Guide to Installing Whisper®

Whisper® Acoustic Panels

SEE®

FIRE RETARDANT

SOUND ABSORPTION

WATER RESISTANT

WASHABLE SURFACE

STRONG STRUCTURE

TRANSMISSION LOSS

LIGHTWEIGHT

UV RESISTANT

FIBRE FREE
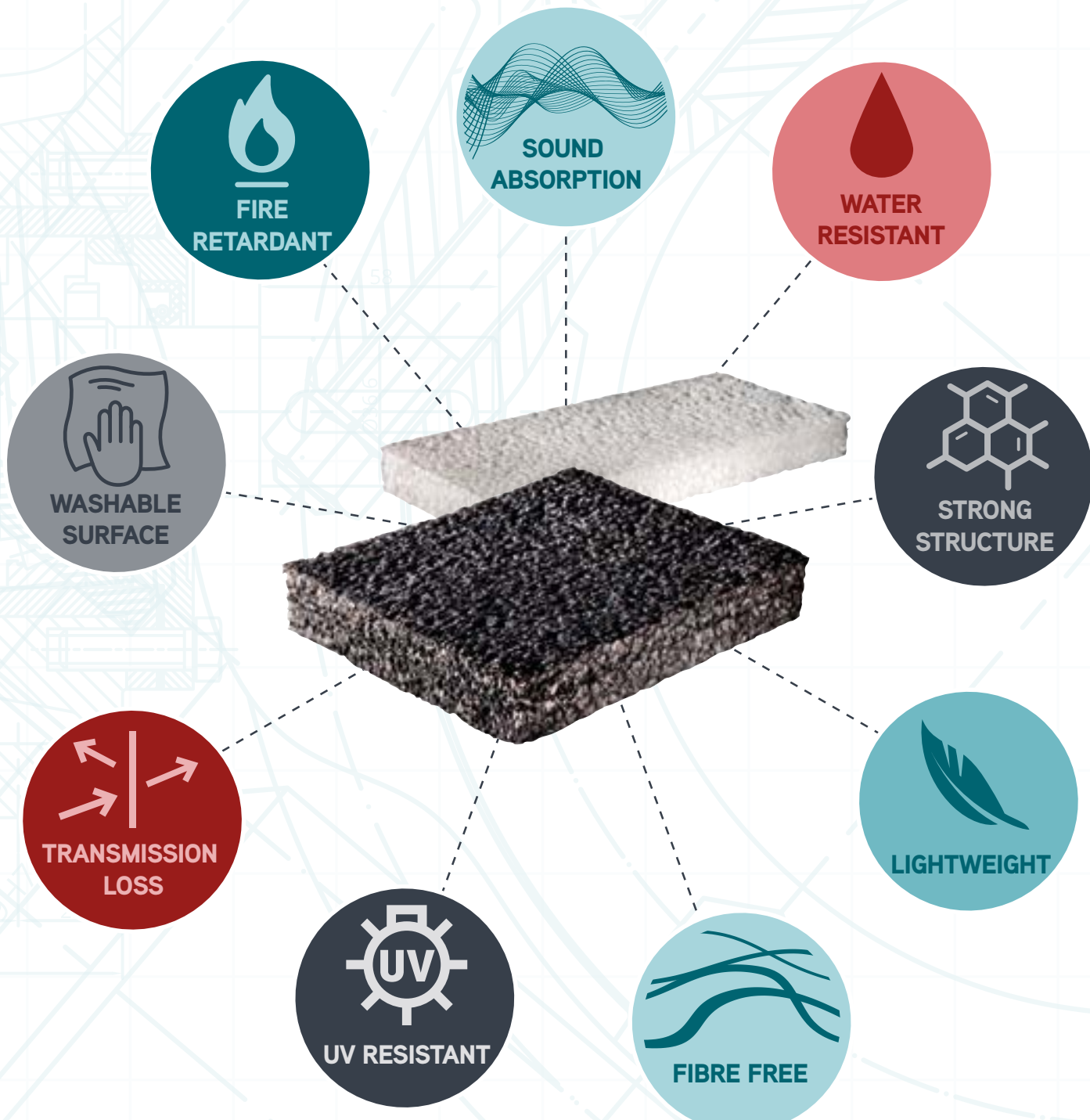
INTRODUCTION

Whisper®

Whisper® is a closed cell polyethylene foam which uses a high performance honeycomb like structure to absorb noise. This durable material remains acoustically 'soft' eliminating the problem of hard reflective surfaces that contribute to reverberation and echo.

If you have challenging conditions to deal with such as, water, moisture, humidity, dirt, dust, ultraviolet light, chlorine and harsh chemicals, then Whisper® is the right acoustic solution for you.

Whisper® is easy to fabricate, light weight, quick to install, and retains its structure in humid environments. Its superior noise reduction qualities are proven in some of the most rigorous applications, such as road and rail traffic and industrial machinery.

