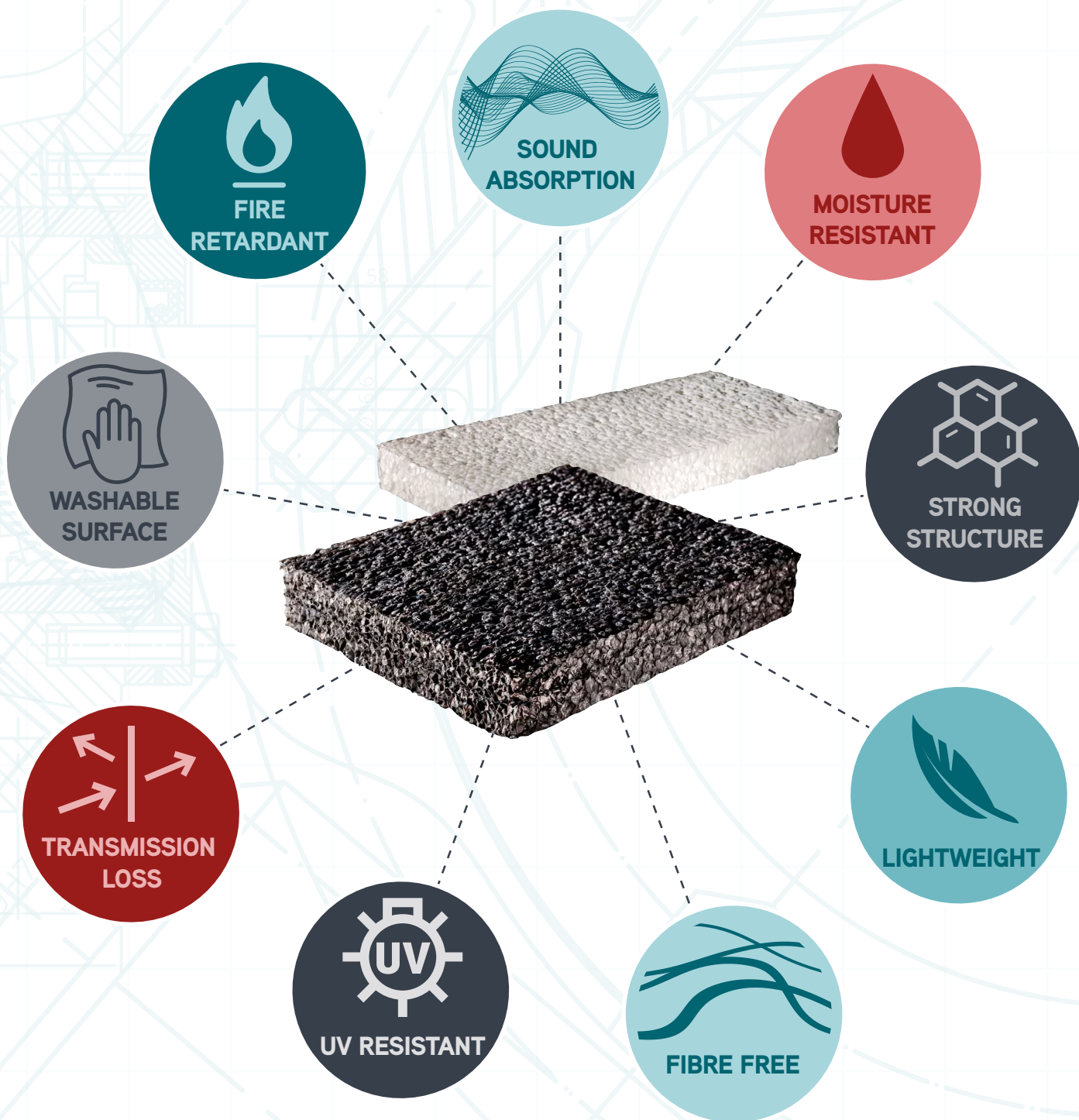

Guide to Fixing and Installing Whisper[®]

August 2020

Sealed Air[®]





