Pyrotek®

LNG AND OFFSHORE SUMMARY

pyroteknc.com

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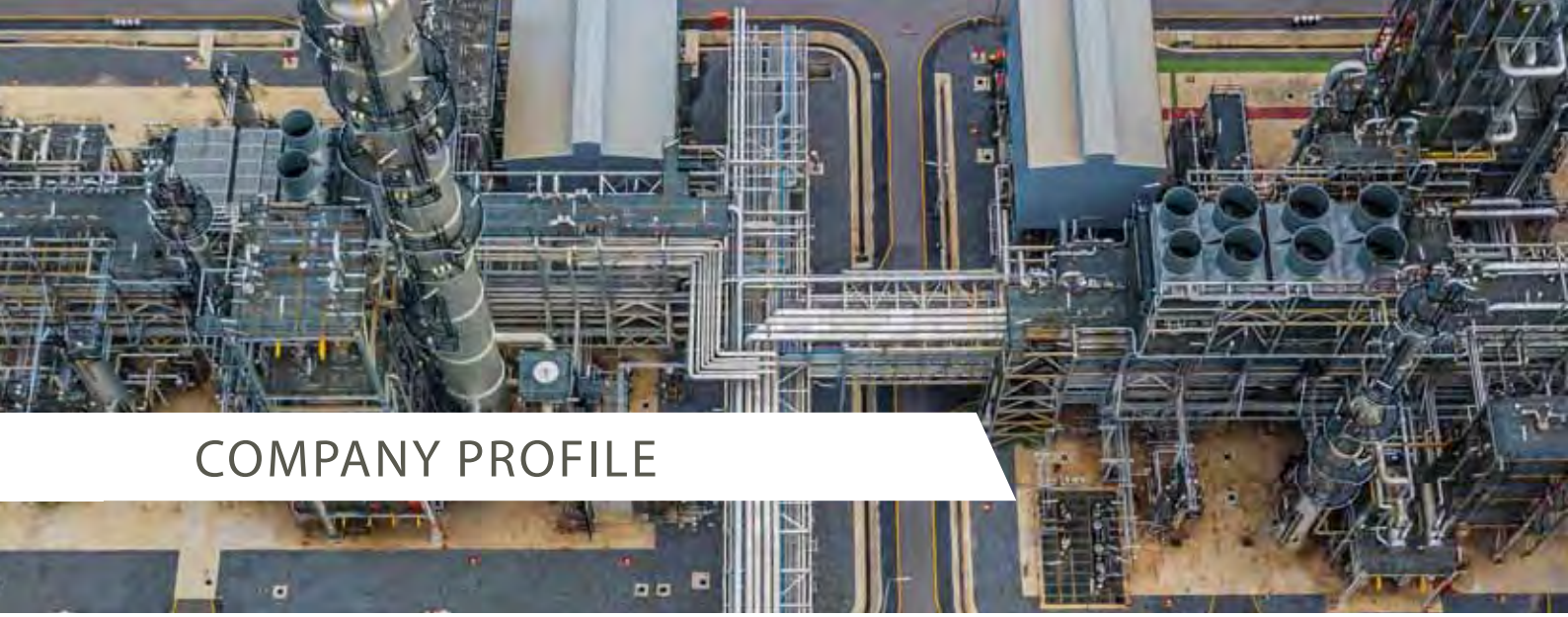
With ISO 9001 quality system certification, our global engineering team design highly specialised products to every specification and performance requirement. Our products are independently certified, time tested and supported by proven results.



COMPANY PROFILE

Pyrotek® is a global engineering leader and innovator of performance-improving technical solutions, integrated systems design and consulting services for customers in the aluminium industry. We are also investing and growing rapidly in areas such as glass, noise control and advanced materials.

We have global resources and dependable local support in more than 35 countries with over 80 locations. Our products and solutions are in use around the world in automotive, aerospace, rail transportation and high-tech manufacturing.

Privately-owned since 1956, our deep-rooted values of integrity and collaborative problem-solving uphold our mission to improve customer performance.

WHO WE ARE

- A global engineering innovator and supplier of complete end-to-end, performance improving technical solutions
- Our Noise Control division began in Australia, bringing over 30 years experience
- We supply complete turn-key solutions for many industries with over 300 Pyrotek application engineers, worldwide

WHY CHOOSE US

- Strong R&D Laboratory Team - ceramic, acoustic & chemical engineers help maximise product performance
- Extensive data analysis and noise predictions
- Design capabilities using CAD and 3D modelling
- Global test laboratories for fire, acoustic and vibration

OUR INDUSTRIES

Building | Industrial | Transportation | Marine | Oil & Gas

SUSTAINABILITY POLICY

Pyrotek is committed to ethical corporate citizenship and to promote sustainability in its activities and environmental responsibility. We will treat the environment as a valued legacy for our grandchildren. While Pyrotek recognizes that its business activities have environmental and social implications, Pyrotek is committed to mitigate any environmental or social impact its business activities may have through the adoption of best practices and policies. Pyrotek will contribute to the development of a sustainable future through the following principles.

PRINCIPLES

1. Practice responsible corporate conduct through adoption of workplace policies and best practices that meet or exceed regulatory and statutory requirements and that develop and maintain an entrepreneurial and collegial environment.
2. Manage risks, including those related to environmental, social and governance aspects.
3. Identify opportunities to contribute to the development of society and future generations.
4. Provide a safe, healthy and enriching working environment for Pyrotek employees.
5. Be a fair and responsible member of the communities in which Pyrotek operates.
6. As employees and as a company, be ethical and responsible citizens.
7. Be a responsible steward of resources.
8. Adhere to Pyrotek's Environmental Policy to limit its carbon footprint.
9. Pyrotek encourages the adoption of similar principles by its supply chain and business partners.

ENVIRONMENTAL PRODUCT STATEMENT

OUR COMMITMENT TO SAFETY, QUALITY AND ENVIRONMENT

Pyrotek is committed to safely produce quality products and services, on-time and at a competitive cost. This enables Pyrotek to build a sustainable business for the benefit of our customers, employees and stakeholders. Our focus is dedicated to developing systems with new, more considered operations and materials, as well as committing to improved technologies to further support long-term goals of safety, quality and environment.

Environmental Consideration

We acknowledge the need for consideration for our manufacturing activities to contribute to the mitigation of global warning via energy savings. We locally commit to reducing environmental impact by the prevention of pollution, minimization of waste and reduction of energy and water we use.

Ozone Depleting Potential

Pyrotek has undertaken an audit of its raw materials supplied and manufactured products barrier referencing to the US EPA List of Ozone Depleting Substances (Class 1 and Class 2). To the best of our knowledge, no ozone depleting substances are involved in either the manufacture or composition of these products.

Volatile Organic Compounds (VOC)

Products supplied by Pyrotek do not contain any significant Volatile Organic Compounds (VOCs) content when evaluated to the differing definitions as applied under the Australia National Pollutant Inventory, The Council of the European Union, Council Directive 1999/13/EC or the USA EPA Regulation 40 CFR 51.100(s). We also test to ASTM D5116 showing low VOC release.

Asbestos free manufacturing

Asbestos is not used during the manufacture of, and not added during any process of during the processing of our products. Please contact Pyrotek for available test reports to AS4964.

Global Warming Potential

Pyrotek's acoustic product range is designed with a reduced carbon footprint in mind, using locally sourced and environmentally-certified materials where possible. We use no CFCs, HCFCs or known high-GWP gases in our manufacturing process.

Recycle and emission care

During the process of manufacture, every care is taken to recycle and reuse material and where possible our plant and equipment has emission cleaners fitted.

Pyrotek has active and ongoing research investment to develop products that reduce environmental impact.

CODE OF BUSINESS ETHICS

POLICY

This Code of Business Conduct and Ethics (the "Code") represents the commitment of Pyrotek Inc. (which, together with all subsidiaries, is referred to as the "Company") to conduct its business with integrity, in accordance with all applicable laws, rules and regulations and with high ethical standards. All employees, officers and general managers of the Company are expected to adhere to the principals and procedures set forth in the Code. However, no code can govern all possible situations. Therefore, those individuals governed by the Code must apply the spirit, as well as the letter, of this Code and request guidance from those identified below in the event of any question of interpretation. In all instances, each individual should strive to uphold the integrity and credibility of the Company. This Code is also supplemented by the rules of business conduct and ethics contained in the Company's other policies and procedures.

Note: This Code is subject to review and modification. The form of the Code made available on the Policies and Procedures Database of the Company supersedes any prior expression of the policy to the extent of any inconsistency.
The following sections highlight key scenarios where the Code will govern individual behavior.

PROCEDURE

CONFLICT OF INTEREST

A "conflict of interest" occurs when an individual's private interests interfere, or appears to interfere, in any way with the interests of the Company. A conflict of interest can arise when an employee, officer or director takes actions or has a personal or non-Company related business interest that may make it difficult to perform his or her Company work objectively and effectively. Conflicts of interest also arise when an employee, officer or director, or a member of his or her family, receives improper personal benefits as a result of his or her position in the Company. Loans to or guarantees of obligations of such persons are of special concern as conflicts of interest. Service to the Company should never be subordinated to personal gain and advantage.

All conflicts of interest as described above are prohibited. Each employee, officer and director should be careful to avoid a conflict of interest by avoiding actions or relationships that may either make it difficult to perform Company work objectively and effectively or affect personal judgment regarding what is in the Company's best interest.

Any individual who has any questions or concerns regarding this policy, or any specific situations, actions or omissions which may relate to or be prohibited by this policy, is encouraged to discuss such questions or concerns with any of the following individuals: the Company's (1) President, (2) Chief Financial Officer or (3) Corporate Counsel.

CORPORATE OBLIGATION

Employees, officers and general managers owe a duty to the Company to advance its legitimate interests when the opportunity to do so arises. Each employee, officer and director is prohibited from:

1. Taking for themselves personal opportunities that are discovered through the use of Company property, information or position;
2. Using Company property, information or position for personal gain; or
3. Competing with the Company.

CONFIDENTIALITY

Employees, officers and general managers should maintain the confidentiality of confidential and proprietary information entrusted to them by the Company and its guests and customers, except when disclosure is authorized or legally mandated. Confidential information includes all nonpublic information that might be of use to competitors of the Company, or harmful to the Company or its guests or customers if disclosed.

Employees, officers and general managers are encouraged to consult the CFO, prior to making any disclosure, with any questions regarding whether a legal obligation to disclose confidential information exists. The obligation to maintain confidentiality extends indefinitely after a person's association with the Company as an employee, officer and director has ended.

FAIR DEALINGS

Each employee, officer and director should endeavor to deal fairly with the Company's customers, suppliers, competitors and employees. No employee, officer or director should take unfair advantage of anyone through manipulation, concealment, abuse of privileged information, misrepresentation of material facts or any other unfair dealing practice. Nothing contained in this paragraph shall in any way alter any existing legal rights and obligations of the Company or its employees, officers or general managers.

PROTECTION AND PROPER USE OF COMPANY ASSETS

Company employees, officers and general managers should protect the Company's assets and ensure their efficient use. Each employee, officer and director should endeavor to prevent misuse, loss, damage, sabotage or theft of Company assets. All Company assets should be used for legitimate business purposes only.

COMPLIANCE WITH LAWS, RULES AND REGULATIONS; REPORTING ILLEGAL OR UNETHICAL BEHAVIOR

The Company is committed to complying with all laws, rules and regulations applicable to it, including, but not limited to, those impacting the obligation of the Company to present all financial information to the public in conformance with generally accepted accounting principles based upon information which accurately reflects all relevant facts.

COMPLIANCE AND REPORTING

Employees, officers and general managers should strive to identify and raise potential issued before they lead to problems, and should ask about application of this Code whenever in doubt. Any employee, officer or general manager who becomes aware of any existing or potential violation of this Code should promptly notify the individual responsible for enforcement identified in the Section entitled "Policies and Procedures for Interpretation and Enforcement of the Code".

POLICIES AND PROCEDURES FOR INTERPRETATION AND ENFORCEMENT OF THE CODE

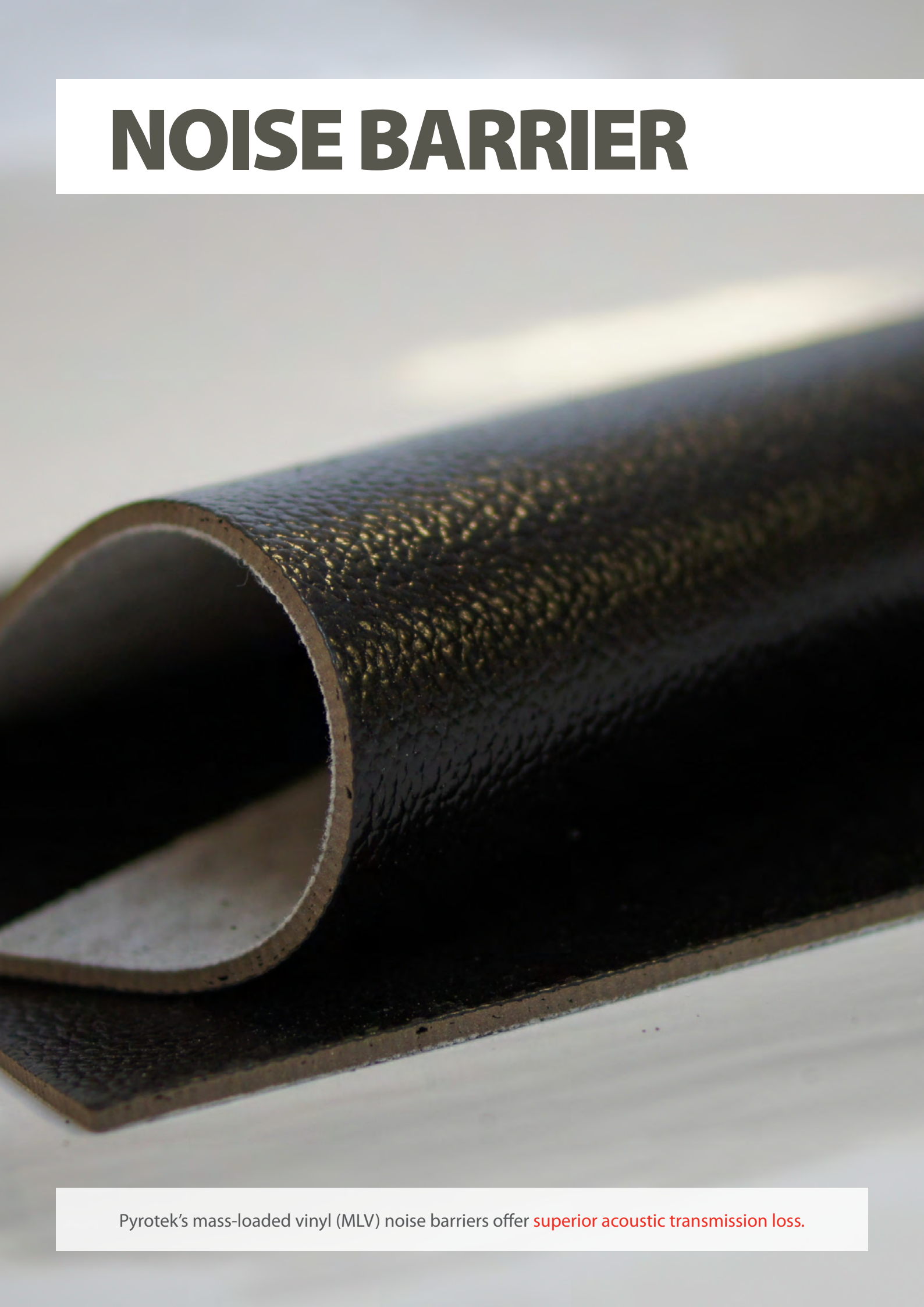
The President, General Counsel and Chief Financial Officer are responsible for applying this Code to specific situations relating to violations of the Code by general managers and executive officers and to specific situations relating to violations of the Code by other employees which have a material adverse effect on the Company's overall operations or financial position.