Whisper® sound absorbing panels help to safely reduce noise, make music sound better, allow people to speak and hear one another, and contribute to a safer and more productive work environment, indoors, or outside.
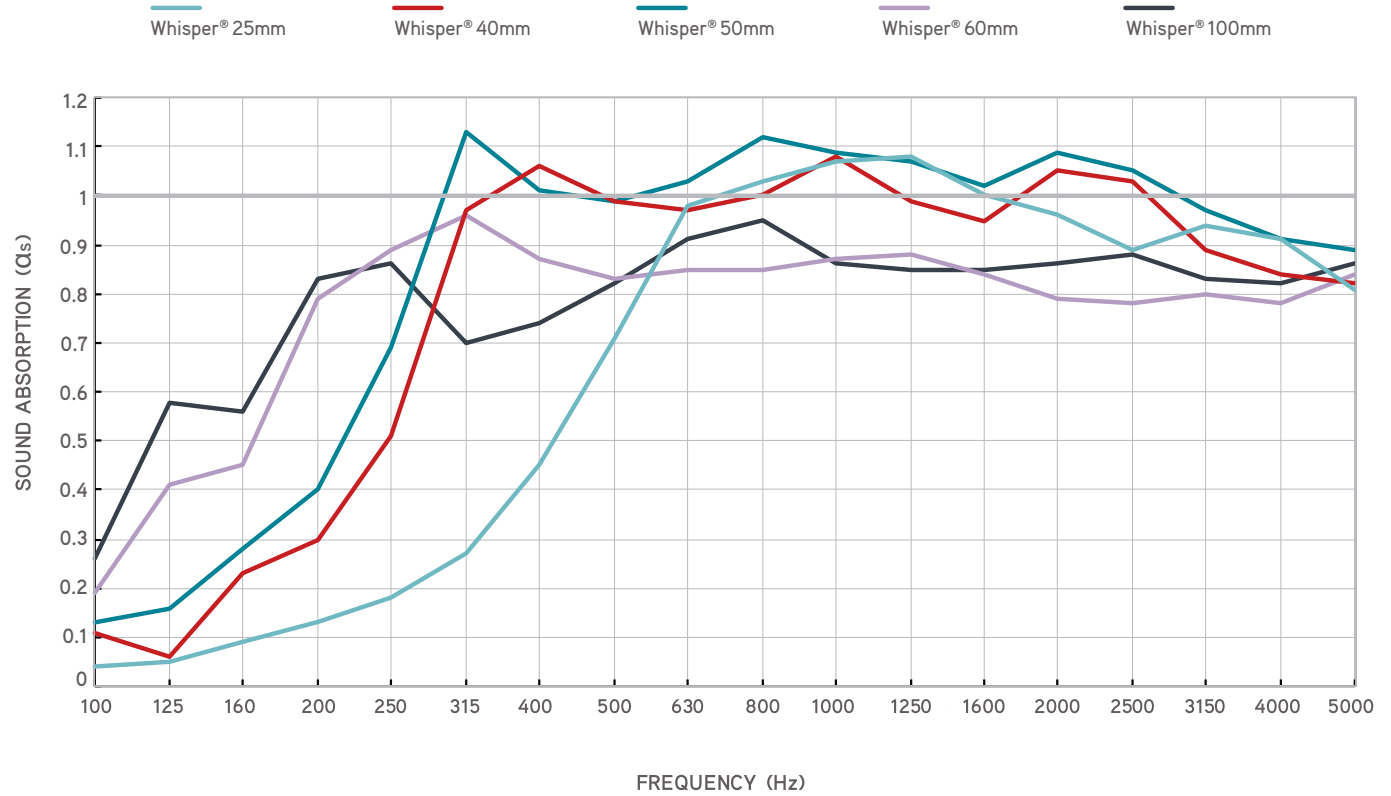
EPD®
THE INTERNATIONAL EPD® SYSTEM

SEE®

Whisper® Acoustic Panels

Sound Absorption ISO 354

Legend: Whisper® 25mm — Whisper® 40mm — Whisper® 50mm — Whisper® 60mm — Whisper® 100mm

Sound Absorption chart: X-axis FREQUENCY (Hz), Y-axis SOUND ABSORPTION (α_s)

Frequency (Hz)	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	AW	NRC	SAA	Class
Whisper® 25mm	0.04	0.05	0.09	0.13	0.18	0.27	0.45	0.71	0.98	1.03	1.07	1.08	1	0.96	0.89	0.94	0.91	0.81	0.50	0.75	0.78	D
Whisper® 40mm	0.11	0.06	0.23	0.30	0.51	0.97	1.06	0.99	0.97	1	1.08	0.99	0.95	1.05	1.03	0.89	0.84	0.82	0.90	0.90	0.91	A
Whisper® 50mm	0.13	0.16	0.28	0.4	0.69	1.13	1.01	0.99	1.03	1.12	1.09	1.07	1.02	1.09	1.05	0.97	0.91	0.89	1	1	0.98	A
Whisper® 60mm	0.19	0.41	0.45	0.79	0.89	0.96	0.87	0.83	0.85	0.85	0.87	0.88	0.84	0.79	0.78	0.8	0.78	0.84	0.85	0.85	0.85	B
Whisper® 100mm	0.26	0.58	0.56	0.83	0.86	0.7	0.74	0.82	0.91	0.95	0.86	0.85	0.85	0.86	0.88	0.83	0.82	0.86	0.9	0.85	0.84	A

SOUND ABSORPTION

SEE
Whisper® Acoustic Panels

Installer Checklist

Name .... Company ....

Project Address... Date............................

	Brochure	☐
	Tolerance sheet	☐
	Technical data sheet	☐
	Material Safety data sheet	☐
	Installation guide	☐
	Annual inspection plan set	☐
	Batch And Date Codes Recorded	☐

Batch And Date Codes Recorded _____ _____ _____

STORAGE & HANDLING CONSIDERATIONS

Whisper® is manufactured in sheets at 1200x2400mm for maximum efficient coverage.

Whisper® NB 40mm is typically produced in 1200 x 1000mm for automated processing, 50 planks per pallet.

For other Whisper® sizes and formats contact your authorised Sealed Air representative.

Standard Pack Quantities:

- 100mm: 4 sheets
- 60mm: 6 sheets
- 50mm: 7 sheets
- 40mm: 8 sheets
- 25mm: 14 sheets

Packs are based upon as close as possible to a 1m³ volume.

Packs are individually labelled with batch codes, always retain and record pack label data for reference.

Sustainable, ventilated bags are used to package Whisper® to facilitate curing, as a result always cover packs when storing outdoors to prevent water saturation. Wherever possible use a forklift, where manual handling is required, one person at each end of a pack using lifting straps is recommended. Do not leave lifting straps around the pack under tension as this may result in foam compression set.

Whisper® should be stored after shipping horizontally, **indoors** on a flat surface.

Whisper® should not be exposed to temperatures outside the range of -60-+80˚C.

Before you install Whisper® also consult the MSDS & tolerance sheet.

Although it is moisture resistant, Whisper® should not be fully immersed or waterlogged prior to installation.

It is best practice to allow sheets to condition indoors, flat on the floor, free of packaging, at 15-30˚C for 2 hours immediately prior to installation. This conditioning will ensure any dimensional change from thermal expansion is minimised. An infrared thermometer can be used to check that the corners of the sheet are the same temperature as the centre prior to cutting to prevent dimensional change.

Some surface texture variation is inevitable with this material, try to standardise on material from the same batch to ensure similar appearance.