INTRODUCTION

Whisper®

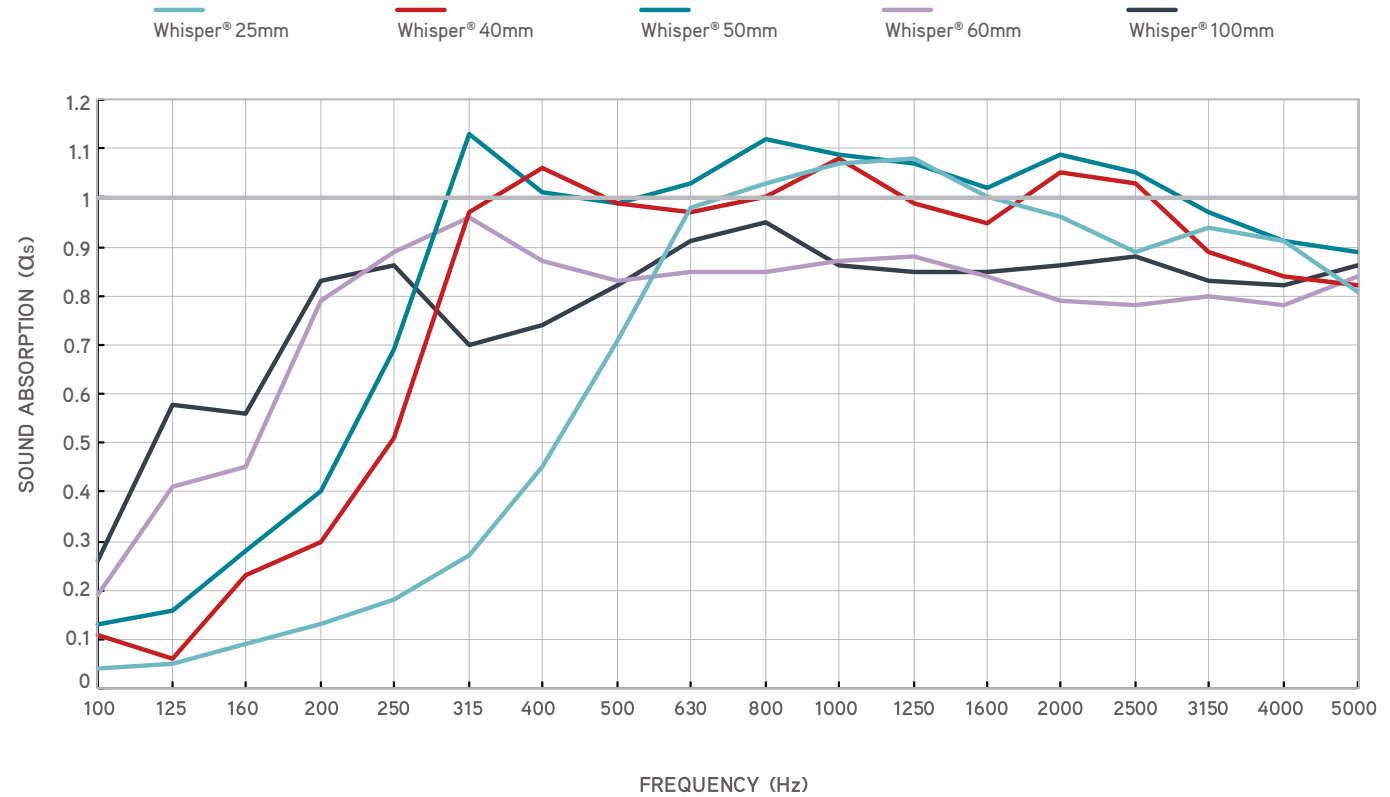
Whisper® is a closed cell polyethylene foam which uses a high performance honeycomb like structure to absorb noise. This durable material remains acoustically 'soft' eliminating the problem of hard reflective surfaces that contribute to reverberation and echo.

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.

Sound Absorption ISO 354



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



Installer Checklist

Name Company

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



Brochure



Tolerance sheet



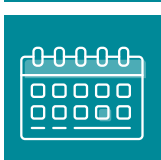
Technical data sheet



Material Safety data sheet



Installation guide



Annual inspection plan set



Batch codes recorded

STORAGE & HANDLING CONSIDERATIONS

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

Standard Pack Quantities:

- 100mm: 3 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, MOQ is typically 10 packs.

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

Sustainable, ventilated bags are used to package Whisper® to facilitate curing, as a result of the ventilation holes the bags may rip during rough handling. 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.

Do not drag bags across the ground on site.

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 17-28°C for 2 hours immediately prior to installation. This conditioning will ensure any dimensional change from thermal expansion is minimised.