Company management will handle violations of the Code by individuals other than general managers or executive officers in the same manner that other violations of Company policies are handled and it is expected that most violations occurring in the ordinary course of the Company's business will not be sufficiently material to require report to the Shareholders of the Company or the President.

WAIVERS

From time to time, the Company may waive certain provisions of this Code. Any employee, officer or general manager who believes that a waiver may be appropriate should discuss the matter with the President.

NOISE BARRIER

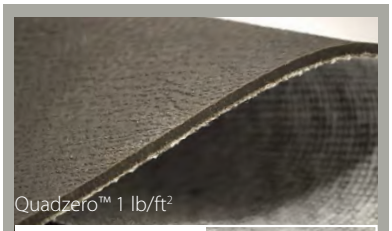


Pyrotek's mass-loaded vinyl (MLV) noise barriers offer superior acoustic transmission loss.

WAVEBAR®

Wavebar® is a high-performance, flexible mass-loaded vinyl noise barrier, offering superior acoustic transmission loss. Designed to meet market requirements, it has been effectively used to reduce noise in building, commercial, industrial and automotive markets, globally.

The engineering team at Pyrotek® developed Wavebar® to be dense, thin, highly-flexible, tear-resistant and strong. These properties give the product high transmission loss throughout the various weight ranges.



Quadzero™ 1 lb/ft²

Rw	25

Quadzero™ 1.6 lb/ft²

Rw	31

Quadzero™ 2 lb/ft²

Rw	34

Features

- Tear resistant with high tensile strength with the ability to be suspended in lengths of up to 16.4 ft (5 metres)
- Resistant to weather and UV light
- Simple to cut and install through obstructions - providing flexibility around pipes, ducts, cables etc.
- Resistant to most chemicals, solvents and petrol

Application

Wavebar® can be installed around LNG and cryogenic pipelines, inside cavities, over lightweight wall/ceilings, adjoining partition walls or as a noise curtain.

TECHNICAL DATA SHEET

WAVEBAR®

flexible noise barrier

Wavebar® is a high-performance, flexible mass-loaded vinyl noise barrier, offering superior acoustic transmission loss. Designed to meet market requirements, it has been effectively used to reduce noise in building, commercial, industrial and automotive markets, globally.

The engineering team at Pyrotek® developed Wavebar® to be dense, thin, highly-flexible, tear-resistant and strong. These properties give the product high transmission loss throughout the various weight ranges.

Stiff lightweight panel constructions, such as plasterboard, drywall, plywood and hollow core walls, typically have coincidence dip resonance which allows noise to transmit through a construction. The coincidence dip is dependent on the material's stiffness and thickness and occurs at the point where the sound transmitted through the structure matches the natural frequency of the panel. Wavebar® shifts the coincidence dip to frequencies limiting its impact, thereby maintaining the performance of the product.

The dense core mass layer reflects and absorbs the transmission of sound through walls, ceilings and floors, reducing the critical frequencies generated from mechanical equipment, engine noise and electronic audio technologies such as radio and television.

VOC STATEMENT

Wavebar® does not contain any Volatile Organic Compounds (VOC) when evaluated according to definitions as applied under the Australia National Pollutant Inventory, The Council of the European Union, Council Directive 1999/13/EC or the USA EPA regulation 40 CFR 51.100(s).

SPECIFICATIONS

Colour	Black
Available	Width: 1380 mm Length (linear m): 5 to 10 m Weight (kg/m^2): 2, 4, 6, 8, 10
	Custom sizes available depending on MOQ

applications

- Inside cavities, over lightweight wall and ceilings.
- Ideal for home theatre rooms, office partitions, meeting rooms
- Between the plenum chamber of a floor slab, the roof and adjoining partition walls
- Isolate sound on doors for privacy
- Position as a curtain to separate and create an acoustic barrier for open floor plans.
- Automotive cabin application to reduce engine and road noise transmitting through to passengers
- Laminate to lightweight structures
- Acoustic treatment for oil & gas pipelines

features

- Simple to cut and install through obstructions - providing flexibility around pipes, ducts, cables etc.
- Resistant to most chemicals, solvents and petrol
- Free from lead, odour-producing oils and bitumen
- Resistant to weather and UV light
- Tear resistant with high tensile strength. Ability to be suspended in lengths of up to 5 metres
- Available in various weights, widths , roll lengths and sheet sizes
- Available with various laminates such as foil, metallised film, foams and polyesters

PRODUCT SPECIFICATIONS

Barrier weight (kg/m²)	Thickness (mm)	Roll			Ceiling sound transmission test AMA-1-II-1967 (CSTC)	Operating temp. range (°C)
		Width (mm)	Length (linear m)	Weight (kg)		
2	1.2	1380*	10	28	44 (Report No. A-22104-0228)	-40 to 100 (Continuous) -40 to 120 (Intermittent)
4	2.0		5 or 10	28 - 56	48 (Report No. -22107-0228)	
6	3.0		5	42	-	
8	4.0		5	56	50 (Report No. 22114-0228)	
10	4.9		5	70	-	

Tolerances: Length: -0/+50mm; Width: -0/+5mm; Thickness: ± 0.5mm; Barrier Weight: <4.5 kg/m² ±0.2 kg/m²; 4.5-10 kg/m² ±0.4 kg/m²; ≥10 kg/m² ±0.5 kg/m²

**Supplied untrimmed - means some surface coverings such as foils, film or fabric may overhang the ordered useable width*

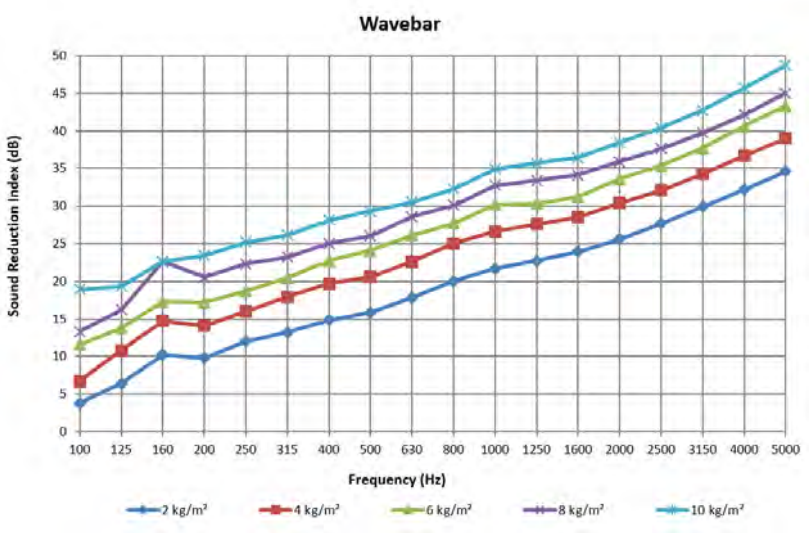
MATERIAL PROPERTIES

Test method	Property	Report no.	Results
AS 5637.1 (AS 3837 / ISO 5660-1)	Fire hazard properties	FH13406-01-2	Group 3
FMVSS-302	Flammability of interior materials	00813BD	Complies to the requirements of US (DOT) Department of transportation for occupant compartments of motor vehicles
UL94	Flammability of plastic materials	33112BD	HBF

ACOUSTIC PERFORMANCE

Frequency (Hz)	2 kg/m²	4 kg/m²	6 kg/m²	8 kg/m²	10 kg/m²
100	3.8	6.7	11.6	13.3	18.9
125	6.4	10.8	13.8	16.2	19.3
160	10.2	14.7	17.3	22.6	22.6
200	9.8	14.1	17.2	20.5	23.4
250	12.0	16.0	18.7	22.3	25.2
315	13.2	17.9	20.4	23.2	26.1
400	14.8	19.7	22.7	25.0	28.1
500	15.8	20.6	24.1	26.0	29.3
630	17.8	22.6	26.1	28.6	30.5
800	20.0	25.0	27.7	30.1	32.3
1000	21.7	26.6	30.2	32.7	34.9
1250	22.7	27.6	30.3	33.4	35.7
1600	23.9	28.5	31.2	34.1	36.4
2000	25.6	30.4	33.6	35.9	38.4
2500	27.7	32.1	35.4	37.6	40.4
3150	29.9	34.3	37.7	39.7	42.7
4000	32.2	36.7	40.6	42.1	45.7
5000	34.6	39.0	43.3	45.0	48.7
Rw	21	25	28	31	34
STC	21	26	28	31	34

Tested to ISO 15186-1:2003 & 10140-4:2010 at University of Canterbury, New Zealand
Report Numbers: 261a, 262a, 263a, 264a & 265a

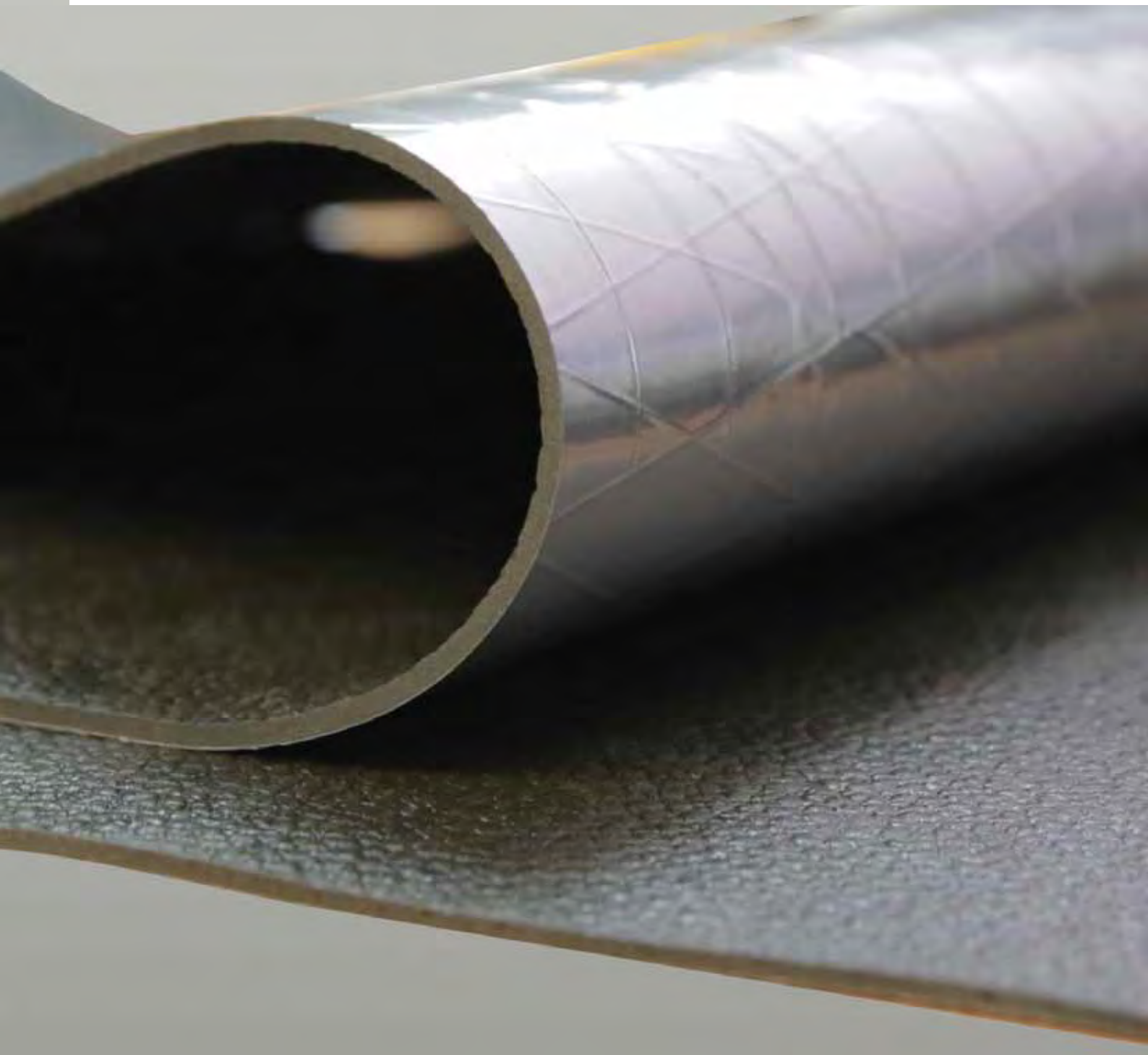


ISO 15665 PIPE INSULATION TESTING

Product	Test method	System Assembly	Report no.	Results
Wavebar 6 kg/m²	ISO 15665 (Group 2 Pipe Size)	Available on request	A 3041-1E-RA-002	ISO 15665: Class A2 & B2 NORSOK R-004: Class 6 & Class 7
Wavebar 6 kg/m² & Wavebar 10 kg/m²	ISO 15665 (Group 2 Pipe Size)	Available on request	A 3041-4E-RA-002	ISO 15665: Class B2 & C2 NORSOK R-004: Class 7 & Class 8

For further information and contact details, please visit our website pyroteknc.com

NOISE & VAPOR BARRIER



Quadzero™ MVT reduces the impact of unwanted sound, offering a 2-in-1 barrier product to combat noise and vapor transmission.