Cutting Whisper®

Whisper® is very quick and easy to cut around penetrations and openings with conventional methods including:

- Pre-cutting
  - Abrasive wire
  - Die Cut
  - CNC blade
  - Router
  - Waterjet

- Field cutting/trimming
  - Sharp Knife
  - Utility Knife
  - Insulation Saw
  - Insulation Knife
 - Hand held circular saw
  - Bandsaw

Tidy lines are best made with sharp blades.

Mechanical fastening

For interior wall linings, sheets of 1200mm x 2400mm Whisper® FR may be installed with a suitable mechanical fastener such as Screws or Insul Anchors, in conjunction with Insulation Washers with a minimum head diameter of 15mm, achieving sufficient mechanical penetration to anchor the sheet to the solid substrate or framing. Note that Insul Anchors extending beyond the Insulation Washer should be trimmed, capped or bent to mitigate potential injury. **Always consult the fastener manufacturers recommendations prior to installation to confirm suitability for the environment.**

Sheets should be trimmed and butt jointed to cover the desired surface area. A minimum of 11 fasteners per sheet should be applied or 4 fixings per m²; these should be installed no less than 50mm and no more than 150mm from the edge of the sheet and evenly distributed over the area of the sheet. For example on a standard 1200mm x 2400mm sheet we recommend 4 fasteners along each length, and three fasteners along the middle offset from the edge positions. An alternative evenly distributed layout may be used to fix into battens or framing through plasterboard or soffits or to avoid services or on trimmed or partial sheets.
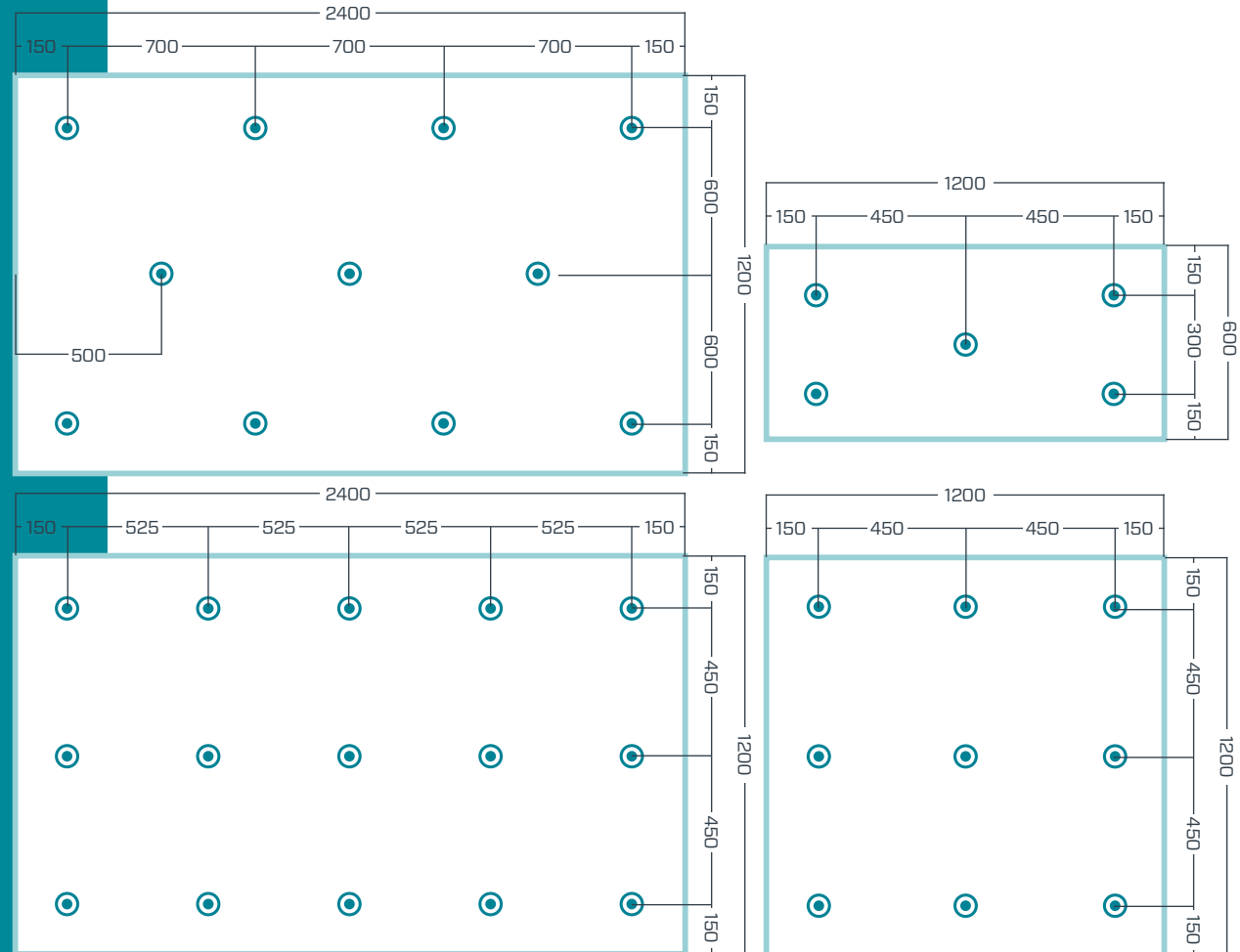
Minimum layout of fasteners
50mm x 1200 x 2400mm sheet.