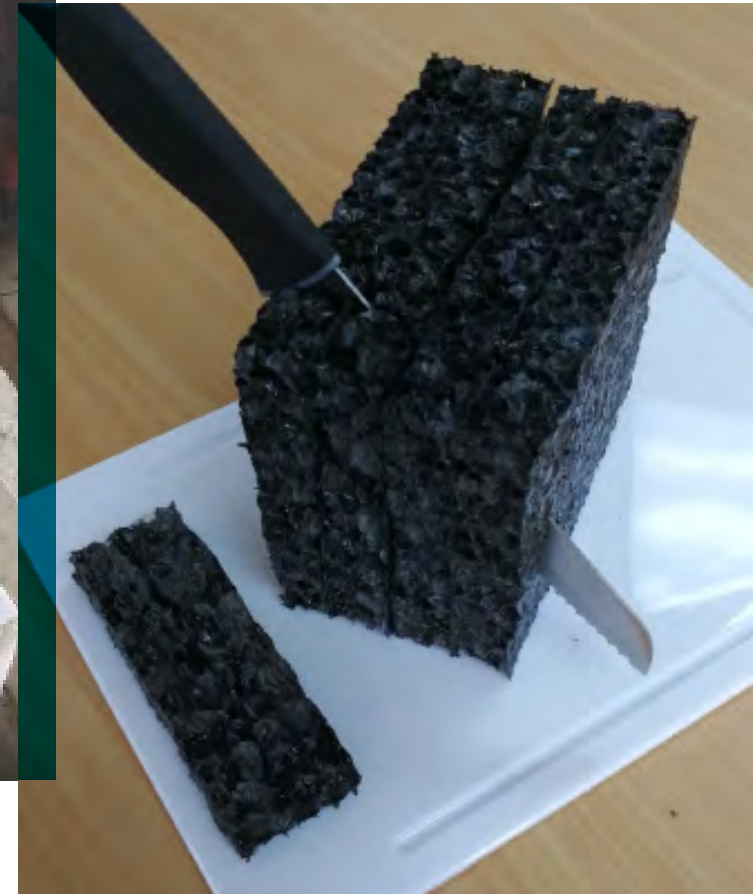
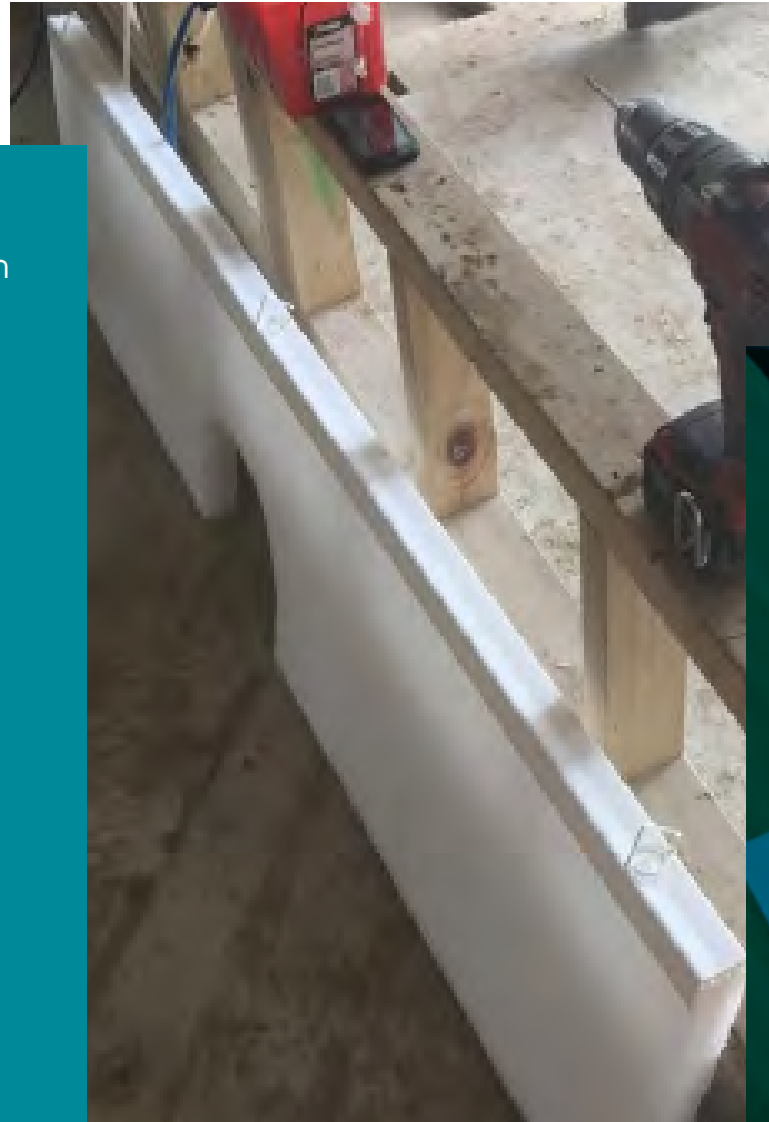
Some surface texture variation is inevitable with this material, try to standardise on material from the same batch to ensure similar appearance.

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

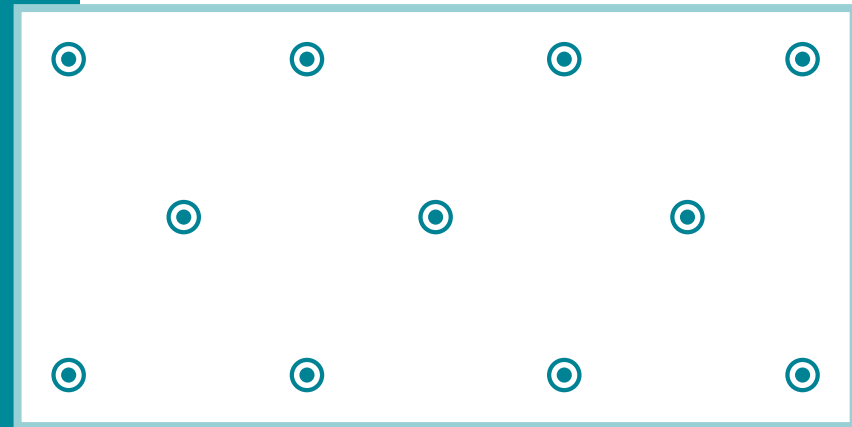
Tidy lines are best made with sharp blades.



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 & 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.



Suggested layout of fasteners
on a 1200 x 2400 sheet

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

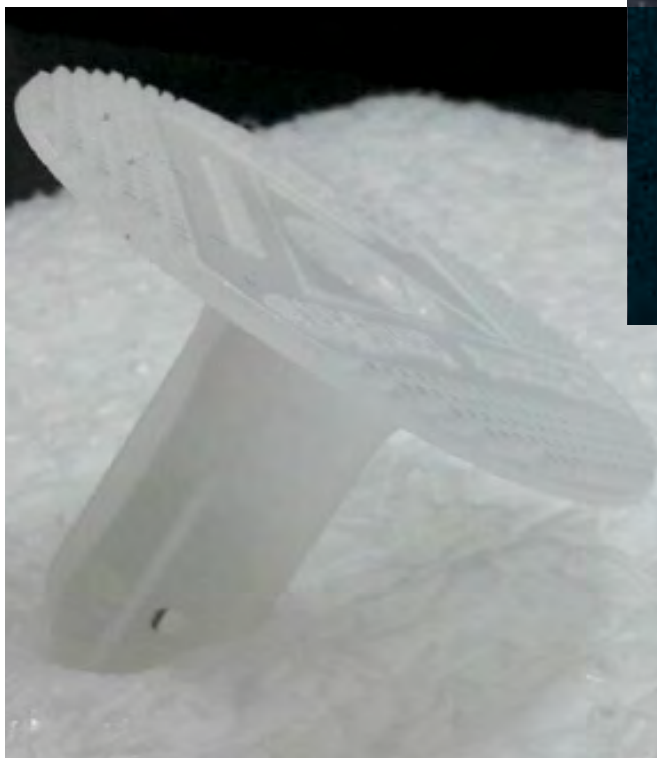
Examples include:

Ramset Insulfast™ & Hilti Insulation Anchors

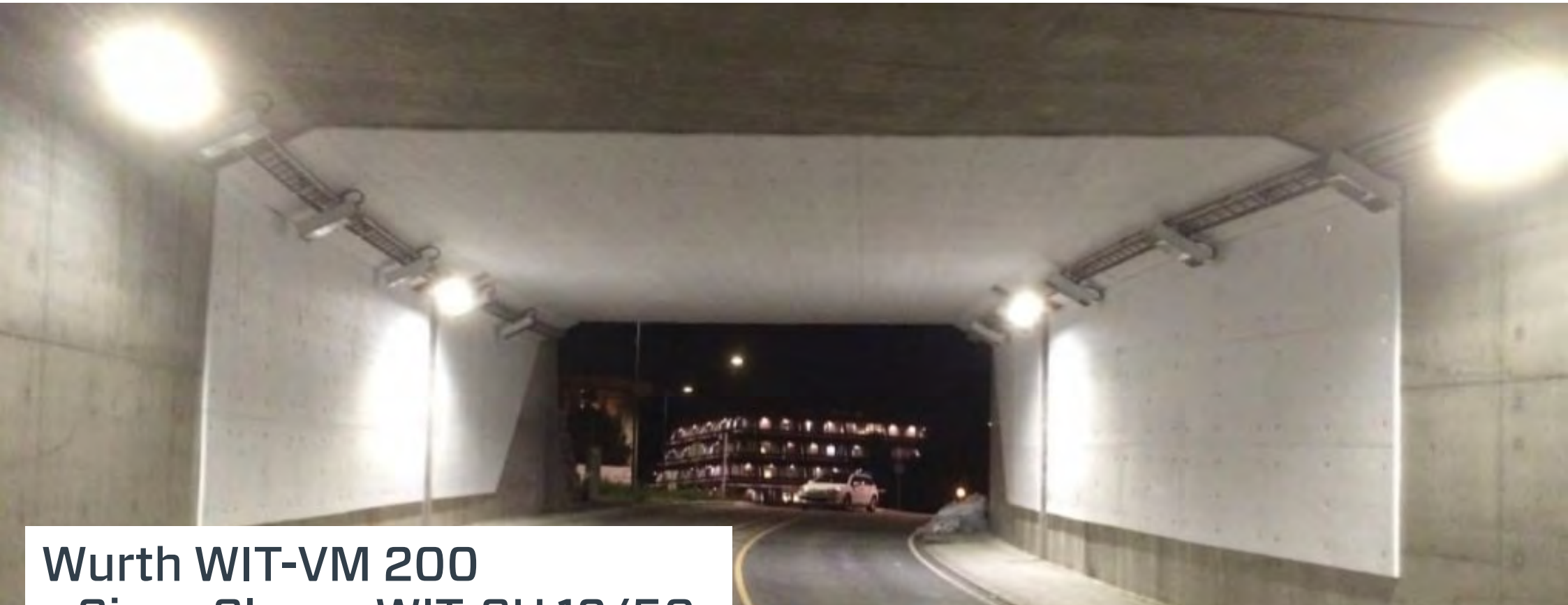
A variety of plastic fasteners and drivers are available in the worldwide market using pneumatic pistols and hammers. This fastener type can speed up installation of foams in construction; known as insulation anchors, cobb plug dowels, or spankers. Those with a head diameter of 25mm or more can be used,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

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

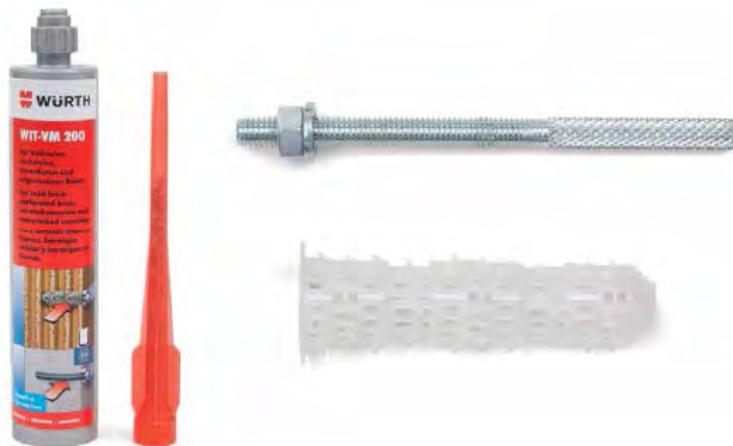
Be sure to include details such as environmental conditions, material thickness and substrate and identify and mitigate corrosion risks.