QUADZERO™ MVT

Quadzero MVT is a foil-faced, mass-loaded vinyl developed to meet moisture vapor transmission (MVT) resistance in liquefied natural gas (LNG) and cryogenic pipelines. It also serves as an acoustic barrier to assist in reducing noise.

Pipeline operating and ambient temperatures can create perfect conditions for moisture buildup inside insulated equipment. The low permeability properties of Quadzero MVT blocks moisture entry into the insulation system, maintaining its thermal performance, and preventing corrosion under insulation (CUI).

Quadzero MVT requires minimal effort to install and has been independently tested for noise and vapor transmission. As a strong vapor and noise barrier layer solution, Quadzero MVT can easily be adjusted to fit around pipe insulation systems. It is flexible, tear-resistant, and is available in various sizes and weights.

Quadzero MVT 1 lb/ft²	
Rw	28
Quadzero MVT 1.5 lb/ft²	
Rw	31
Quadzero MVT 2 lb/ft²	
Rw	34

Features

- Low vapour permeability - maintaining thermal performance of the insulation
- 2-in-1 solution: vapor barrier and noise barrier
- Simple to cut and install, providing flexibility around LNG pipes or other similar applications
- Resistant to weather and UV light
- Tear resistant with high tensile strength
- Available in various weights, widths, roll lengths and sheet sizes
- The foil facing makes it easy to bond onto other substrates using matching Tape PAP adhesive or equivalent

Specifications

Standard roll size: Width: 1370 mm (54 in) Length: 5 m (16 ft, 4 in)
Custom sizes and weights are available (depending on MOQ).

Application

- Liquefied natural gas (LNG) and cryogenic pipes
- Wrapped around other noisy pipes, valves and fan casings e.g. fluid or gas pulsation in chemical, petrochemical and waste water treatment plants
- Compressor jackets where acoustic and thermal treatment is required

TECHNICAL DATA SHEET

QUADZERO™ MVT

flexible foil-faced vapor barrier

Quadzero MVT is a foil-faced, mass-loaded vinyl developed to meet moisture vapor transmission (MVT) resistance in liquefied natural gas (LNG) and cryogenic pipelines. It also serves as an acoustic barrier to assist in reducing noise.

As an acoustic solution, Quadzero MVT reduces the impact of unwanted sound, offering a 2-in-1 barrier product to combat not only noise but also vapor transmission.

Quadzero MVT surface is constructed with a durable grade of 12 µm polyester / 25 µm foil / 12 µm polyester (PAP) with a reinforcement layer to provide extra strength and ripstop properties. The PAP surface covering stops plasticizer migration and leaching of other substances. Resistant to UV and weathering, the PAP facing also provides a good surface for easy adhesion. Quadzero MVT is ideally used over mineral wool, cellular glass, polyurethane, polyisocyanurate, phenolic, styrene and rigid fiberglass.

Quazdzero MVT can be installed in both cold and warm weather conditions, ranging from -40 ºF to 248 ºF. Designed for hot and cold LNG pipe applications to reduce noise and control vapour transmission whilst maintaining thermal performance and preventing corrosion under insulation (CUI).

Quadzero MVT requires minimal effort to install and has been independently tested for noise and vapor transmission. Quadzero MVT can easily be adjusted to fit around pipe insulation systems. It is flexible, tear-resistant, and is available in various sizes and weights.

applications

- Liquefied natural gas (LNG) and cryogenic pipes
- Ideally used over mineral wool, cellular glass, polyurethane, polyisocyanurate, phenolic, styrene and rigid fiberglass.
- Wrapped around other noisy pipes, valves and fan casings e.g. fluid or gas pulsation in chemical, petrochemical and waste water treatment plants
- Compressor jackets where acoustic and thermal treatment is required

features

- Low vapor permeability - maintaining thermal performance of the insulation
- No plasticizer or leaching through the PAP surface covering
- Can be installed in cold and warm temperatures ranging from -40 ºF to 248 ºF without deterioration
- Simple to cut and install, providing flexibility around LNG pipes or other similar applications
- Resistant to weather and UV light
- Tear resistant with high tensile strength
- Available in various weights, widths, roll lengths and sheet sizes
- The foil facing makes it easy to bond onto other substrates using matching PAP tape

HEALTH AND SAFETY, VOC & ODP STATEMENT

Quadzero MVT is non-toxic and safe to handle by methods prescribed in Safety datasheet. No Volatile Organic Compounds (VOC) are intentionally added to Quadzero MVT during its manufacture when evaluated according to definitions as applied under the Australia National Pollutant Inventory, The Council of the European Union, Council Directive 1999/13/EC or the USA EPA regulation 40 CFR 51.100(s). No Ozone depleting substances are used during the manufacture of Quadzero MVT.

SPECIFICATIONS

Colour	Silver (foil facing), and black
Available	Standard roll size: 1.22 x 4.6 to 9.1 m (4 ft x 15 to 30 ft) Barrier weight: 2.5 kg/m² (0.5 lb/ft²), 5 kg/m² (1 lb/ft²) 7.5 kg/m² (1.5 lb/ft²), 10 kg/m² (2 lb/ft²)
	Custom sizes available depending on MOQ

PRODUCT SPECIFICATIONS

Barrier Weight	Thickness	Standard Roll Size	Standard Roll Weight	Operating temperature range
2.5 kg/m² (0.5 lb/ft²)	1.2 mm (0.05 in)	1.22 x 9.1 m (4 ft x 30 ft)	27 kg (60 lb)	Continuous: -40 to 100 °C (-40 to 212 °F) Intermittent: -40 to 120 °C (-40 to 248 °F)
5 kg/m² (1 lb/ft²)	2.5 mm (0.1 in)	1.22 x 9.1 m (4 ft x 30 ft)	54 kg (120 lb)	
7.5 kg/m² (1.5 lb/ft²)	3.7 mm (0.15 in)	1.22 x 6.1 m (4 ft x 20 ft)	54 kg (120 lb)	
10 kg/m² (2 lb/ft²)	4.9 mm (0.19 in)	1.22 x 4.6 m (4 ft x 15 ft)	54 kg (120 lb)	

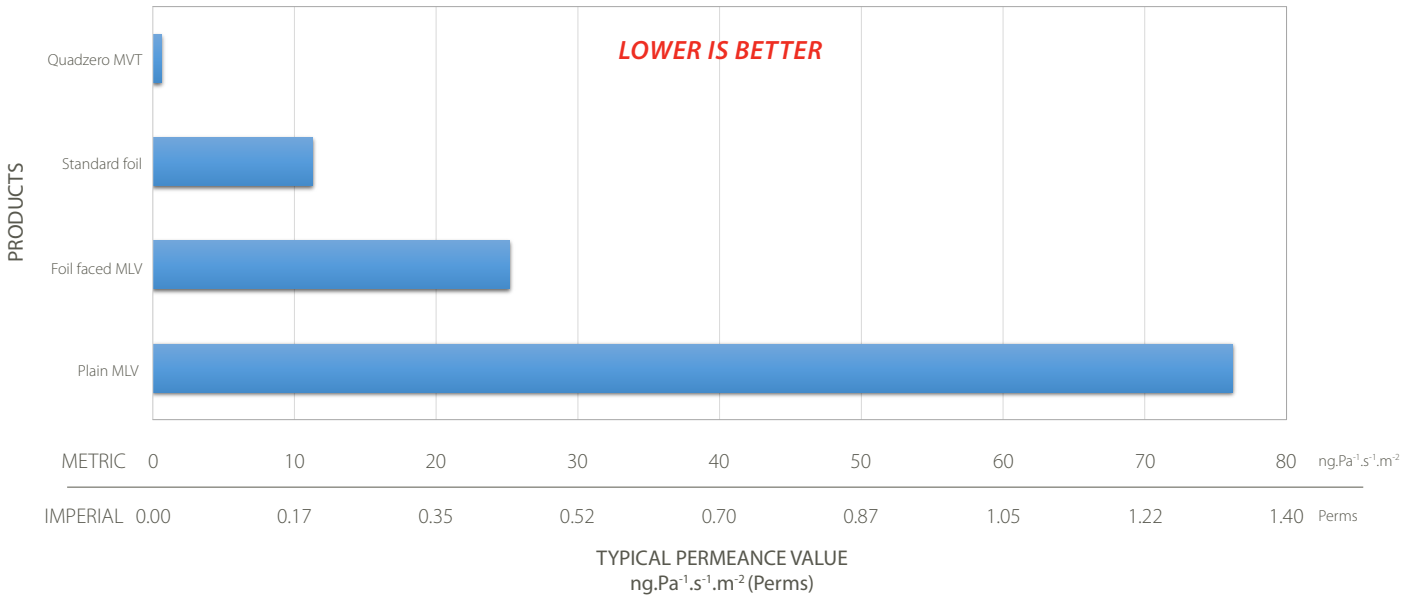
Tolerances: Length: -0/+50 mm (2 in), Width: -0/+5 mm (0.2 in), Thickness: ±0.5 mm (0.02 in), Weight: ±10%

Supplied untrimmed - means some surface coverings such as foils, film or fabric may overhang the ordered useable width

MATERIAL PROPERTIES

Test method	Property	Report no.	Results
ASTM E 96	Water vapor transmission & permeance	103095355MID-001B	0.65 ng. Pa^{-1}. s^{-1}. m^{-2} (0.011 Perms)
ASTM D638	Nominal tensile strength	26819JY	2.06 MPa
ASTM D638	Nominal Elongation		9.3%
ASTM D2240	Shore D hardness		14 Shore D
UL94 - HF/HBF	Flammability of plastic materials	27419BD2	Passes

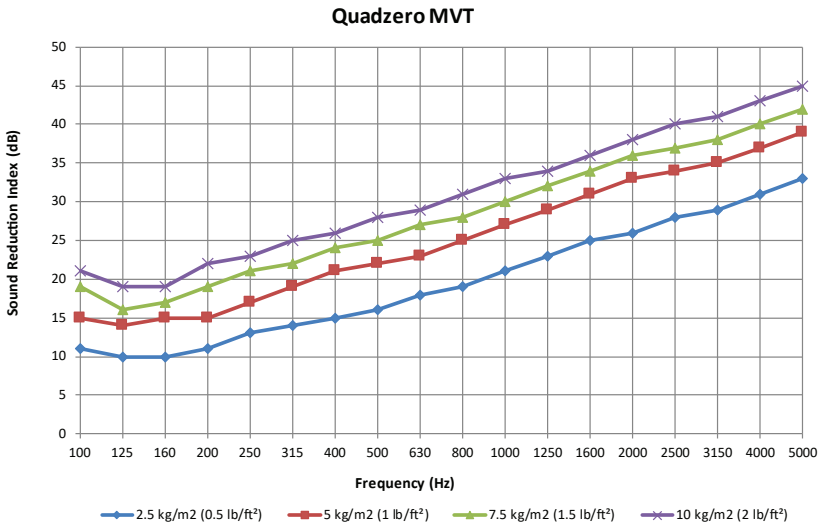
COMPARISON WITH OTHER SOLUTIONS



ACOUSTIC PERFORMANCE

Frequency (Hz)	2.5 kg/m² (0.5 lb/ft²)	5 kg/m² (1 lb/ft²)	7.5 kg/m² (1.5 lb/ft²)	10 kg/m² (2 lb/ft²)
100	11	15	19	21
125	10	14	16	19
160	10	15	17	19
200	11	15	19	22
250	13	17	21	23
315	14	19	22	25
400	15	21	24	26
500	16	22	25	28
630	18	23	27	29
800	19	25	28	31
1000	21	27	30	33
1250	23	29	32	34
1600	25	31	34	36
2000	26	33	36	38
2500	28	34	37	40
3150	29	35	38	41
4000	31	37	40	43
5000	33	39	42	45
R_w	21	26	30	32
STC	21	26	30	32

Tested to ASTM E90 at Riverbank Acoustical Laboratories, USA
Report Numbers: TL18-641, TL18-642, TL18-643 & TL18-644



ISO 15665 PIPE INSULATION TESTING

Barrier Weight	Test method	System Assembly	Report no.	Results
6 kg/m² (1.2 lb/ft²)	ISO 15665 (Group 2 Pipe Size)	Available on request	A 3041-1E-RA-002	ISO 15665: Class A2 & B2 NORSOK R-004: Class 6 & Class 7
6 kg/m² (1.2 lb/ft²) & 10 kg/m² (2 lb/ft²)	ISO 15665 (Group 2 Pipe Size)	Available on request	A 3041-4E-RA-002	ISO 15665: Class B2 & C2 NORSOK R-004: Class 7 & Class 8

Testing was conducted using Wavebar®

INSTALLATION GUIDE

QUADZERO™ MVT

COLD AND HOT PIPE INSTALLATION GUIDE

This installation guide provides recommendations to maximize the service life of Quadzero MVT for LNG and cryogenic pipe applications.