Whisper® retainer wire screw install

Whisper® retainer wires are available from Sealed Air to attach Whisper® NB to various surfaces including wood and concrete. Retainer wires are produced from A4 (316L) stainless steel and are designed to accept an M6 fastener.
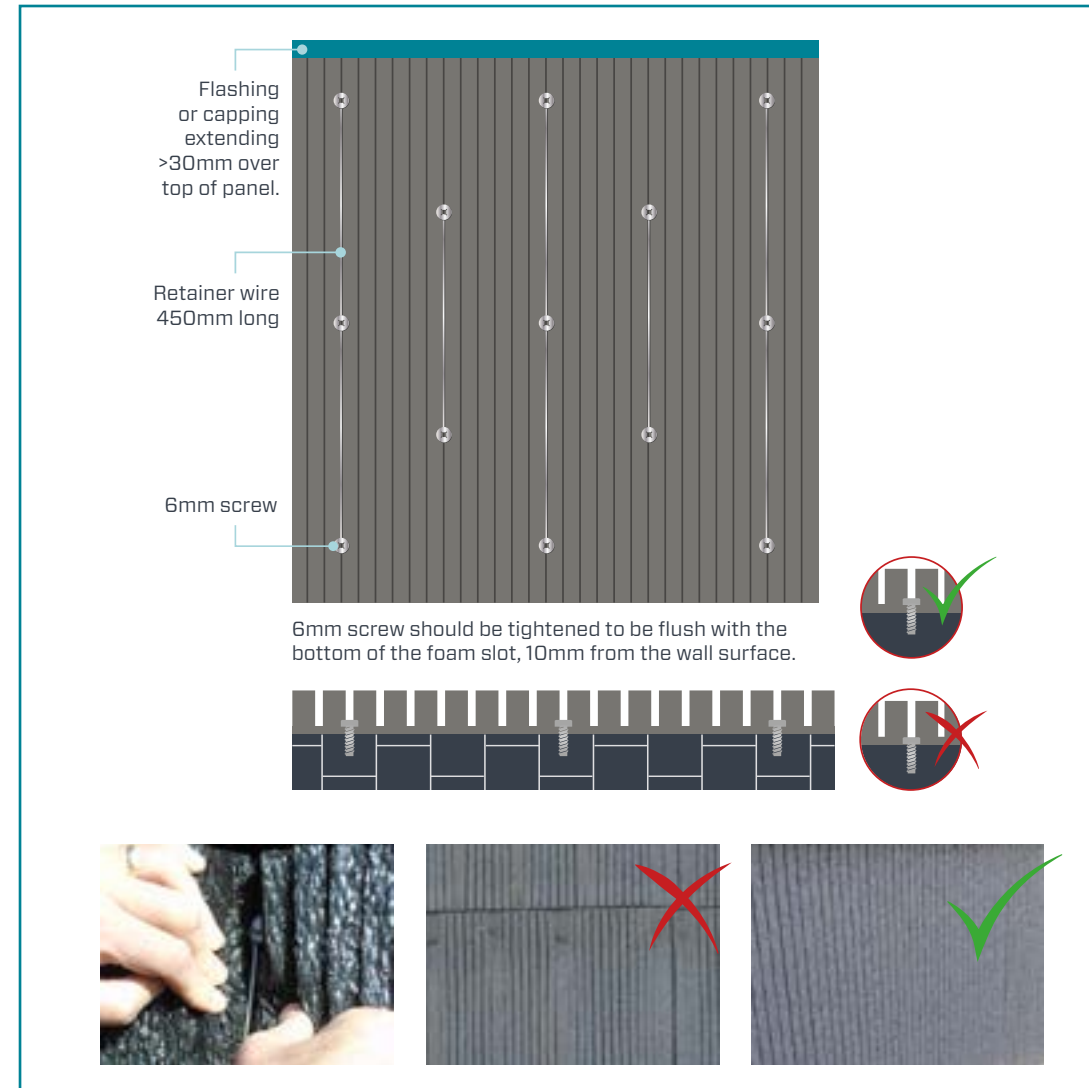
It is recommended to fit a capping flashing or cover over the upper edge of Whisper NB planks to protect from water ingress or ice loading. Slots should be positioned vertically to reduce possibility of biological growth, water, or ice loading.

Install at least 8 retainer wires per 1.2m² plank in an evenly distributed pattern of 2:1:2:1:2, a central screw position may be shared for paired retainer wires.

Screws do not need to be fully tightened so as not to compress the 10mm of foam in a 40mm plank or remaining foam depth in other plank thicknesses.

Screws should not extend more than 25mm into concrete to avoid contact with reinforcing bar.

Drill bits can be marked with masking tape or paint to calculate the total depth including the foam remaining at the bottom of the slots. Fasteners should be selected appropriately to suit in conjunction with advice from a fastener supplier.

Flashing or capping extending >30mm over top of panel.

Retainer wire 450mm long

6mm screw

6mm screw should be tightened to be flush with the bottom of the foam slot, 10mm from the wall surface.

The fastener has been overtightened, fully compressing the foam in the slot. Ideally the fastener should be stopped at 10mm, so the head of the screw is flush with the surface of the foam at the bottom of the slot.

Example of an ideal installation

Whisper® Flushmount Corkscrew

This provides a mechanical interface between Whisper and popular caulking gun style adhesives enabling the installation of planks flat and parallel to each other without visible fastenings through the sheet face.

Normally silane adhesives form no physical bond with Whisper, so an interface is essential for a durable installation. Flushmount corkscrews are available in packs of 100 pieces from the Whisper factory. Produced from A4 (316L) stainless steel for indoor, outdoor and wet environments.

Each corkscrew can withstand 3KG of pull force before deformation, the failure point is >10kg per corkscrew with 150mm of elongation at break. The corkscrew itself is designed to have a strength greater than the internal strength of the foam.

Use 6-8 per m2 on vertical walls
Use 8-12 per m2 on ceilings.

For initial grip and curing time consult adhesive manufacturer. Typically full bond strength takes > 1 week so we suggest using in conjunction with a mechanical safety fastener.
Adhesive examples and notes from trials below:

Sika Nailbond SB - Slow curing
Quilosa MS Instant - Fastest curing
Bostik Polymax - Very good! Fast curing

The flush mount corkscrew also works to reinforce and retain Whisper with mechanical screws. Pictured is the Fischer Ultracut FBS2 6mm concrete screw. A mechanical safety fastening is always recommended for ceiling mounting of panels.
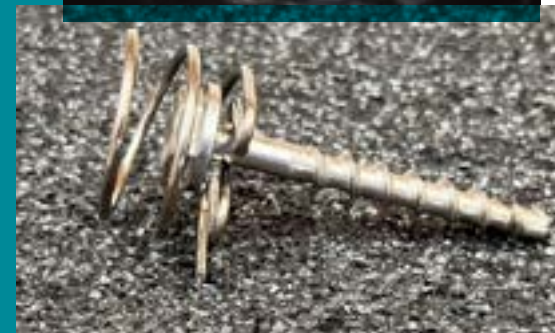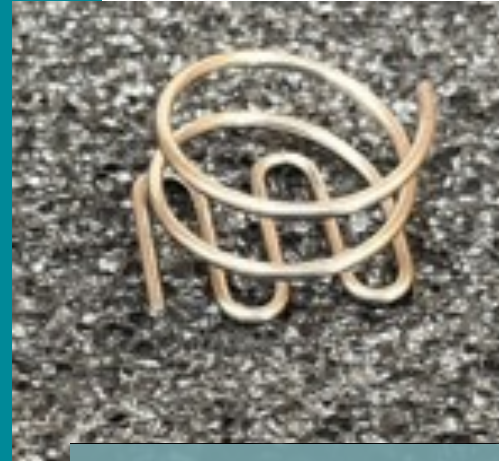
Insul Anchors & Insulation Washers