Sodar Wind Profiler



Würth WIT-VM 200 + Sieve Sleeve WIT-SH 12/50



Approvals
Masonry: Solid and perforated brick

Advantages

- Safe anchoring in solid and perforated bricks
- The anchor may also be anchored in masonry joints
- No spreading effect, enabling small edge and axial distances to be complied with
- Cartridge can be used up to expiration of the best before date by replacing the static mixer or by being closed again with the sealing cap
- Consult manufacturer for options and suitability for a specific project or application and further installation instructions

Interior Hanging Baffles

Whisper® 2205 stainless steel corkscrew fittings 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.

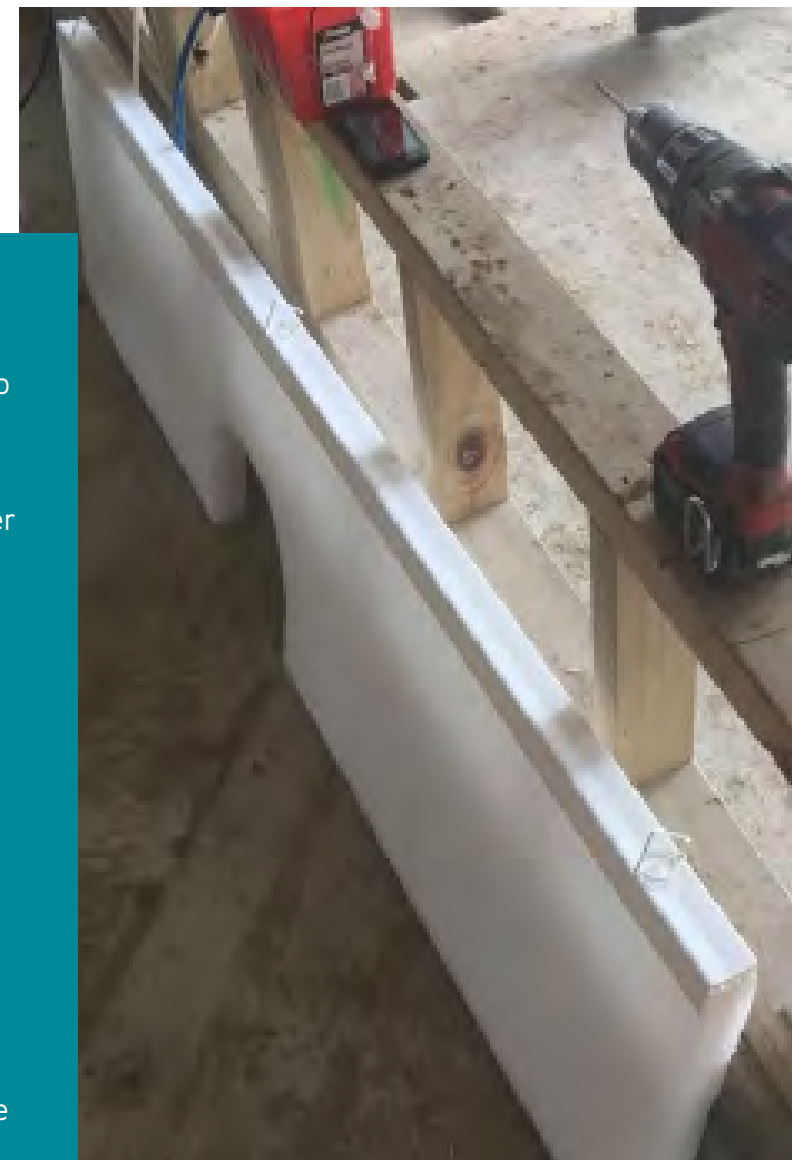
Corkscrews should extend at least 25mm into a 50mm thick sheet. When fitted to either the short or long edge of the sheet, at least one fitting per 450mm is recommended to prevent sagging. Always close and lock the corkscrew loop to prevent fall during earthquakes or impact.

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 450mm span without additional framing.

A drilled ABS 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.

The more face & perimeter area left exposed, typically the greater the absorption of the installation.