Quadzero MVT

KEY INSTALLATION REQUIREMENTS - COLD PIPES

- Attention to detail and good workmanship in cutting, applying and fixing the product on to the pipe is essential.
- Ensure pipe and pipe insulation work surface is clean and dry before installing product.
- Coverage of the pipe insulation being treated must be continuous.
- Coverage will vary depending on the pipe or insulation diameter.
- There should be no gaps at joints or edges and adequate overlaps must be applied according to the specification as the smallest gap at any joint will result in performance loss.
- Tape PAP should be applied on all joins to hold MVT in place, in lieu of metal straps for horizontal sections.
- Do not overstretch Tape PAP when applying, as this will create buckles and voids in the contact area.
- For cold applications, Quadzero MVT should be installed with silver PAP facing outward. Metal banding is optional once Tape PAP is applied.
- For optimal performance, allow at least a 50 mm to 100 mm overlap when wrapping around the pipe or insulation being treated. A tight seal around all joints and edges is critical to attain maximum performance.

KEY INSTALLATION REQUIREMENTS - HOT PIPES

- Attention to detail and good workmanship in cutting, applying and fixing the product on to the pipe is essential.
- Ensure pipe and pipe insulation work surface is clean and dry before installing product.
- Coverage of the pipe insulation being treated must be continuous.
- Coverage will vary depending on the pipe or insulation diameter.
- There should be no gaps at joints or edges and adequate overlaps must be applied according to the specification as the smallest gap at any joint will result in performance loss.
- Metal banding should be applied to fasten the MVT against the insulation. DO NOT SEAL ANY JOINTS USING TAPE PAP.
- For hot applications, Quadzero MVT should be installed foil side down – black barrier facing outward.
- For optimal performance, allow at least a 50 mm to 100 mm overlap when wrapping around the pipe or insulation being treated. A tight seal around all joints and edges is critical to attain maximum performance.

GENERAL GUIDELINE RECOMMENDATION

HOW TO MEASURE AND CUT MATERIAL

For Straight Pipe Sections

Apply the following formula to calculate and cut the required wrapping circumference (C).

Measure the outside diameter (OD) of the pipe that requires lagging.

Overlap (OL) is determined by the consultant / technical specification on the project.

C = 3.14 x (OD + (2 x T)) + OL

OD = Outside Diameter of the pipe or insulation being treated.

OL= Overlap for good acoustic seal

T = Thickness of barrier product being installed

Mark the calculated wrapping circumference (C) along the length of the roll and cut material with a utility knife or equivalent.

Always cut from the foil faced side of the material.

***Installation video can be found on our website - www.pyroteknc.com/services/install-videos/*

MEASURE AND CUT

- Roll out the product to an appropriate length and measure the coverage required to fit around the pipeline insulation.
- Refer to "How to measure and cut material" formula above.
- Place and wrap the 1st section onto the pipe work.
- Tape the overlapping joint to seal and secure the product.
- Wipe or rub the tape with firm pressure across the tape with a cloth or equivalent to smooth out any air bubbles or buckles.
- All joints along each pipe section must have a 50 mm overlap on bends and radius. All straight sections should have a 100 mm overlap.
- For cold pipe applications, continue wrapping each segment and join with Tape PAP. This will provide a vapour seal and will help eliminate corrosion under installation (CUI).
- For hot pipe applications, all joins to be held in place with metal banding to ensure any residual moisture in the insulation system can escape. Do not use Tape PAP for hot pipe applications.
- Always ensure that the overlaps are positioned to shed water so that an upper piece always overlaps/fits over a lower piece.
- When wrapping vertical pipes in cold and hot applications, metal banding is required due to the weight of Quadzero MVT.

REPAIRS AND DIFFICULT JOINS

- Puncture hole and tears can be easily fixed by placing a piece of Quadzero MVT patch over the affected areas.
- The patch size must be 2 X larger than the puncture / tear area to ensure a good overlap and acoustic seal.
- The patch perimeter must be sealed using Tape PAP.
- When treating bends, simply cut strips of Quadzero MVT and place over joins and seal using Tape PAP.

COLD APPLICATION INSTALLATION IMAGES

Measure length and circumference of pipe

Wrap cut section over the insulation

Ensure overlap is positioned to side or bottom of pipe to reduce water migration

Seal overlap join with Tape PAP

Measure bend section allowing for overlap

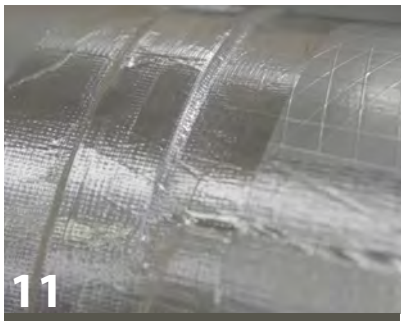
Cut out bend sections

Cut out straight section of bend

Wrap cut bend sections over the insulation

Measure and cut 50 mm strip for bend joints

Apply 50 mm strip on bends joints to ensure an acoustic and water tight seal



Seal strip in place with Tape PAP

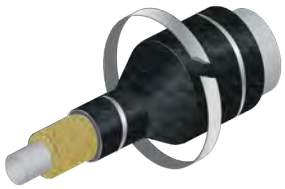
MVT installed and sealed on straight and bend sections

HOT APPLICATION INSTALLATION IMAGES

- Metal banding should be applied to fasten the MVT against the insulation.
- DO NOT SEAL ANY JOINTS WITH TAPE PAP. Metal banding will allow water, vapour and steam to escape.
- Sealing strip of 50mm to be apply on bends and radius to ensure a good acoustic and water tight seal.

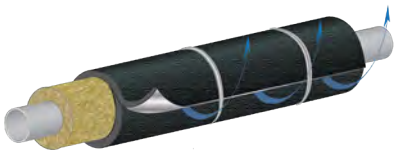
1

MVT installed around T-Sections with metal banding



2

Apply 50 mm overlap to reducing sections to ensure an acoustic and water tight seal



3

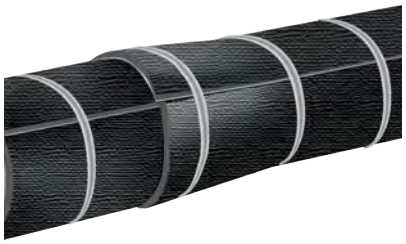
Cut and install straight pipes with metal banding to allow vapour to escape

4

Overlap eliminates rain water from penetrating through joins

5

Each section to be overlapped and installed with metal banding



6

Straight pipe with 100 mm overlap side of pipe to reduce water migration

WORKING HEALTH AND SAFETY

- Personal Protection Equipment (PPE) is recommended.
- Always follow, read and understand any information contained within the product technical datasheets and safety data sheets.
- If unsure, please consult with your local Pyrotek representative regarding the application of the product.

Note: This installation is suitable for professional and experienced users only.

NOTE: All information above only serves as a general guideline for the installation of Quadzero MVT around pipeline insulation in LNG and Offshore applications. This installation guide does not override any technical specifications written by consultants and engineers.

Please contact Pyrotek® for further information or detailed advice on your specific application.

BROCHURE

FLEXIBLE ACOUSTIC NOISE BARRIER

WAVEBAR AND QUADZERO RANGE

BUILDING - INDUSTRIAL - TRANSPORT - MARINE - OIL & GAS

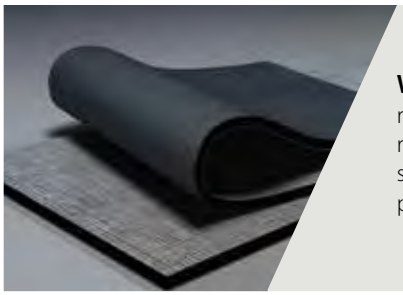
SOUNDPROOFING SOLUTIONS FOR ALL INDUSTRIES

pyroteknc.com

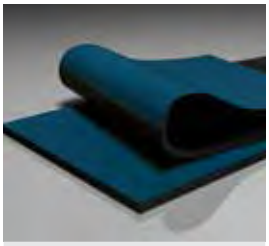
Pyrotek

MASS LOADED VINYL FOR ALL INDUSTRIES

The mass loaded vinyl (MLV) range has been uniquely developed by Pyrotek's world class engineering team. Offering superior acoustic transmission loss - Wavebar® and Quadzero™ are flexible reinforced noise barrier solutions that meet global market requirements in all industries including building, industrial, transport, marine and oil & gas.

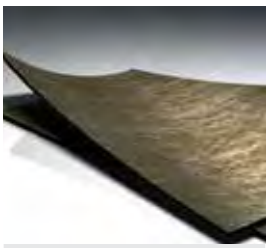


Wavebar® is a reinforced MLV noise barrier designed by Pyrotek to meet market requirements and effectively reduce noise transmission. Due to its flexible and tear resistant properties, Wavebar is suitable for various applications across all industries such as building, commercial, industrial and transport. Wavebar will help improve performance of a lightweight partition at critical frequencies.



Wavebar® NC

Wavebar® NC is a tear resistant noise barrier curtain with high tensile strength. The tarpaulin base fabric facing is used to withstand tough weather conditions in addition to being UV resistant. Able to withstand exposure to most chemicals and solvents, Wavebar NC is easy to hang or drape in long lengths – being the ideal choice for outdoor use, oil and gas industries and construction sites. It can also be combined with absorption materials, offering versatility in challenging noise environments. The tarpaulin base fabric facing is available in various colours.



Wavebar® dBX

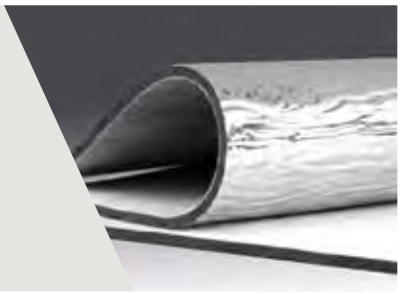
Wavebar® dBX is the latest alternative in noise barrier technology manufactured from thermoplastic recycled polymers. A self-extinguishing and low smoke emission noise barrier, Wavebar® dBX provides high-performance acoustic insulation that can be vacuum formed and easily moulded. This product is 100% recyclable and recommended for transport, building and industrial applications due to its strong characteristics.

Our Wavebar® and Quadzero™ range perform an important role as high-performance barriers where noise transmission issues need to be addressed. Typically stiff lightweight panels such as plasterboard, drywall, plywood and hollow core walls have a coincidence dip. A coincidence dip is the frequency at which the stiff panel vibrates in unison with the frequency of sound pressure waves. The frequency of the coincidence dip is dependent on the material's stiffness and internal damping properties causing a degradation in transmission loss. The Wavebar® and Quadzero™ range will eliminate the impact of the coincidence dip when installed in a structure, rendering it as a highly effective noise barrier.

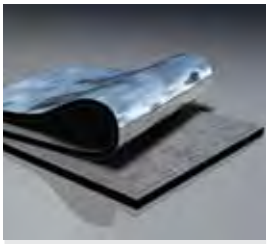
SUPERIOR ACOUSTIC TRANSMISSION LOSS

BETTER FLEXIBILITY EASY TO INSTALL

Quadzero™ is a flame resistant foil faced MLV offering superior acoustic transmission loss with high flame retardant properties. The reflective foil facing provides a low spread of flame surface covering for areas where higher fire specifications are required. Additionally, the dense, thin and strong physical characteristics make Quadzero suitable for building, industrial and transport.

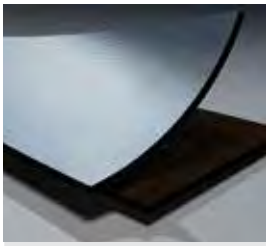


Quadzero™ NL is a foil faced barrier that is formulated to achieve the highest fire rating as an acoustic surface covering. It is durable, flexible and tear resistant, with a strong base fabric. This product offers optimum noise transmission loss with fire testing results that complies with international marine and rail standards. Quadzero NL is suitable for marine and rail carriages in walls, ceilings and under floor insulation, as it contains no ozone depleting substances, lead, unrefined oils or bitumen.



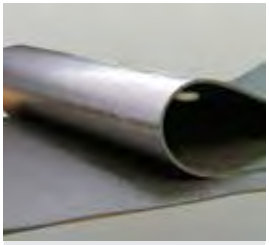
Quadzero™ NL

Quadzero™ dBX is a MLV laminated with reinforced aluminium foil, manufactured from thermoplastic recycled polymers that exhibits superior transmission loss. Meeting international standards for rail, transport and marine, Quadzero dBX has high fire resistant properties, a low spread of flame surface and low smoke development. This product is suitable for marine, transport and rail applications. Quadzero™ dBX is 100% recyclable.



Quadzero™ dBX

Quadzero™ MVT is a foil-faced, mass-loaded vinyl developed to meet moisture vapor transmission (MVT) resistance in liquefied natural gas (LNG) and cryogenic pipelines. It also serves as an acoustic barrier to assist in reducing noise. As an acoustic solution, Quadzero™ MVT reduces the impact of unwanted sound, offering a 2-in-1 barrier product to not only combat noise, but also vapor transmission.