A wide variety of insulation anchors and insulation locking washers are available in the global market. A minimum head diameter of 12mm is recommended. These fasteners are typically suited only to interior use. Push lockwashers onto the pin until flush with Whisper® sheet then bend the pin over or trim the pin so it does not present a safety risk. Consult manufacturers for details and suitability to the installed environment.

Truck Wash - acoustic lining to wall and ceiling using screws and washers

Insulation Anchors

Examples include:
Ramset Insulfast™ & Hilti Insulation Anchors

A variety of plastic fasteners and drivers are available in the worldwide market using pneumatic pistols and hammers. This fastener type can speed up installation of foams in construction; known as insulation anchors, cobb plug dowels, or spankers. Those with a head diameter of 25mm or more can be used, evenly distributed across the surface of the sheet.

Consult the fastener manufacturer for instruction, suitability and fixing method for your particular application.

Be sure to include details such as environmental conditions, material thickness and substrate and identify and mitigate corrosion risks.

Sodar Wind Profiler

Interior Hanging Baffles

Whisper® hanging corkscrews can be used to fix the product to droppers or rigging wires for hanging baffles. If corresponding fittings are not also 2205 stainless, isolate the corkscrew from the fitting with a non-conductive material to prevent galvanic corrosion.

Whisper® Hanging Corkscrews are produced from 1.4529 (X1NiCrMoCuN25-20-7) stainless steel, and therefore comply with the requirements of EN 13451-1:2011+A1:2016 standard annex F when combined with the recommended installation method, number of fixings, and a robust annual inspection plan.

Corkscrews should extend at least 25mm into a 50mm thick sheet. When fitted to either the short or long edge of the sheet, at least one fitting per 525mm is recommended to prevent sagging. Always close and lock the corkscrew loop to prevent fall during earthquakes or impact.

Corkscrew fittings can be fitted to faces of the sheet with at least two fasteners per square metre recommended and to support no bigger than a 525mm span without additional framing.

A drilled profile can be used to maintain straight lines however this is not always necessary. It is a good measure to prevent water getting into the open vertical cell structure from the top if designers anticipate frequent splashing or rain.
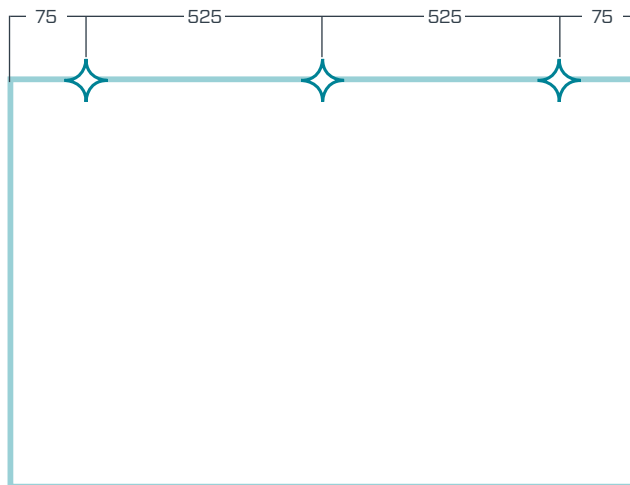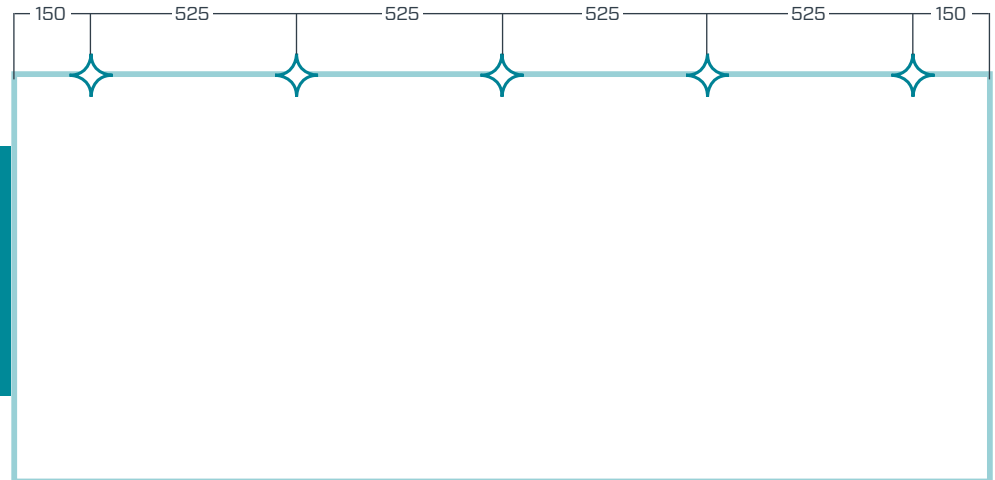
Slight curvature in sheets can usually be removed by bending them in the opposing direction, and repeating the conditioning step, adding a profile, or tensioning the ends of baffles with a corkscrew and rigging rope or wire.

