on all adhesives and use appropriate adhesive for substrate.*

Recommended Adhesive Installation

Direct Mount

- Use standard construction adhesives i.e., Liquid Nails/Titebond (**Not PVA glue**).
- Clean and prepare surface per adhesive guidelines.
- Spread adhesive evenly on panel back, leaving 2" space at edges.
- Adhere to wall surface, providing bracing to hold material against surface per adhesive open time/instructions.

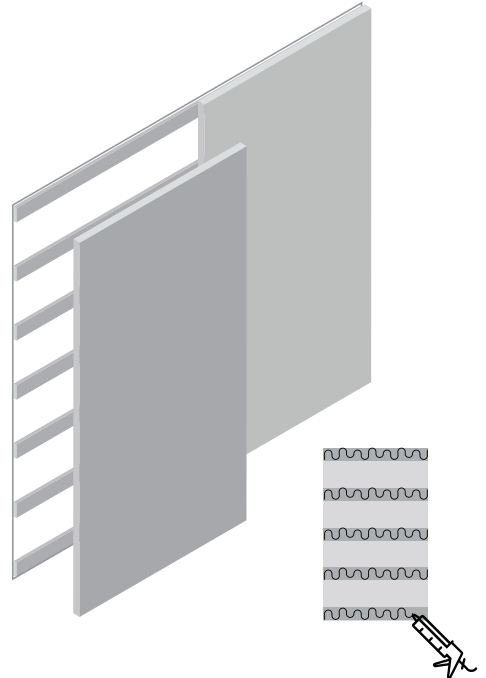




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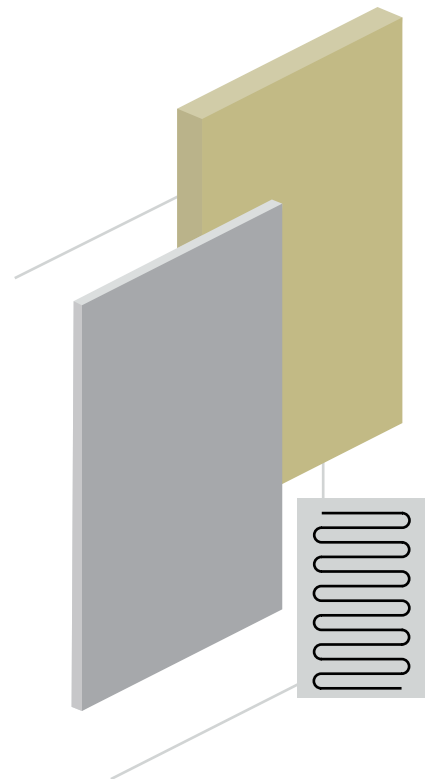
Furring Strips for Air Gaps

- Furring strips may be used to provide air space behind EchoPanel. These strips can be made from wood or EchoPanel.
- Recommended width 3" furring strips should be placed every 6"-18" along the panel depending on expected potential impact.
- Edges may be covered with EchoPanel strips or other surface for clean edge.
- Spread adhesive on furring strip surface and place panel to furring strips, bracing per adhesive instructions.



Fiberglass Mount

- Fiberglass boards may be used to provide additional sound absorption behind EchoPanel. EchoPanel can be direct fixed with a commercial adhesive (it is the installer's responsibility to ensure the adhesive used is appropriate for the product and substrate it is being fixed to).
- Recommended thickness 1" - 2" fiberglass board (depending on desired acoustic results) should be placed directly behind the panel. (Suggested fiberglass: Owens Corning® Type 705 700 Series® Fiberglass Insulation™ Board)
- Edges may be covered with EchoPanel strips or other surface for clean edge.
- Spread adhesive on fiberglass board and place panel directly on top of substrate.





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Temporary Mounting Options

If your project requires a temporary install, hook and loop (i.e., Velcro®) tapes may be used. Recommended coverage is at least 30% of the panel and Velcro and double sided tape need to be commercial grade.

The quality and durability of any temporary install is dependent upon the surface condition and texture of the substrate as well as the proper application of the mounting adhesive. The visual guidelines provide a baseline for a typical flat, smooth wall in suitable condition.

Hook and Loop

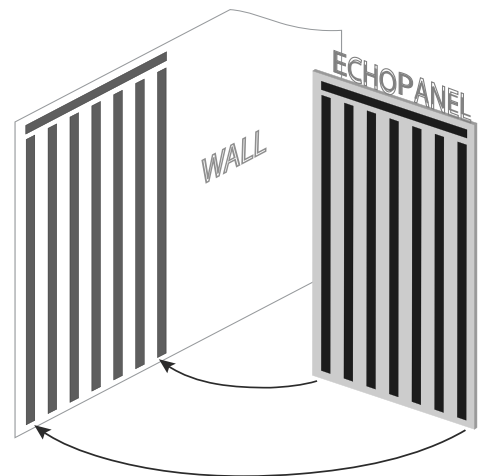
Hook and Loop tape may be used to affix EchoPanel to surfaces. Commercial-grade hook and loop tape with a strong adhesive is recommended to ensure adhesion to EchoPanel.