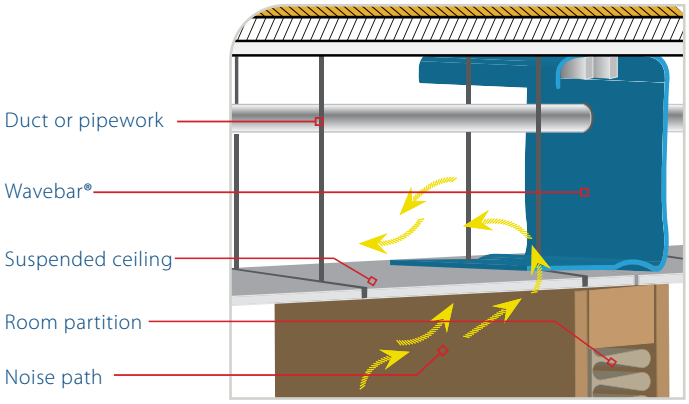


Quadzero™ MVT

IDEAL NOISE BARRIER SOLUTIONS FOR ALL MARKETS

Building - Commercial

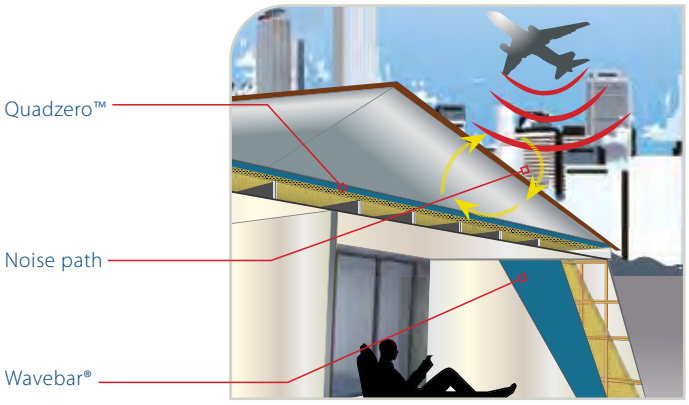
Wavebar® and Wavebar® dBX fitted in the plenum space above suspended ceilings and partition walls to avoid flanking noise.



Building - Residential

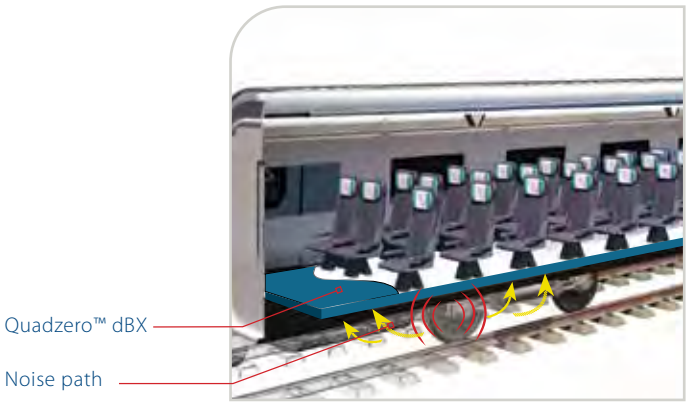
Quadzero™ is suitable for ceiling cavities due to its reflective and low spread of flame surface covering.

Wavebar® fitted between plasterboard walls for greater transmission loss. Improves performance at critical frequencies generated from urban and environmental noise impact.



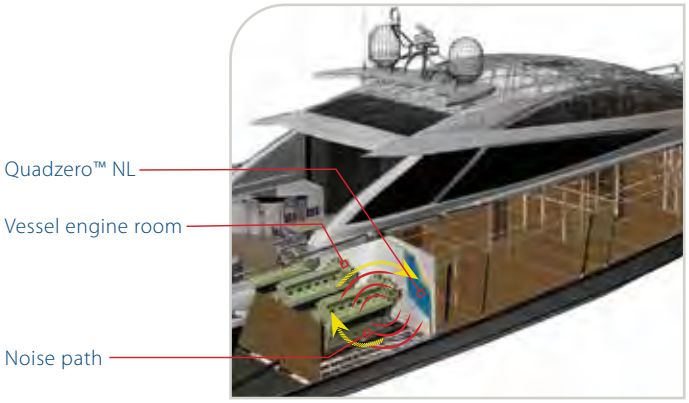
Transport

Quadzero™ NL and Quadzero™ dBX will effectively control sound transfer from external track, rail or engine noise into cabins and carriages. This durable product can be used without impacting carriage safety providing additional comfort to passengers.



Marine

Quadzero™ NL and Quadzero™ dBX can be installed in the wall linings, deckheads and bulkheads of marine vessels to reduce sound transmission emitting from the vessel engine room.



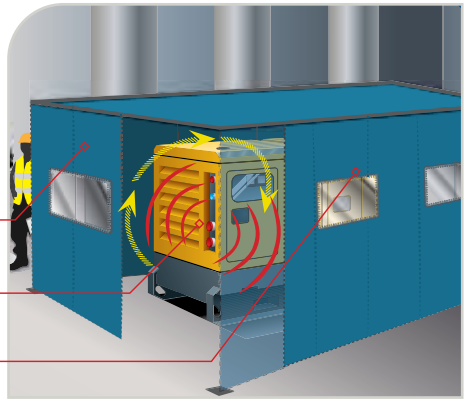
Wavebar® is weather resistant, contains no ozone depleting substances and complies with International standards for Volatile Organic Compound (VOC) emissions.

Industrial - Outdoor

Wavebar® NC can be conveniently draped over fencing as an acoustic barrier to reduce noise transmission around construction sites, building sites and mobile equipment.

Industrial - Indoor

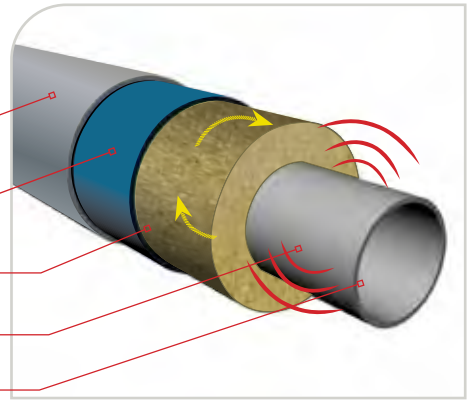
Wavebar® NC can be easily fabricated and sewn to make custom enclosures to reduce noise transfer from generator sets, plant rooms, printing machines and other heavy equipment.



LNG Pipes

Lagged around pipes, Wavebar® & Quadzero™ MVT are important for LNG (Liquid Natural Gas) pipe applications to prevent noise breakout.

Wavebar® complies to the ISO 15665 (Group 2 Pipe size) test method.



APPLICATIONS

Suited across a variety of applications, the mass loaded vinyl range offers superior acoustic transmission loss benefiting the following areas:

PRODUCT	TYPICAL AREAS OF USE
Wavebar®	• Home theatre and office partitions • Inside cavities, over lightweight walls and ceilings • Between the plenum chamber of a slab, the roof and adjoining partition walls
Wavebar® NC	• Noise curtain for indoor/outdoor industrial and construction sites • Enclosures for industrial equipment e.g. generators, engine rooms, punch presses
Wavebar® dBX	• Automotive cabin • Heavy transport and machinery • Acoustic doors
Quadzero™	• Building construction • Industrial cladding • Roof cavities
Quadzero™ NL	• Train and tram carriages • Marine deckheads and bulkheads • Marine engine room
Quadzero™ dBX	• Train and tram carriages • Marine engine room deck • Inside cavities or over lightweight walls, ceilings and floor constructions
Quadzero™ MVT	• Liquefied natural gas (LNG) and cryogenic pipes • Valves and fan casings • Compressor jackets

TESTED TO A RANGE OF GLOBAL FIRE STANDARDS

FEATURES	BENEFITS
• Flexible and easy to install • Isolate cavities, over lightweight walls and ceiling constructions • Reinforced fabric strength	• Reduces noise transfer through lightweight partition walls and ceilings • Reduce cross-talk noise and ensure privacy • Longevity
• Can be designed as a partial or complete enclosure around noise sources • Manufacturing options with stainless steel eyelets and hook-and-loop fasteners • Portable acoustic curtain easily draped over fencing	• Curtains are durable and address environmental noise impact • Customised for unique purposes and difficult sites • Reduce noise transmission around construction areas and mobile equipment on site
• Low smoke emission - contains no ozone depleting substances • Can be easily moulded into linings • Thermoplastic properties	• Safe and self-extinguishes in heavy vehicle, road/ engine bay • 100% recyclable • Rail carriage will hold its integrity for longer in case of emergency
• Fire resistant foil properties • Resistant to water, oil and natural weather conditions • Reflective foil faced surface	• Complies to international building standards • Joins are easily taped for quick installation • Free from lead, odour producing oils and bitumen
• Highest flame retardant properties • Self-extinguishes upon removal of flame • Aluminium foil faced surface	• Suitable for use in high risk areas including marine & offshore • Meets international marine & rail standards • Used where high fire standards are required
• Flame retardant properties • Reinforced aluminium facing • Suitable for use where thermoplastic materials are required	• Durable with low spread of flame • 100% recyclable • Aluminium faced materials can be easily joined using foil tape
• Low vapor permeability • Tear resistant with high tensile strength • Suitable for use with LNG pipes	• 2-in-1 solution: vapor barrier and noise barrier • Blocks moisture entry - maintaining thermal properties • Flexibility for easy install

Pyrotek

pyroteknc.com

With over 40 years of noise control experience, Pyrotek® is a well trusted name for performance improving technical solutions. We offer global resources with dependable local support.

80+ locations in 30+ countries

- Six research and development centres
- Five engineering centres
- Global headquarters in Spokane, Washington, USA

pyroteknc.com

CONTACT DETAILS
for further information or to see your local office
please visit our website

Pyrotek endorse forest sustainability and the preservation of natural environment. We procure the highest quality materials from suppliers who hold FSC (Forest Stewardship Council) Certification and PEFC (Programme for the Endorsement of Forestry Certification) amongst other certification programmes.

VIBRATION CONTROL

Decidamp® SP80 effectively absorbs and dissipates vibrational energy from the flexural stress of the base structure to reduce panel coincidence and resonance effects.

DECIDAMP® SP80

Decidamp® SP80 is a lightweight, non-toxic structural damping material that is suitable for exterior and interior use and anywhere that noise can impact structural longevity, comfort and function.

Decidamp® SP80 is a superior extensional damping compound and is suitable to be applied directly to structures (steel, fibreglass and alloys) where sound damping is required. Available in grey (standard) or other colours can be ordered depending on MOQ.

Fast drying formula

Specifications

Packaging	20 kg pail
	5 gal pail
	300 kg drum
	55 gal drum

Features

- Advanced, non-sag formulation
- Excellent adhesion to most surfaces
- Water-based - non toxic, solvent free, low VOC
- Excellent flame resistance, ignition retardant
- Designed for damping across broad temperature and frequency range
- Reduces resonant vibration and eliminates tinniness and ringing
- Easy application and clean up (Sprayable)
- Can be painted/gel coated over, once cured
- Cures to chip resistant finish

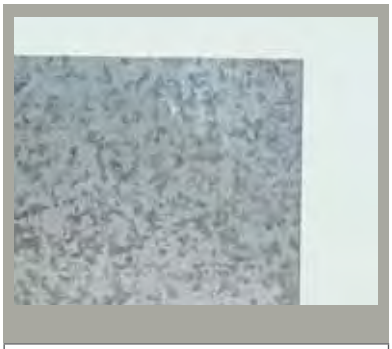
Application

- Oil and gas: pipe cladding
- Building: metal roofing, floors wall cladding
- Enclosures for machinery and industrial equipment
- HVAC, plant rooms, substations
- Stainless steel applications (sinks, bowls)
- Garbage chutes and other utilities where suitable

SOUNDSTEEL MPM

Soundsteel MPM is a fully damped steel composite comprising two outer layers of steel that is laminated together using a layer of a viscoelastic polymer. The function of the viscoelastic interlayer is to damp disturbing structure-borne sound.

Soundsteel MPM can be used in severe environments where other damping materials cannot withstand. When exposed to harsh environments, SS316 offers considerably high heat and corrosion resistance when compared to other grades of stainless steels.



Standard sheet size:
1220 mm x 2440 mm

Custom sizes and shapes available depending on MOQ

Features

- Able to fabricate using conventional machine shop tools
- Cut, form and join just like plain aluminium
- Maximum damping with minimum thickness

SOUNDALLOY MPM

Soundalloy MPM is a damped aluminium composite comprising two layers of aluminium laminated together using a layer of a viscoelastic polymer.

Soundalloy MPM is free from resonance and coincidence phenomena which often detract from the performance of other acoustic insulation materials.

Soundalloy MPM can also be used in severe environments which other materials cannot withstand.

Standard sheet size:
1200 mm x 2400 mm

Custom sizes available depending on MOQ

Features

- Various configurations of metal thicknesses
- Able to be die cut and formed into complex shapes
- Able to fabricate using conventional machine shop tools

Application

Soundsteel MPM and Soundalloy MPM can be used as metal claddings for pipes in the LNG industry, in engine rooms for high-speed craft/vessels, machinery equipment, compressors, or generator set enclosures.

TECHNICAL DATA SHEET

DECIDAMP® SP80

water-based vibration damping compound

Decidamp® SP80 is a fast drying, water-based viscoelastic vibration damping compound.

The advanced formula is optimised to suit building applications providing an acoustic improvement of structures that are exposed to vibrations and impact noise.

Developed with a special polymer technology, Decidamp® SP80 is a lightweight, non-toxic damping material that is suitable for exterior and interior use. It can be applied almost anywhere that vibration can impact structural longevity, comfort and function.

With exceptional fire properties and compliance to international fire codes, it performs across several industries and is now developed for building applications. Decidamp® SP80 is easy to apply by simply spraying, rolling or trowelling onto surfaces. Once dry, the cured film is UV, water and chip resistant and effectively damps vibration.

Decidamp® SP80 is a superior extensional damping compound and is suitable to be applied directly to structures (steel, fibreglass and alloys) where vibration damping is required.

applications

- Metal roofing, floors and wall cladding
- Enclosures for machinery and industrial equipment
- HVAC, plant rooms and substations
- Stainless steel applications (sinks, bowls)
- Hospital equipment
- Whitegoods and dishwashers
- Back of house, garbage chutes, and utilities
- LNG pipe

features

- Advanced, non-sag formulation
- Excellent adhesion to most surfaces
- Water-based, non-toxic, solvent-free, and low VOC
- Excellent flame resistance, ignition retardant
- Designed for damping across broad temperature and frequency range
- Reduces resonant vibration and eliminates tinniness and ringing
- Easy application and clean up (sprayable)
- Can be painted/gel coated over once cured
- Cures to a chip-resistant finish
- Fast drying formula

SPECIFICATIONS

Colour	Grey (standard colour) Other colours available depending on MOQ
Available	Pail: 20 kg, 5 gal
	Drum: 300 kg, 55 gal

PRODUCT SPECIFICATIONS

Colour	UOM	Weight	Service temp range (max short term)	pH	Chemical resistance			
Grey (Standard)	20 kg Pail	1.8 kg/m²/mm DFT	-40 °C to 120 °C (-40 °F to 248 °F)	8	UV excellent	water very good	petrol good	diesel good
	5 gal Pail							
	300 kg (55 gal) Drum							

To achieve a desired dry film thickness (DFT), provision for material shrinkage of up to 15% on average should be included when applying wet coating.