Whisper® hanging baffles

Plank Length 2400mm:
- 5 corkscrews
- 150mm distance from ends
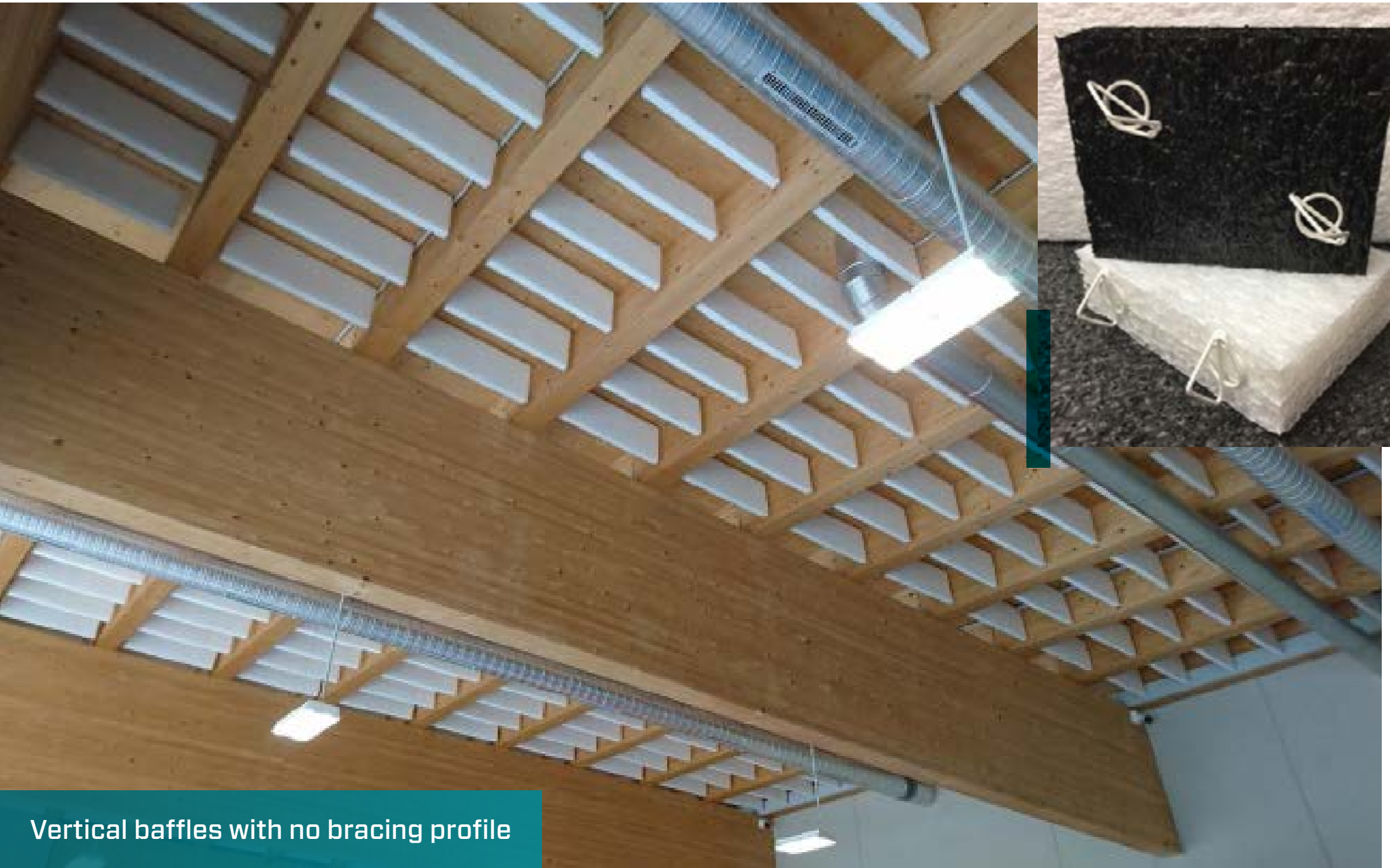- 525mm between corkscrew centres

Plank Length 1200mm:
- 3 corkscrews
- 75mm distance from ends
- 525mm between corkscrew centres

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Corrosion Resistant Corkscrews with White ABS Plastic U Channels
Location: Otaki Swimming Pool, New Zealand

SOUND ABSORPTION

WATER RESISTANT

LIGHTWEIGHT

FIRE RETARDANT

Vertical baffles with no bracing profile

Ceiling Rafts at Hogs Breath Café, Australia

Corkscrew fittings used in 50mm Whisper® FR

For ceiling rafts, it is best practise to build a supporting frame to hold the sheet flat, drill 30mm holes in the frame to enable a corkscrew to penetrate through the frame into the foam. Sagging may be observed on spans greater than 525mm unsupported.

Secure to the frame with corkscrew fittings, at least 4 will be required per square metre.