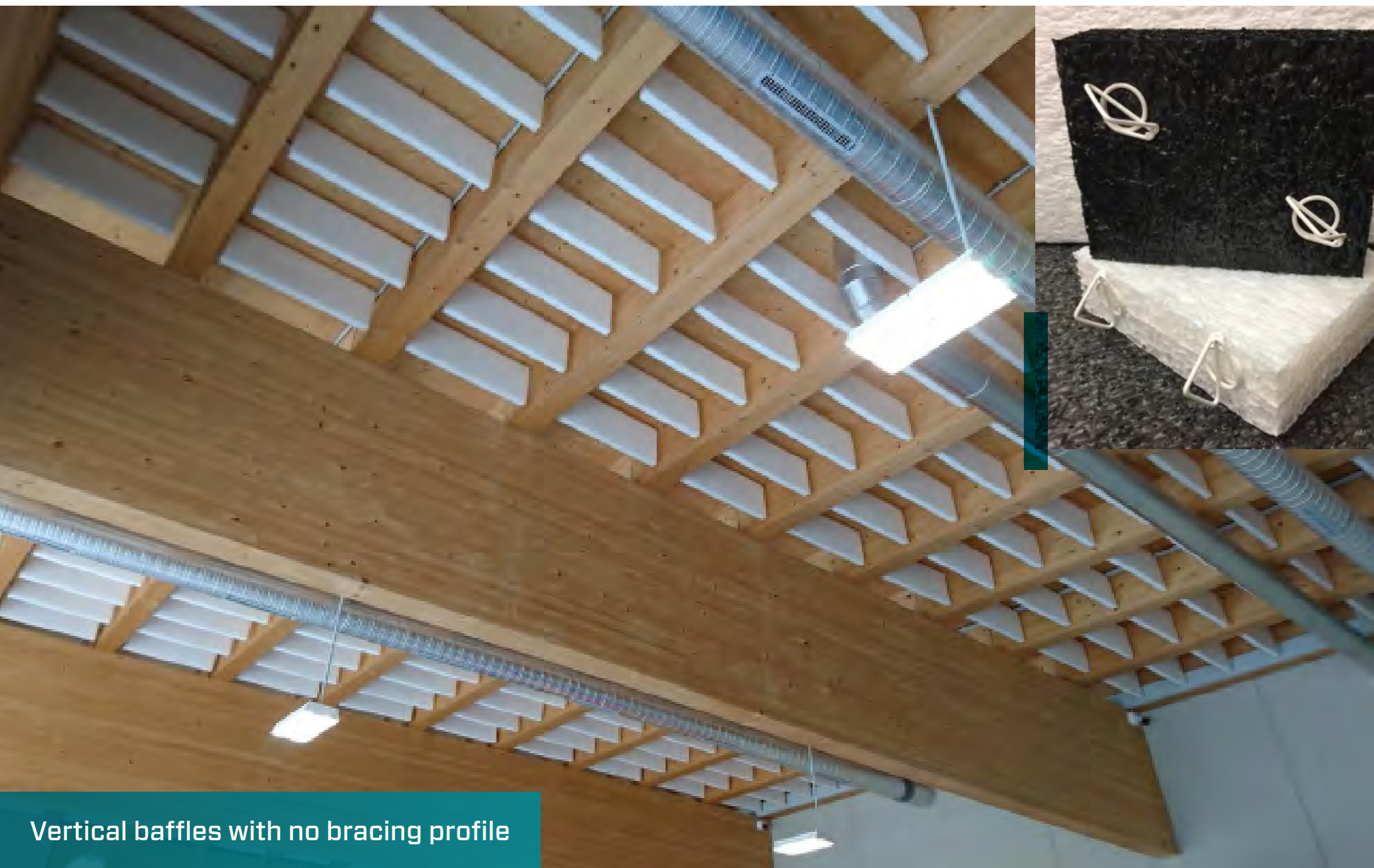
Slight curvature in sheets can usually be removed by bending them in the opposing direction, and repeating the conditioning step.



Corrosion Resistant Corkscrews with White ABS Plastic U Channels

Location: Otaki Swimming Pool, New Zealand





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 450mm 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.

ARKEMA
INDUSTRIE - CHIMIE



Cofix S



PRODOTTO

Cofix S è un adesivo per contatto a solvente spruzzabile basato su policloroprene (PCP), specialmente sviluppato per applicazioni decorative interne nel settore marino. Cofix S possiede un'eccellente applicabilità iniziale ed un'eccellente resistenza alla temperatura. L'adesivo è non-reticolabile e può essere utilizzato a spruzzo. Cofix S non ha applicabilità residua. Cofix S è stato testato e certificato presso International Maritime Organization Fire Test Procedure for Surface Flammability, risoluzione A. 653 (16) ed è stato approvato per l'utilizzo su paratie, soffitti e ponti.

APPLICAZIONI

Cofix S è specialmente adatto per incollaggi per contatto universali di vari materiali per decorazione interna come legno, metallo, schiuma, sughero, cuoio. Cofix S non è idoneo per l'incollaggio di schiuma di polistirene espanso.

CARATTERISTICHE


- Eccellente tenuta iniziale.
- Eccellente resistenza alla temperatura.
- Ritardante di fiamma, certificato DNO A. 653 (16).
- Eccellente proprietà di spruzzabilità.
- Flessibilità del giunto collante.

METODOLOGIA DI APPLICAZIONE

Informazione Base: i materiali da incollare devono essere puliti, asciutti e liberi da polvere e da grasso.
Equipaggiamento per applicazione: data la grande varietà di equipaggiamenti d'applicazione, è consigliabile contattare Arkema per avere maggiori informazioni.
Instruzioni d'uso: Cofix S deve essere applicato in due passaggi utilizzando una pistola a spruzzo in modo da ottenere uno strato sottile ed omogeneo. Spruzzare ad una distanza di circa 30 cm. I supporti devono essere assemblati entro il tempo aperto (vedi dati tecnici). Le condizioni di lavoro (temperatura, umidità relativa, ecc.) possono influenzare il processo di incollaggio (velocità, tempo aperto, pressione, ecc.). Cofix S contiene solventi volatili. Si raccomanda un'ottima ventilazione.

Pulizia/Disidratazione: Solventi P.

Adhesives - Bostik


LABORATORY EVALUATION

EVALUATION OF SUPERTAK HS AND NC BONDING COLORSTEEL TO WHISPERFOAM

Aim: Evaluation of Bostik's Supertak HS and NC to bond colorsteel to Whisperfoam.