When coating thickness requirement is not specified, general recommended coating thickness (dry film) is >= 1.0 x T for steel, >= 0.5x T for aluminium, >= 0.3 x T for FRP, where T = substrate thickness.

Other thicknesses may be installed to achieve desired damping performance.

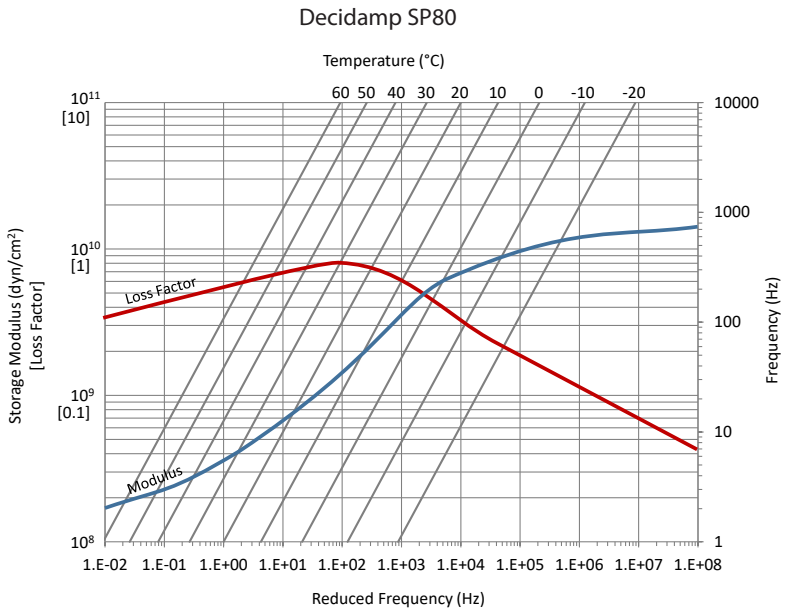
Storage: Store between 10 °C to 45 °C (50 °F to 113 °F). Do not freeze.

Shelf Life: 36 months from receiving goods (stored under recommended conditions).

MATERIAL PROPERTIES

Test Method	Property	Report No.	Results
BS 476 Part 6	Fire propagation	376684	Complies with Class 0
BS 476 Part 7	Surface spread of flame	376685	
BS 476 Class 0 summary	Surface spread of flame Fire propagation	376686	
AS 1530.3	Flame Propagation (Spread of Flame Index), Smoke Development Index	21-005255	Complies with Australian Building Code Standards for other materials/locations/ insulation materials. Spread of Flame Index = 4 Smoke Developed Index = 4
UL94	Flammability of plastic materials	29516AC1	HF-1, V-0
FMVSS-302	Flammability of interior materials	29516AC2	Complies to the requirements of US (DOT) Department of transportation for occupant compartments of motor vehicles
ISO 10140-2	Airborne noise insulation of 0.42 mm corrugated metal roofing with and without treatment of 1 mm (DFT) Decidamp SP80	T1822-1 & T1822-2	Untreated R_w (C; C_{tr})/STC = 18 (-1; -2)/18 Treated R_w (C; C_{tr})/STC = 23 (-0; -2)/24
ISO 10140-5	Rainfall noise insulation of 0.42 mm corrugated metal roofing with and without treatment of 1 mm (DFT) Decidamp SP80		Untreated L_{IA} = 74.5 Treated L_{IA} = 64.3
ISO 4624	Pull-off test for adhesion	33018BD	≥ 0.68 N/mm²

ACOUSTIC PERFORMANCE



Tested to ISO 6721-5:1996
Report Number: 12716AR

How to read a reduced frequency nomogram:

1. *Start by selecting the frequency (Hz) on the right-hand vertical axis.*
2. *Follow this value horizontally to the left to where the diagonal temperature isotherm intersects.*
3. *Draw a vertical line through the frequency and isotherm intersection, find the point where this line intersects the modulus and loss factor curves.*
4. *Draw horizontal lines from these points to the left-hand vertical axis to read the values.*

ACOUSTIC DATA: SYSTEM LOSS FACTOR

Temperature (°C)	Application ratio of Decidamp® SP80 DFT on 1 mm steel (Product thickness: Substrate thickness)		
	1:1	2:1	3:1
15	0.07	0.23	0.38
20	0.04	0.15	0.24

Tested to ISO 6721-3:1994 | Report Number: 27818AR

0575

SOUNDSTEEL® MPM

constrained layer, viscoelastic steel sandwich laminate

Soundsteel MPM is a fully damped steel composite comprising of two outer layers of steel laminated together using a layer of a viscoelastic polymer to form the laminate. Using the "constrained layer" principle, the function of the viscoelastic interlayer is to damp disturbing structure-borne sound.

Soundsteel MPM is free from resonance and coincidence phenomena which often detract from the performance of other acoustic insulation materials.

Soundsteel MPM can be used to fabricate acoustic doors, laundry and garbage chutes, ducts, enclosures, extraction hoods, and automotive components such as valve covers & oil sumps. Because of the steel base material, Soundsteel MPM can be used in severe environments where other damping materials cannot withstand.

The standard product is supplied with an electro-galvanised finish, and available in various metals and surface finishes. Using electro-galvanised, cold-rolled, low carbon steel allows the laminate to be used as a structural material in equipment construction.

Soundsteel MPM is also available with a choice 304 and 316 stainless steel grades, with a surface finish of either polished, brushed or polyethylene (PE) coating for additional scratch resistance. When exposed to harsh environments, SS316 offers considerably high heat and corrosion resistance when compared to other grades of stainless steels.

Note: Powder coated panels should not be bent. Bending should be completed on plain panels and painted on site. We recommend conducting trials on small sample pieces first.

VOC, ODP, HEALTH AND SAFETY

Soundsteel MPM is non-toxic and safe to handle by methods prescribed in the Safety Data Sheet.

SPECIFICATIONS

Colour	Plain, plain galvanised finish, or powder coated
Available	Standard sheet size: 1.22 x 2.44 m (4 x 8 ft) Standard thicknesses: 1.2, 1.6 and 2 mm (0.05, 0.06 and 0.08 in) Various configurations of metal thicknesses available from 1 to 6 mm (0.04 to 0.2 in)
	Custom sizes, colours and/or thicknesses available depending on MOQ

applications

- Engine rooms for high speed craft/vessels
- Machinery and equipment, compressor and generator set enclosures
- Acoustic hoods and chutes
- Conveyor systems
- Crushers / Granulators
- Coin counters
- Air conditioner casings
- Automotive sumps and panels
- Acoustic wall panels and doors
- LNG cladding

features

- Lightweight while providing maximum damping performance even at minimum thickness
- Complies to IMO FTP 2010 - low spread of flame
- Can be used as part of the "main structure"
- Able to cut, die form into complex shapes and join just like plain aluminium
- Insulates against airborne sound, impact and vibration
- Able to be painted & powder coated - best results from the manufacturer for powder coating
- Effective "in-structure damping"
- No need for external damping materials
- Reduces or eliminates the need for the use of external isolators
- Broad temperature range: -40 to 110 ºC (-40 to 230 °F)
- Able to fabricate using conventional machine shop tools
- Available with a choice of polished, electro-galvanised, brushed or polyethylene (PE) coated surface finishes

PRODUCT SPECIFICATION

Product	Thickness	Standard sheet size	Approximate Surface Density	Transmission Loss	Recommended Maximum Service Temperature
Soundsteel MPM 1200	1.2 mm (0.05 in)	1.22 x 2.44 m (4 x 8 ft)	8.7 kg/m² (1.8 lb/ft²)	Rw 29 / STC 29*	110 °C (230 °F)
Soundsteel MPM 1600	1.6 mm (0.06 in)		11.8 kg/m² (2.4 lb/ft²)	Rw 30 / STC 30**	
Soundsteel MPM 2000	2 mm (0.08 in)		14.9 kg/m² (3.1 lb/ft²)	Rw 33 / STC 33*	

Tolerances: Dimensions & Weight: ±10%. Other grades/thicknesses are available, please enquire for more information.

**Published transmission loss results have been calculated using transmission loss prediction software with a general tolerance of ±3 dB. Full prediction data can be shared upon request.*

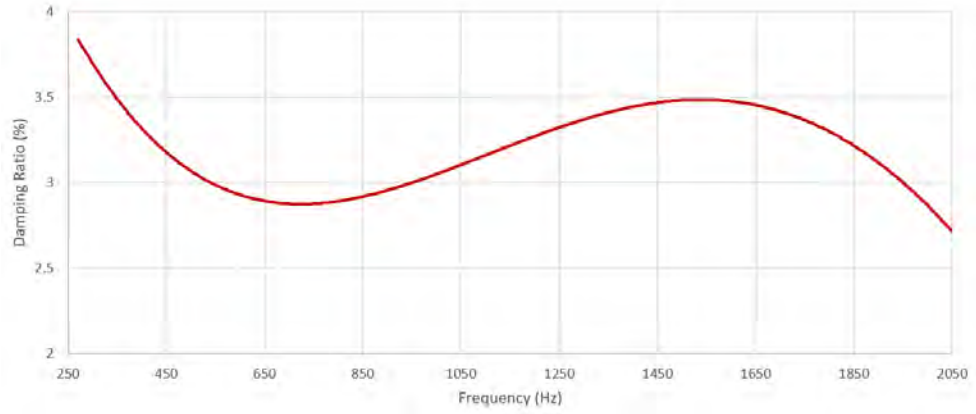
***Test report ATF-142*

MATERIAL PROPERTIES

Test method	Property	Report no.	Results
IMO FTP Annex 1 Part 5	Surface flammability	394458	Complies for bulkhead, walls, floors and ceiling linings
IMO FTP Annex 2	Smoke and toxicity	394458	
MED B	EC Type Certificate (Module B) for Marine Equipment Directive	MEDB000082N	
MED D	EC Type Certificate (Module D) for Marine Equipment Directive	MEDD000028J	Complies

**Soundsteel MPM 1.6 mm thickness*

ACOUSTIC PERFORMANCE



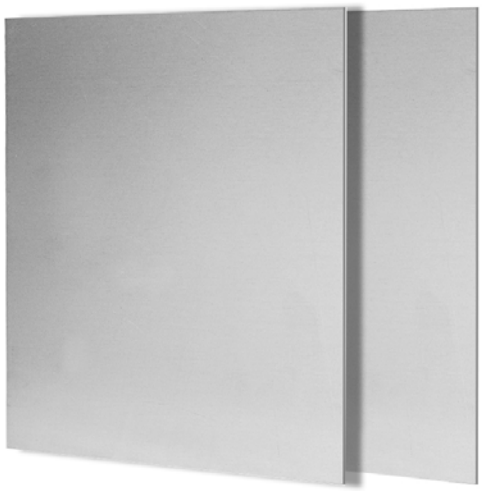
Results for Soundsteel® 1.6 mm
Test Report 31421CD

For further information and contact details, please visit our website pyroteknc.com

0575

SOUNDALLOY® MPM

constrained layer metal composite



Soundalloy MPM is a damped aluminium composite comprising two layers of aluminium laminated together using a layer of a viscoelastic polymer to form the laminate. The function of the viscoelastic interlayer is to damp structure-borne sound.

Soundalloy MPM is free from resonance and coincidence phenomena which often detract from the performance of other acoustic insulation materials. And because of the aluminium base material, Soundalloy MPM can be used in severe environments which other materials cannot withstand.

The product can be used to fabricate acoustic doors, laundry & garbage chutes, ducts, enclosures, extraction hoods, and automotive components such as valve covers & oil sumps. Using aluminium sheet also allows the laminate to be used as a structural material in equipment construction.

Other metals such as stainless steel and EG steel can be substituted for aluminium.

Note: Powder-coated panels should not be bent. Bending should be completed on plain panels and painted on site. We recommend conducting trials on small samples pieces first.

VOC, ODP, HEALTH AND SAFETY

Soundalloy MPM is non-toxic and safe to handle by methods prescribed in the Safety Data Sheet.