Double Sided Tape

Double sided tape with acrylic adhesive may provide a secure bond with EchoPanel and substrate. A smooth clean surface is required for best results. Use consistently applied pressure to ensure a strong mount to EchoPanel.

When applying Velcro or Double Sided Tape, be sure to lay out the EchoPanel on a clean, flat surface that is fully supported to apply maximum pressure for proper bonding.

EchoPanel may be damaged when removing from your wall, depending on the amount and type of fastener used.

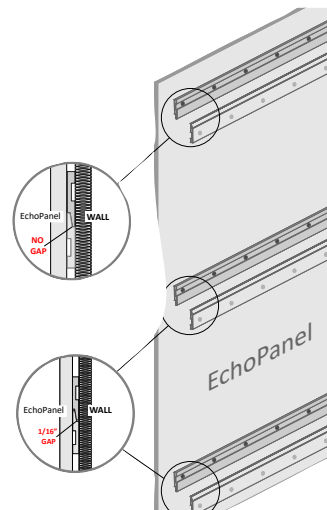


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Z-Clips

Z-clips may be used with EchoPanel by screwing Z-clips into surface and into EchoPanel. Use screws that will not extend past panel surface. Full width Z-clips are recommended, evenly spaced vertically on the panels, with clips placed starting 4-6" from top of the panel, and multiple Z-clips spaced regularly as needed to support the panel against potential impact.

To ensure panels lay flat, support panel weight from top full width Z-clip. It is recommended that middle and bottom Z-clips be installed with a 1/16" gap to allow for panel flex.





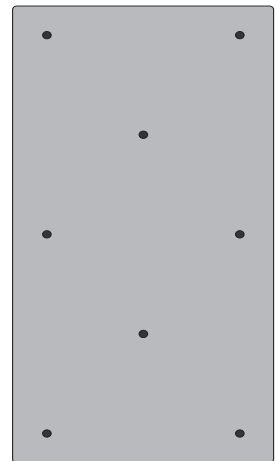
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Abutting Panels

EchoPanel panels are sold with up to +/- 10mm dimensional tolerance and may have an irregular factory-supplied edge. Trimming will be necessary to remove factory supplied edges if a perfect square panel and panel edge is required. This should be noted particularly when butt joining panels together. It is recommended that edge trimming be done with a track saw or using a CNC knife.

Standoffs

Standoffs provide a more decorative install method to increase acoustic performance. We recommend 1.25" diameter or greater and up to 2" depth for best results. Standoffs should be evenly spaced to properly support the panel and brace against any expected impact.



Hanging EchoPanel

EchoPanel can be suspended using a variety of hardware. Kirei can supply a range of hardware to hang EchoPanel in many situations. Contact Kirei for more information.

Curves, Folds and Thermoforming

Being 100% PET, EchoPanel has the characteristics of most plastic type products when thermoforming. EchoPanel is an incredibly versatile material and can be readily fabricated into 3D geometric shapes via folds, kerf cut bends or interlocking panels. Please reach out to our team to discuss your project, we do custom daily!

Heat can be applied to the panel while it is held in-form and then allowed to set. Specialist thermoformers should be consulted to work with EchoPanel. These businesses would typically work in shaping plastics and foams.

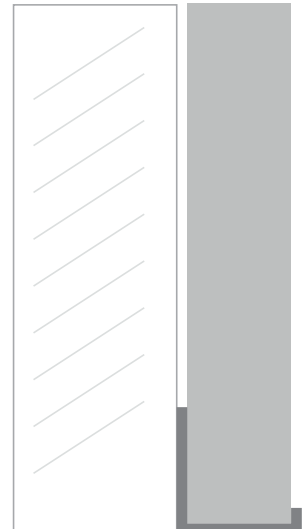


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Framing Systems

EchoPanel commonly installed using a wide range of architectural aluminum trims. EchoPanel can be mounted to walls or used as a freestanding panel by using aluminum or other metal/plastic extrusions such as T, J, H or L trim strips as frames. These are ideal for using with EchoPanel as they create lightweight, easily assembled systems that avoid the use of non-recyclable glues and tapes.

EchoPanel may be framed with standard J-molding or other trim molding as per molding instructions. Please note metric sizing of EchoPanel (7mm, 12mm, or 24mm) when selecting moldings/trim.



Digital Printing

EchoPanel is an ideal base to print on utilizing the latest in ink-jet technology and specialized graphics programs. Ideal for signage and full color images, EchoPanel can be used both as individually printed panels and for multi-panel displays.

Contact Kirei for further information on custom printing.

Work Safety

In the interest of work safety, it is recommended that people working with EchoPanel Panels wear the appropriate safety equipment. Although the product emits zero off-gases, masks and gloves should be worn to ensure the maximum possible safety precautions. For an SDS form, please contact Kirei at info@kireiusa.com or 619-236-9924.

Final Note

Kirei will not be responsible for any cutting or mounting not performed by Kirei staff.

For any other questions or concerns, please contact Kirei.