Adhesives - Arkema
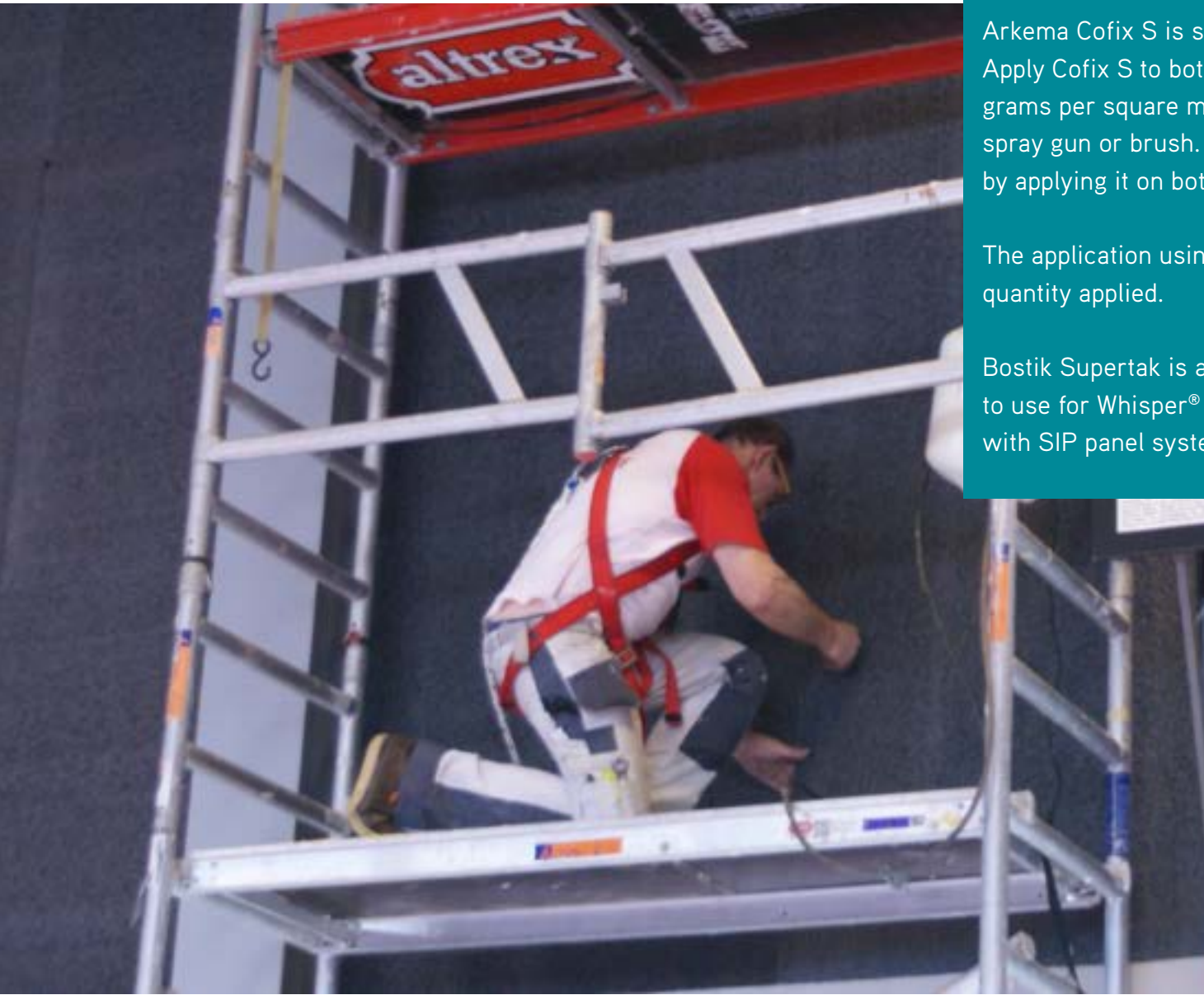
Arkema Cofix S is supplied in a canister of 25lt or about 20 kg. Apply Cofix S to both corresponding surfaces at a rate of 200 grams per square metre. Adhesive may be applied to surfaces with spray gun or brush. This is sufficient to cover 40-50 m² of coverage by applying it on both bonding faces as a contact adhesive.

The application using a spray gun instead of brush may optimise the quantity applied.

Bostik Supertak is another well proven contact adhesive system to use for Whisper® and has been successfully used in conjunction with SIP panel systems.

OTHER ADHESIVES

Two-Component Adhesive

Henkel Loctite 3090 ideal for high bond strength to small articles

Permabond TA4610 structural adhesive

Solvent-based Adhesive

Spray adhesive 77 from 3M

Würth Power Spray Glue Plus

Use solvent adhesives as you would with any contact adhesive: spray both surfaces, allow to tack dry, and then bring together applying pressure.

Pressure Sensitive Adhesive

Everad ADP 7133 butyl adhesive for indoors or outside

CEMET DS/TTA - H5GH06 laminating adhesive for peel and stick application

CACTUS/V-Himark G483B double sided foam tape

Hot Melt Adhesive

Beardow and Adams Pressen 2016C

For Best Results:

- Follow the adhesive manufacturers instructions
- Apply to clean, dry surfaces
- If there is dust present on any of the surfaces it may be removed with either a clean microfibre cloth or a broom prior to installation
- Porous surfaces can be primed to promote adhesion
- Coat weights in excess of 80gsm work well for solvent adhesive options

Silane adhesives are incompatible with Whisper® unless Flushmount corkscrews are used as a mechanical interface.

WHISPER® FR TIPS

Whisper® FR is available in black (anthracite), natural (white), and light grey (25,50,100mm).

Whisper® should face the noise source.

Some creative ideas include:
- Partially covering with CNC routed graphics.
- Cutting and inserting pieces of Whisper® with contrasting colours to create logos, images, and patterns.
- Using Whisper® as a LED panel diffuser with colours/gels.
- Twisting, curving, cutting expansion joints. This strong and rugged material is adaptable to your vision.
- Covering Whisper with an acoustically transparent cloth.

Whisper® is unaffected by most common solvent free cleaning products, if you are concerned about chemical damage please contact Sealed Air or your supplier for advice.

It is best practice to allow sheets to condition indoors, free of packaging, at 15-30°C for 2 hours immediately prior to installation.

An infrared thermometer can be used to check that the corners of the sheet are the same temperature as the centre prior to cutting to prevent dimensional change.

LED panel lamp, coloured stage lighting gel behind 25mm FR

WHISPER® UV TIPS

Whisper® should face the noise source.

Always install sheets vertically; Whisper® is not a roofing material, cladding or moisture barrier.

Cap sheets with a profile or flashing to prevent water coming into the open cells at the upper sheet edge in particular for outdoor wall mounting.

In noise wall applications seal around holes and gaps to minimise paths for sound to escape through, check for these at night with the aid of a torch.

Improve the transmission loss of a wall by using a dense acoustically reflective material behind Whisper®.

It is best practice to allow sheets to condition indoors, free of packaging, at 15-30°C for 2 hours immediately prior to installation.