SPECIFICATIONS

Colour	Silver
Available	Standard sheet size: 1.2 x 2.4 m (3.9 x 7.9 ft) Standard thicknesses: 1.6 and 2.1 mm (0.06 to 0.08 in) Various configurations of metal thicknesses available from 1 to 6 mm (0.04 to 0.2 in)
	Custom sizes, colours and/or thicknesses available depending on MOQ

applications

- Engine rooms for high-speed craft and vessels
- Machinery, equipment, compressor and generator set enclosures
- Acoustic hoods and chutes
- Conveyor systems
- Crushers / Granulators
- Coin counters
- Air conditioner casings
- Automotive sumps and panels
- Acoustic wall panels and doors
- LNG cladding

features

- Maximum damping performance even at minimum thickness
- Complies to IMO FTP 2010 - low spread of flame
- Can be used as part of the "main structure"
- Able to cut, die form into complex shapes and join
- Insulates against airborne sound, impact and vibration
- Can be painted & powder coated - best results from the
- manufacturer for powder coating
- Effective "in-structure damping"
- No need for external damping materials
- Reduces or eliminates the need for the use of external isolators
- Lightweight damped structures
- Broad temperature range: -40 to 110 °C (-40 to 230 °F)
- Able to fabricate using conventional machine shop tools

PRODUCT SPECIFICATION

Product	Thickness	Standard sheet size	Approximate surface density	Transmission loss	Recommended maximum service temperature
Soundalloy MPM 1600	1.6 mm (0.06 in)	1.2 x 2.4 m (3.9 x 7.9 ft)	4.2 kg/m² (0.9 lb/ft²)	Rw 23 / STC 23*	110 °C (230 °F)
Soundalloy MPM 2100	2.1 mm (0.08 in)		5.5 kg/m² (1.1 lb/ft²)	Rw 25 / STC 25*	

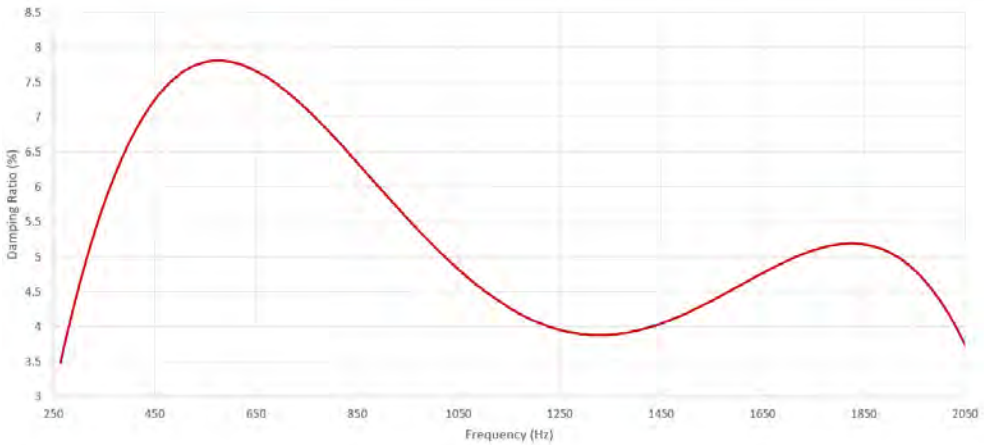
Tolerances: Dimensions & Weight: ±10%. Other grades/thicknesses are available, please contact your local Pyrotek representative for more information.

**Published transmission loss results have been calculated using transmission loss prediction software with a general tolerance of ±3 dB. Full prediction data can be shared upon request.*

MATERIAL PROPERTIES

Test method	Property	Report no.	Results
IMO FTP 2010	Surface flammability	Resolution MSC.307(88) Annex 1 Part 5 323596	>50.5 kW/m² >30.3 MJm⁻² <0.01 kW <0.01 MJ Meets all low flame spread requirements for bulkhead, wall, ceiling and floor coverings
MED B	EC Type Certificate (Module B) for Marine Equipment Directive	MEDB000082M	Complies for Bulkhead, walls and ceiling linings. USCG Type approval granted.
MED D	EC Type Certificate (Module D) for Marine Equipment Directive	MEDD000028J	

ACOUSTIC PERFORMANCE



Results for Soundalloy® 1.6 mm
Test Report 31521CD

For further information and contact details, please visit our website pyroteknc.com

INSTALLATION GUIDE

DECIDAMP® SP RANGE

Decidamp® SP range is a high-performance, fast drying, water-based, viscoelastic vibration damping compound specially formulated for easy application and maximum performance.

WORK HEALTH AND SAFETY

Gloves, protective goggles, respiratory protective equipment, protective clothing and any other appropriate safety equipment based on local health & safety requirements and safe work practice must be worn by the applicator.

KEY INSTALLATION REQUIREMENTS

Surface Preparation

This product is specially formulated to provide high adhesion to difficult substrates such as uncoated aluminium, however adequate surface preparation is essential.

- Remove any dust, dirt, oil, grease, rust, mould-release agent, etc. from the surface using a suitable solvent.
- Abrading the surface by wire brushing, sandblasting or abrasive paper is recommended for highly polished surfaces.
- On steel substrates, surface priming is recommended to prevent flash rusting.

METHODS OF APPLICATION

Decidamp® SP range can be applied using the following methods:

- **Trowel:** Simply apply and smooth as required.
- **Brush:** For brush applications, we recommend adding 0.3% of water by weight per kg of product. This will assist in easier and smoother application. Use a wide 100 mm (3.9 in) thick nylon bristle brush. Keep brush well loaded with Decidamp and use short strokes, applying a thick coat of approximately 2 mm (0.08 in). Avoid "painting" back and forth as this will cause the coat to become too thin.
- **Roller:** Used where high film build is not required, or for levelling and finishing an installation. Can be used to apply a final coat over surface defects. For roller applications, we recommend adding 1% of water by weight per kg of product. This will aid in an easier and smoother application. Using a short nap cloth roller, roll with short strokes, and try to avoid rolling back and forth, as this might cause the coat to become too thin. Use a light brush to "tip-off" the stipples if desired.
- **Air-assisted and Airless spray systems:** Please see page 3 for the recommended spray system for the application of Decidamp® SP range.

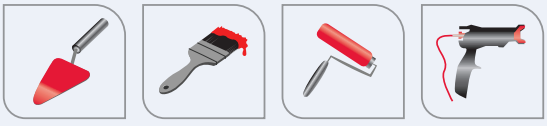
These advanced formulas were developed for acoustic improvement of structures that are exposed to vibration and impact.

The Decidamp SP range consists of highly-effective damping compounds that reduce vibration and minimise radiated structure-borne noise.

applications

- Marine: hulls, decks, deckheads and bulkheads
- Machinery and industrial equipment enclosures
- HVAC, plant rooms, substations
- Exit ways, smoking areas, stairwells
- Rail: locomotives, carriages, high-speed trains
- Automotive, trucks and bus underbodies
- Heavy earthmoving equipment
- Stainless steel applications (sinks, bowls)
- Hospital equipment
- Whitegoods and dishwashers
- Metal floors, deck roofing, wall cladding
- Garbage chutes

Trowel | Brush | Roller | Spray



Ensure proper preparation, mixing and application for best results. Decidamp® SP range should always be applied to surfaces that are clean, dry and free of contaminants.

MIXING & APPLICATION

- Mix thoroughly before application using a ribbon or paddle mixer as shown. The product should be mixed until it is a smooth, creamy consistency.
- If required, the viscosity of the product can be altered by the addition of 0.3% of water by weight per kg of product.
- Apply above ambient temperatures of 10 °C (50 °F).

APPLICATION RATE & COVERAGE

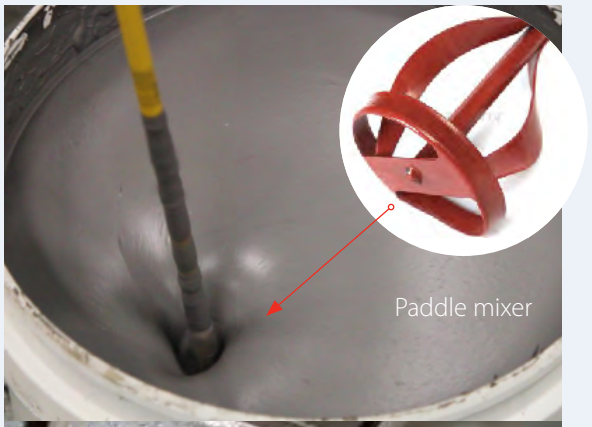
- Apply as a 2 mm (0.08 in) wet film thickness (WFT).
- Use of a tack coat is recommended: 0.5 mm (0.02 in) first coat.
- Decidamp SP150: Installation on maritime vessel to be done at maximum nominal thickness of 10 mm (0.4 in) DFT. Approved for use as paint systems on a metallic substrate with thickness of at least 3 mm (0.12 in).
- It is important to apply evenly to ensure proper curing and reduce waste.
- Use of thermometer, hygrometer or humidity meter is recommended for monitoring application conditions. High-temperature or low humidity conditions may lead to crack formation.
- Surface defects can be avoided by reducing applied wet film thickness to accommodate poor application conditions.
- Cracked coating can be remedied by application of an additional coat applied to the affected area.
- Excessively cold or high humidity conditions may lead to sagging. Assisted drying may be required.
- Ensure application is adequately dry before additional coating is added.
- Lower WFT application will have a faster drying time and will allow for a quicker re-coat time.
- The final thickness of the application will vary based on your requirement.

When the thickness requirement is unknown or not specified, the following is provided as a general guide:

- Dry coating thickness steel: >1.0 x substrate thickness.
- Dry coating thickness aluminium: >0.5 x substrate thickness.
- Dry coating thickness FRP: >0.3 x substrate thickness.

To achieve a desired dry film thickness, provision for material shrinkage of up to 15% on average should be included when applying wet coating.

Resistant to water spray or immersion up to 12 hours, however, if this is anticipated, Decidamp® SP range should always be sealed with a suitable commercial waterproof sealant/coating, applied well after complete curing of the material.



DRYING AND CURING

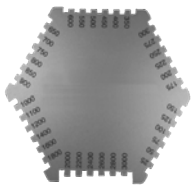
- For best results, allow the compound to dry naturally. Forced drying may result in cracking of the coat.
- In cold conditions, the substrate can be warmed to aid drying.
- Forced ventilation can be used to help coating dry. Air movement should be both in/out during drying process.
- It is recommended before install that a small section of the area is applied with the product to test and determine the adequacy of drying conditions.

The cure time of 2 mm Decidamp® SP80, SP150, SP450. SP500			
Temperature	**Humidity**	**Dry to Touch**	**Fully Cured**
20 - 25 °C (70 - 75 °F)	30 - 45%	2 to 3 hours	14 to 24 hours
26 - 30 °C (80 - 85 °F)	30 - 45%	1 to 2 hours	12 to 24 hours
31 - 36 °C (90 - 95 °F)	30 - 45%	1 to 2 hours	12 to 20 hours

Please note: drying and curing times are only general guides. Testing should be performed by the end user, as end-use conditions (thickness of application, substrate type, temperature and humidity) will affect drying times.

WET GAUGE FILM THICKNESS CHECK

To ensure the correct film build is achieved, a wet film gauge can be used (as shown on the right).



RECOMMENDED SPRAYING SETUPS

Below displays typical configurations - other configurations and settings can also be suitable

	Airless Spray System		Air-Assisted Spray System	
	Graco Xtreme 70:1 pneumatic pump	Wagner ProSpray 3.39	Pneumatic piston pump	Bottom entry pressure pot
Gun type	XTR-7 airless spray guns	Wagner Vector Pro or Grip airless gun	GNG/T3005 texture gun, bottom entry	GNG/T3005 texture gun, bottom entry
Operating line pressure *"Hose pressure rating to match requirement of pump"*	Typically 207 bar (3000 psi) for ¾"hose with up to 3.5m³/min airflow. *Higher pressure required for longer hose lengths.*	Up to 230 bar (3335 psi)	24 to 30 bar (350 to 440 psi)	2 to 4 bar (30 to 60 psi)
Length of hose from pump to gun	**SP150, SP450 & SP500:** Up to 30 m (98.4 ft) **SP80 only**: Up to 15 m (49.2 ft)	15m (50 ft)	Up to 30 m (98.4 ft)	5 to 20 m (16.4 to 65.6 ft)
Diameter of hose	9.5mm (3/8") ID	12.5 mm ID (1/2" ID)	19 mm ID (3/4" ID)	19 mm ID (3/4" ID)
Whip	0.5 m (1.6 ft) whip 6 mm (0.24 in) hose *Higher pressure required when whip used*	1 m x 9.5 mm (3.3 ft x 3⁄8 in.)	-	-
Diameter of nozzle	**Reversible tips:** 0.5 to 0.6 mm (0.02 to 0.02 in) (Reversible tips 519 to 523)	Reversible tip: 0.43 to 0.74 mm (0.017 to 0.029 in.)	2 to 6 mm (0.08 to 0.24 in)	2 to 6 mm (0.08 to 0.24 in)
Pump type	Ratio 70:1 piston pump	2.68 kW rated brushless DC motor	Ratio: 4:1or greater Flow: 3 L/min 2-ball piston pump	20 litre (5 US gal) bottom entry pressure pot
Air pressure requirement	Approx. 3 bar (32 to 45 psi)	Site-air not required	Up to 7 bar (100 psi)	**Pressure in gun:** up to 6 bar (85 psi) **Pressure in pot:** 2 to 4 bar (30 to 60 psi)

PRODUCT INFORMATION

Product	Decidamp® SP80	Decidamp® SP150	Decidamp® SP450	Decidamp® SP500
Volume solids	70 - 75%	70 - 75%	70 - 75%	70 - 75%
Weight kg/m²/mm	1.8 kg/m²/mm DFT	1.6 kg/m²/mm DFT	1.5 kg/m²/mm DFT (1.6 g/ml wet)	1.3 kg/m²/mm DFT
Consumption for 1 mm DFT *Includes allowance for up to 15% material shrinkage*	2.1 kg/m²	1.85 kg/m²	1.9 kg/m²	1.5 kg/m²
1mm DFT (dry film thickness) coverage using 20kg pail	9.5 m²	10.5 m²	10.5 m²	13 m²

Substrates: Can be used on steel, aluminium, GRP/FRP laminate, GRP/FRP.

Water-resistant: Decidamp® SP range varieties are water-resistant, however, where regular exposure is expected, Decidamp® SP range should always be sealed with a suitable commercial waterproofing sealant/coating, applied well after complete curing of the material.

Shelf life and Storage:

- 36 months from date of manufacture under recommended storage conditions.
- Product to be stored and transported between 10 to 45 °C (50 to 113 °F). **Do not allow to freeze.**
- Partially used pails of the product can be reused if sealed firmly after first use. The opened product should be resealed and used within 2 months. **Frequent opening of the seal must be avoided.**

Clean up and Safety:

- Equipment easily cleaned with water
- Personal Protection Equipment (PPE) including eye protection, gloves and safety clothing are highly recommended.

GRACO XTREME 70:1 PNEUMATIC PUMP

XTR-7 Airless Spray Gun

GNG/T3005 Texture Gun Bottom Entry

Bottom Entry Pressure Pot

ProSpray 3.39

Please contact Pyrotek® for further information or detailed advice on your specific application.

SOUNDSTEEL / SOUND ALLOY

This Installation Guide provides recommendations for working on Soundmetal panels ie joining, bending, welding and fastening.

WORKING HEALTH AND SAFETY

- Make sure that the premises are well ventilated when welding panels.
- Personal Protection Equipment (PPE), including eye protection, gloves and safety clothing is recommended. Refer to MSDS, use in a well ventilated area.