Background: Previous work has shown that Supertak NC is suitable for bonding Whisperfoam to a variety of substrates. Further testing is required to determine if Supertak is capable of adhering Whisperfoam to a Colorsteel. Supertak HS was also evaluated in case of failure of the Supertak NC.

Evaluation parameters:

Product: Bostik Supertak High Solids, Batch: AL1608218A10
Bostik Supertak Non-Chlorinated, Batch: AL1609253A9

Substrates: Whisper UV-stabilised PE panel
Colorsteel (beige), 300 mm x 300 mm x 100mm (1.3Kg)

Test Methods: Spray application to achieve a minimum of 90% coverage. The test piece was left for an open time of 2 minutes before hand pressing for 30 seconds onto the Colorsteel. The test pieces were left for an hour at 25°C before initial bonding inspection. It was then left for another 3 days to cure.

Surface Preparation: Whisperfoam was scrubbed with water to remove dust and then left to dry.
Colorsteel was wiped down with Bostik's No.3 Solvent

Results:

Test Method	Substrate	Result
Supertak High Solids	Colorsteel	Good initial grab, with no migration. Upon final curing the foam held the steel when only supported only by the foam.
Supertak Non-Chlorinated	Colorsteel	Initial grab close, but not quite as good as the Supertak HS with a small amount of migration. Upon curing the foam held the steel when only supported only by the foam.

Conclusions
Both adhesives were able to bond the insulator to the steel wall. HS showed better initial adhesion than NC, but there was no difference after curing in adhesive performance. It is recommended Supertak NC to be used for bonding Whisperfoam to Colorsteel. The Colorsteel must be clean and free from dust and contaminants.



Bostik Supertak HS is a high performance adhesive, tested by Bostik for adhering Whisper® to common non-porous construction materials.

Bostik recommend Bostik Supertak HS for adhesion to Colorsteel Endura paint surfaces such as SIP panel systems & for adhesion to concrete, such as tilt slab materials.

Follow all instructions carefully being sure to apply 80GSM wet weight to each surface.



OTHER ADHESIVES

Two Component Adhesive

Henkel Loctite 3090 ideal for high bond strength to small articles

Solvent-based Adhesive

Spray adhesive 77 from 3M

3M Hi-Strength 90 – Spray Adhesive

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, or polyester based tube or gun adhesives are incompatible with Whisper®

Whispertape - Danco 6657

A double sided tape with an aggressive pressure sensitive adhesive tailored to low surface energy plastics; for fast, low cost DIY installation of Whisper® FR to clean, dry and dust free interior applications.

Consult the separate Danco 6657 Whispertape Installation Guidelines for further advice.

Danco 6657 Whisper Tape

Strong double-sided tape for fixing Stratocell Whisper FR to many popular interior surfaces

Features and Benefits:

A double sided tape with an aggressive pressure sensitive adhesive tailored to low surface energy plastics; for fast, low cost DIY installation of Stratocell Whisper FR to clean, dry and dust free interior applications.

Want to know more?
Contact your Sealed Air Account
www.sealedair.com

Sealed Air®

Sealed Air®

Danco 6657 Whisper Tape

Strong double-sided tape for fixing Stratocell Whisper FR to many popular interior surfaces

DANCO
SPECIALTY ADHESIVE TAPES

Before Installation: Surfaces must be accessible, flat, and where there will be appreciable joint movement or where the surface is dirty, porous or friable. Apply a sample to a discreet area first to assess surface compatibility; surfaces may be prepared with an acrylic primer. Condition Whisper sheets in accordance with handling best practise and ensure all surfaces are clean and dry. Surfaces may be cleaned with a fresh microfibre cloth & 50% IPA spray.

Install: Apply tape to first surface in three strips in the long third to the centre. Leave red liner in place to ensure tape bubbles by applying pressure in a sweeping motion with a solid rubber roller or wedge. Alternatively apply tape evenly distributed to attain 25% coverage area. Whisper can be repositioned on the tape within 5 minutes of installation. If sheets need to be repositioned after a longer duration always replace with new tape. Bring first surface, tape and second surface together. After initial tack has formed apply pressure to the sheet in a firm sweeping motion from one end of the sheet to the other directly over the foam tape. Apply pressure again working from one side to the other in a sweeping motion to wet out the adhesive and force out air bubbles. At least 5kg of force should be applied.

After Installation: Adhesion will grow significantly over time. A discreet mechanical fastening is recommended in addition to tape on ceiling installations along with periodical inspection program. This adhesive is not designed to clean remove.

It is the customer's responsibility to ensure that a particular product with the properties described in this product specification is suitable for use in a specific situation. No warranty, representation or guarantee is given by us regarding the suitability of this product for any particular use. The physical and performance characteristics shown are averages obtained from tests recommended by PSTC, ASTM and our own internal procedures. A particular roll may vary from these averages. It is recommended that the customer determine the suitability for their own purpose by conducting a rigorous trial process.
www.danco.co.nz_tapes@sealedair.com



Product Specifications:

Thickness: 1mm +/-0.1mm
Release liner: 0.08mm red PE film
Peel Adhesion PSTC 101: 180° peel, >2.5 Kg/25mm
Shear Adhesion PSTC 107: 1Kg weight, 25°C, 24H <2mm
Loop Tack FINAT 9: 0.5Kg Weight, 80 °C 24H <2mm
>6 Kg/25mm

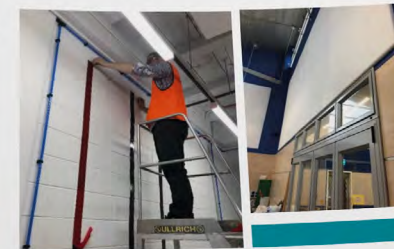
Resistant to solvents and moisture for long term applications in temperature ranges -20-+80 °C

Alternative Uses:

Well suited to mounting automotive trim, bathroom accessories, nameplates, and mirrors.