Sheets can expand up to 3% dimensionally between -60-+80°C in outdoor conditions. Capping the upper edge will minimise the appearance of any dimensional change.
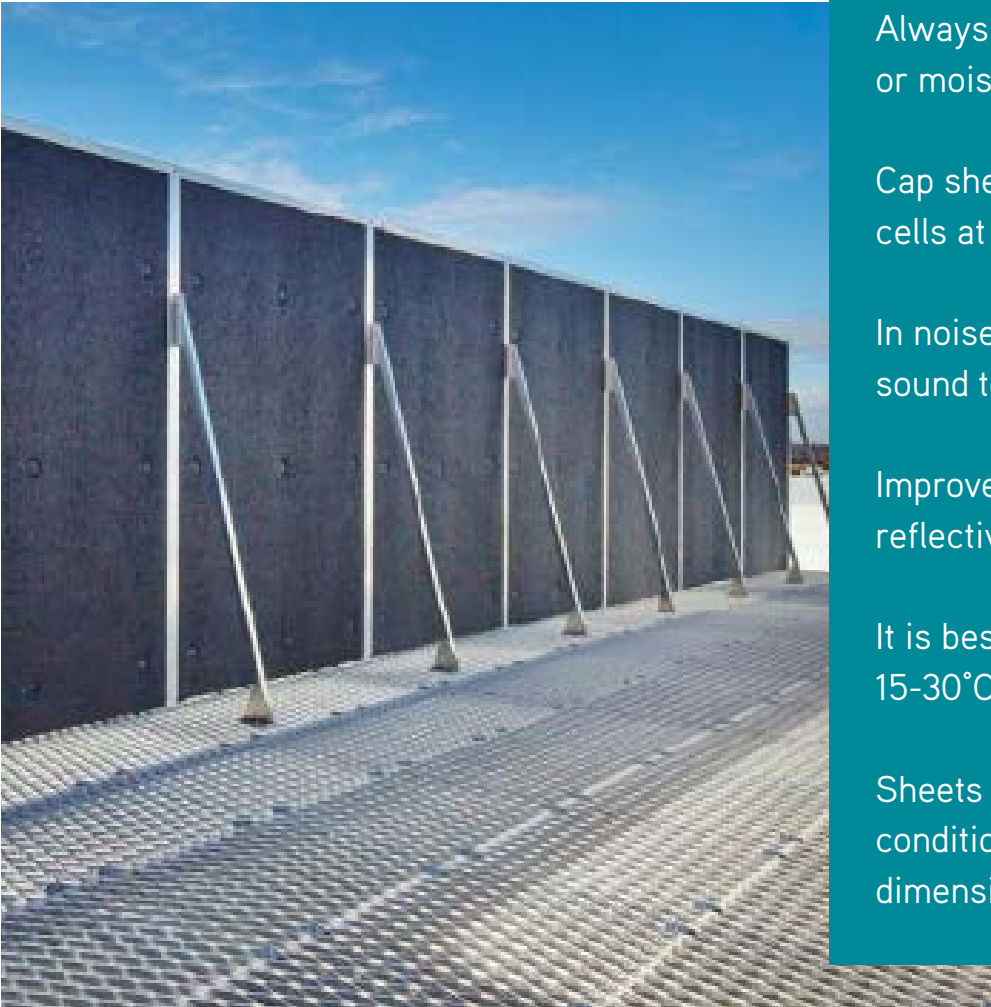
Studioverket Stockholm, Sweden

Whisper®

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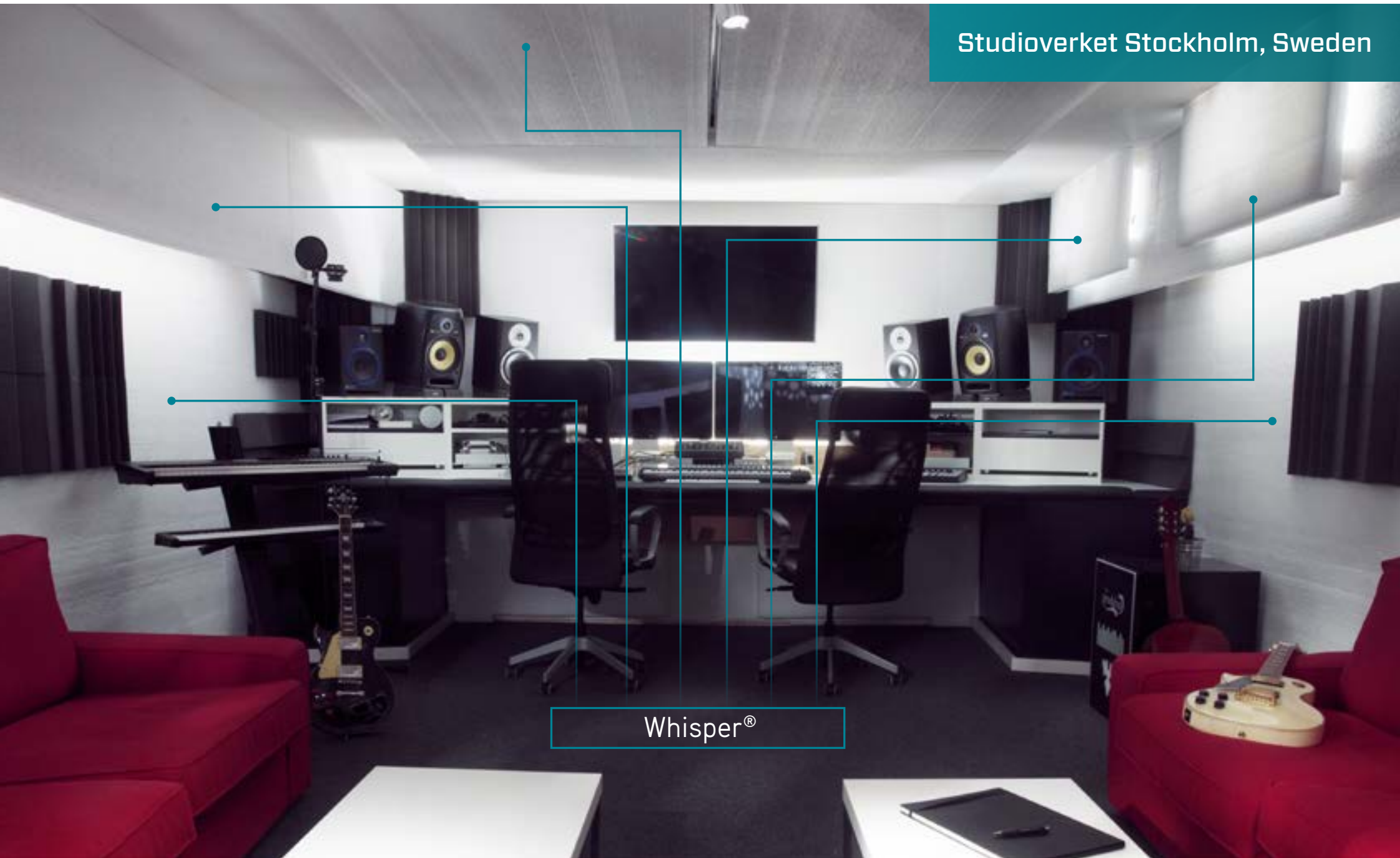
For more information, please contact us at
www.sealedair.com/uk/contact