Storage:

Store in original packaging below 40°C and 50% relative for up to 6 months after purchase



© Sealed Air Corporation 2019. All rights reserved.

WHISPER® FR TIPS

Framed sheets look great!

The face of Whisper® should face the noise source, a screen or any covering may effect performance, if in doubt seek advice from an acoustic engineer.

Whisper works well as an LED Panel Diffuser

If Whisper® is used in a wet environment, sufficient air movement, temperature and humidity differential must exist to enable it to dry periodically.

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 17-28°C for 2 hours immediately prior to installation.

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

WHISPER® UV TIPS



Whisper® should face the noise source, a screen or any cover may effect performance.

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.

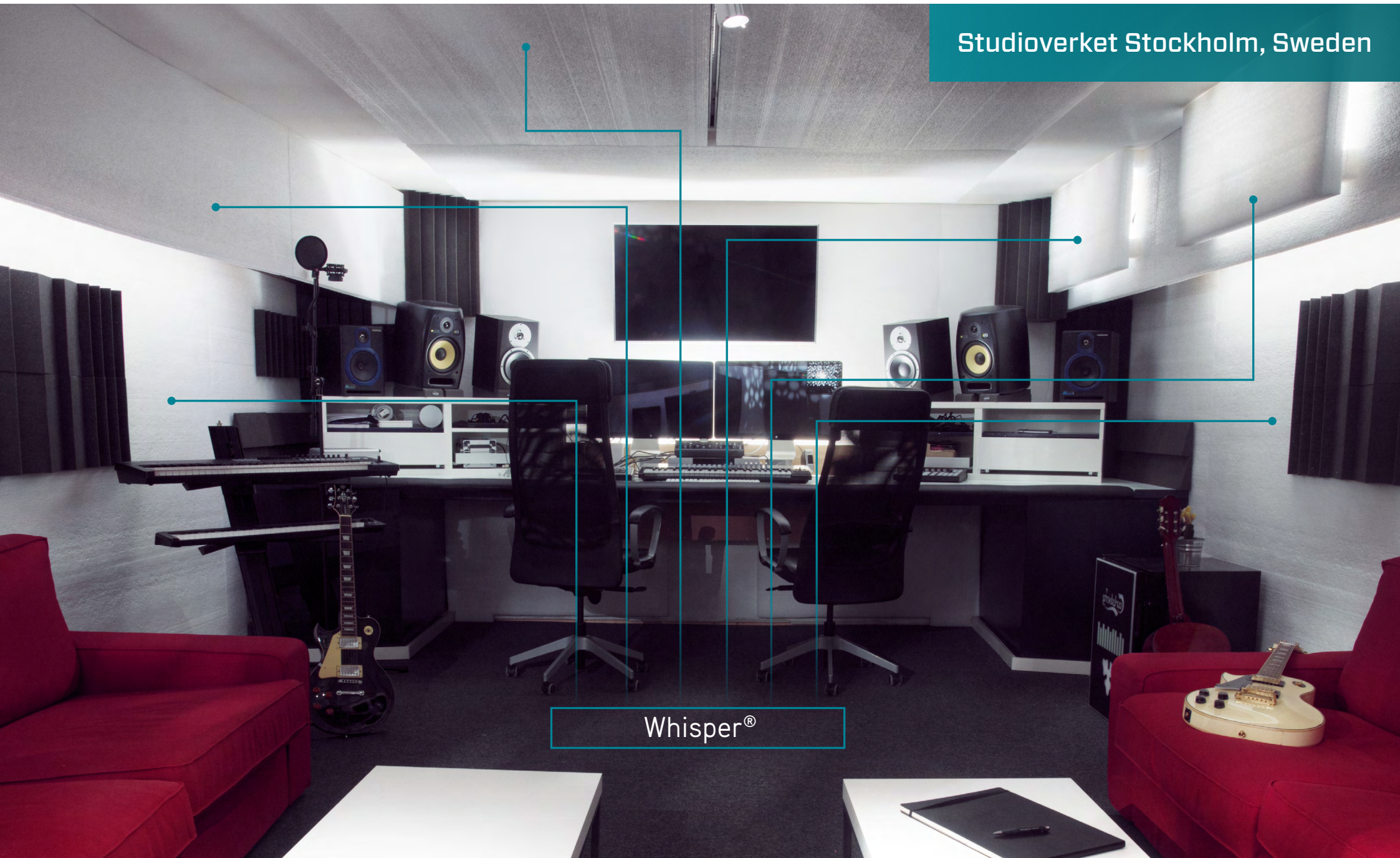
In noise wall applications seal around holes and gaps to minimise paths for sound to escape through, check for these at night with the aid of a torch.

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 17-28°C for 2 hours immediately prior to installation.

Sheets can expand up to 3% dimensionally between -60-+80°C in outdoor conditions.

Studioverket Stockholm, Sweden



Whisper®