Note: This product is suitable for professional and experienced users only.

CONDITIONS BEFORE WORKING ON PANELS

All panels must be at room temperature (15°C - 35°C) before they can be worked on. If you have no heated storage space, the panel must be brought into heated premises at least 24 hours prior to any working operations. If the temperature of the panel is below room temperature, bending and like operations may cause the thermoplastic layer to separate from the facing.

PROCESSING PANELS

CUTTING:
Panels are easily cut with guillotine shears. Cutting edges should be well sharpened. Set the clearance between cutting edges as for a sheet metal thickness equal to 60% of the thickness of the panel. Standard MPM panels come with outer layers of equal thicknesses. Panels with outer layers of unequal thickness, should be cut with the thinner side facing up. MPM panels can also be laser cut. Water jet cutting is not recommended.

SAWING AND SLOTTING:
If the panel is to be sawn or slotted with a cutting wheel or similar tool, it should first be spot or tack welded on both sides of the cutting line. Use minimum heat.

BEADING AND FLANGING:
These operations can be performed in the same way as with single sheets of metal. As the operation takes place under compressive force, there is no risk of separation at the edges of the panel.

PUNCHING:
Any drilling or piercing should be done after bending, as the holes will otherwise be displaced.

BENDING:
Panels can be bent and edged without trouble provided that a few essential points are kept in mind. The bending radius should be at least 1.5 - 2.0 times the thickness of the panel. For best results with heavier-gauge panels, the radius of the die should be slightly larger than that of the tool.

When bent, it behaves like two sheets of metal lying loosely one on the other, and the facings are displaced by the difference in bending radius between the inner and outer facing.

Pyrotek's 'Soundmetal' range of products include two standard damping sandwich panels - Soundalloy™ MPM (Refer to TDS '111IP') and Soundsteel® MPM (Refer '121IP').

applications

- Engine rooms for high speed craft/vessels
- Machinery and equipment, compressor and generator set enclosures
- Acoustic hoods and chutes
- Conveyor systems
- Crushers / Granulators
- Coin counters
- Air conditioner casings
- Automotive sumps and panels
- Acoustic wall panels and doors

Please refer to our website pyroteknc.com for latest information

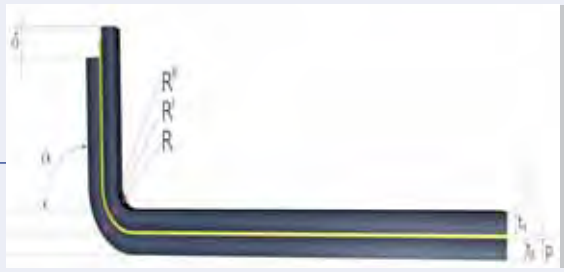
PROCESSING PANELS (cont.)

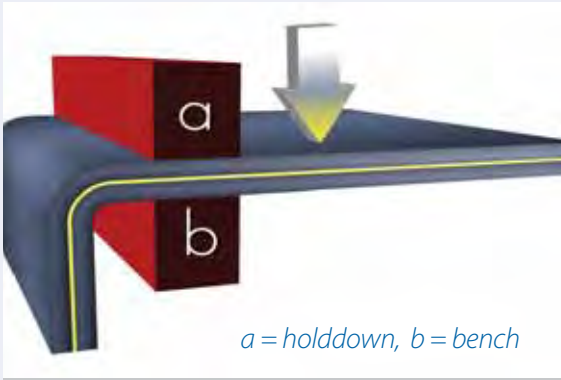
BENDING (cont.)
The amount of displacement can be calculated according to the formula:

ð = α X π/180 X (RII - RI) mm
RI = R + t1/3
RII= R + t1 + p + t2/3

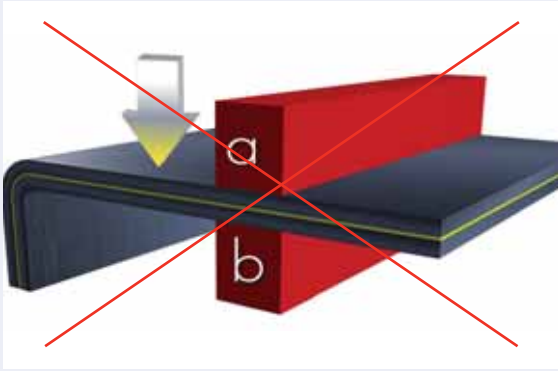
where ð = displacement
α = bending angle in degrees
t1 =thickness of facing nearest tool
t2= thickness of facing nearest die
RI=bending radius of inner facing(t1)
RII=bending radius of outer facing(t2)
p=thickness of plastic inlay

As a result of the displacement, you cannot make several successive bends without taking certain precautions. Always bend nearest a free edge to allow for displacement. If you bend on the side nearest a bent edge, the layers of the panel will split apart.
Note: Powder-coated panels should not be bent. Bending should be completed on plain panels and painted on site. We recommend conducting trials on small samples pieces first..





a = holddown, b = bench



JOIINING & FASTENING

MPM panels are readily joined by both resistance and arc welding.

Weldability of MPM Panels
Care must be taken to adjust current settings and to use the correct clamp design to form an electrical bridge between the two sheets of the sandwich system. In all welding operations you should try to limit both the duration and extent of heating of the thermoplastic inlay.

Resistance Welding
MPM panels lends itself well to resistance welding. The strength of the joints is equivalent to that normally obtained in solid steel sheet welding.

Before resistance welding begins, the insulating plastic inlay must be punctured. This is most easily done by making a centre punch mark under the first spot. For heavier gauge panels you can use a clip or clamp. Once electrical contact is established between the metal facings, no further punch marks are needed. (See fig RW1)

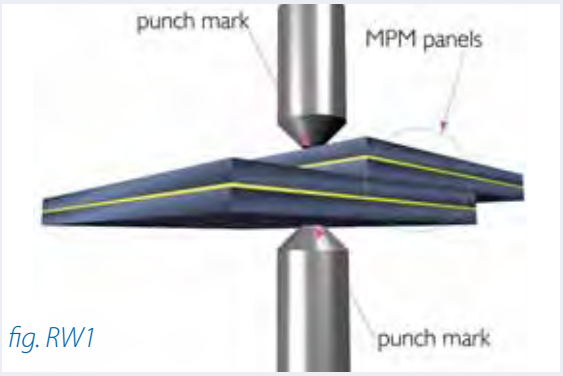


fig. RW1

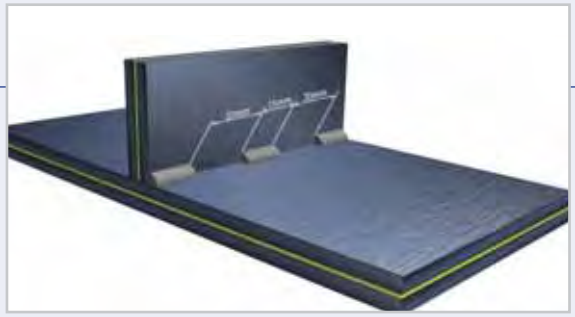
The electrode pressure should be increased by 50-80 % compared to solid metal; this is to ensure that the spot will penetrate the plastic inlay and deform the facings to establish electrical contact. The power should be increased by 20% compared to solid sheeting of the same thickness. With small spot welders developing less than 35kVA, the welding time should be prolonged.

When long edges are spot welded to prevent the panel from splitting apart, the intervals between spots should not be longer than 5cm (2inches) and shorter than that for asymmetrical panels.

Seam Welding
An overlapping form of spot welding is also a suitable method. Bolts, brackets and similar fittings can also be welded to the panel by application of double electrodes on the same side of the panel. In such cases, it isn't necessary to puncture the inlay.

Make sure that premises are well ventilated when you weld MPM panels.

VARIOUS TYPES OF JOINT



Fillet Welding to a heavier gauge material or between panels
First secure the edges of the MPM panel with spot welds. Continuous fillet welds should be avoided. Joints 15mm long, spaced 20mm apart are right. Intermittent fillet welding in a staggered pattern gives best results.

Butt Welding
Edges of the MPM panels should first be secured by spot welds and then built up as shown in the three figures.

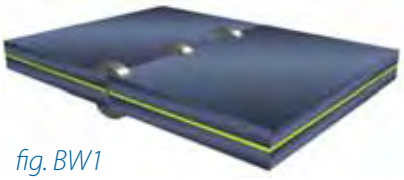


fig. BW1

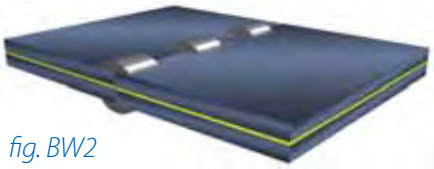


fig. BW2

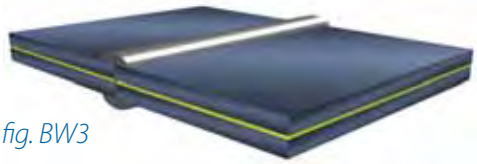


fig. BW3

Plug Welding
Panel edges should first be secured by spot welds. Welding data should be selected according to the thickness of the panel. Basic electrodes are recommended.
(See fig. PW1)

Corner Welding
Locate the panels so that one covers the thermoplastic inlay of the other one.
(See fig. CW1)

Make sure that premises are well ventilated when you weld MPM panels.

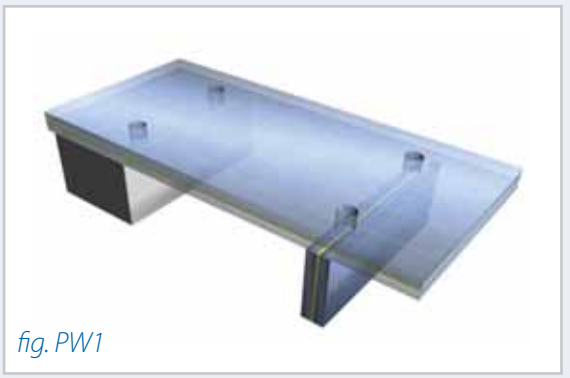


fig. PW1

fig. CW1

Please contact Pyrotek® for further information or detailed advice on your specific application.

BROCHURE

WATER BASED VIBRATION DAMPING COMPOUND

DECIDAMP® SP RANGE

BUILDING - INDUSTRIAL - TRANSPORT - MARINE - OIL & GAS

SOUNDPROOFING SOLUTIONS FOR ALL INDUSTRIES

pyroteknc.com

Pyrotek

WATER-BASED VIBRATION DAMPING COMPOUND

Decidamp® SP (Soundpaint) is a water-based, extensional damping compound designed to reduce impact-generated noise and address resonant vibration at its source. The viscoelastic properties effectively damp and dissipate vibrational energy to alleviate flexural stress of base structures, which can greatly assist in the prevention of metal structural fatigue. Our advanced formula was developed for acoustic improvement in marine vessels, rail carriages, vehicle chassis and other structures that are exposed to vibration and impact.

The Decidamp® range was developed to reduce structural-borne noise, metal fatigue and flexural or dynamic stress of structures.

VIBRATION DAMPING TO REDUCE NOISE & LESSEN STRUCTURAL FATIGUE

Structures with minimal internal damping properties can resonate on impact or when exposed to other momentary forces. If not effectively damped, structure borne vibration is converted to airborne noise. Increased damping in a structure will reduce vibration, noise transfer and structural fatigue. Effective damping can achieve greater than 20 dB reduction in noise.

FEATURES

- Certified to International Maritime Organization (IMO) fire safety standards
- Certified to European Standards EN45545-2 for railway applications
- USCG (United States Coast Guard) approved
- ClassNK (Nippon Kaiji Kyokai) approved
- Lightweight and easy to apply
- Faster drying with no slumping
- Contains no ozone-depleting substances
- Water-based, anti-corrosion and chip resistant properties
- Low consumption rate, high damping performance
- High build rate, with the ability to apply 2 mm thick in one single coat
- Seamless damping solution

Available in pails and drums according to project size and customer requirements.

50% quicker application

Lightweight, less shrinkage

across every industry and application

DECIDAMP SP80

Suitable for architectural, building and industrial use

Tested to British Standards - BS 476 Part 6 & 7 - Complies with Class 0.

- Easily applied to any contoured, horizontal or vertical surface
- Apply up to 2 mm in one spray application
- No odour and low Volatile Organic Compound (VOC)

DECIDAMP SP150

Designed for marine and offshore applications

Complies to IMO FTP/SOLAS Annex 1 Part 5 & Annex 2. Wheelmark, USCG and ClassNK approved.

- Wheelmark approved for Marine Industry
- International Marine Organisation (IMO) (fire) approved coating of up to 10 mm thickness therefore highly suitable for thick substrates
- No slumping upon correct application, faster drying
- Can be painted or gel coated over

0575

DECIDAMP SP450 | SP500

Recommended for transport and rail applications

Complies to international fire standards including EN45545-2 - Results R1, R7, R8, R10 HL3.

- Achieves highest fire rating results in latest rail standards
- Premium lightweight formulation. High performance damping with excellent system loss factor
- Offers chip and corrosion resistance, no cracking properties and high build rate

EN45545-2
COMPLIANT

"Pyrotek SP150 Soundpaint® shows significant improvements to the transmission loss, vibration acceptance, and damping compared to the untreated steel and aluminium bulkheads. Comparisons to a previously tested spray-on damping treatment show that Soundpaint® performs significantly better in transmission loss, vibration acceptance, and damping."

Noise Control Engineering Inc. TM 12-071

Address resonant vibration in structures, facades, casings, chutes and anywhere high performance damping is required.

TYPICAL AREAS OF USE

BUILDING/INDUSTRIAL -

- Commercial, and multi-storey residential
- Government infrastructure projects, schools, educational and hospitals
- Industrial factories and equipment
- Mills and processing equipment
- Metal roofing - interior rain noise
- Metal structures - frames, facades, stairs
- HVAC - ducts, fan housing ventilation units
- Generator sets - metal panels
- Industrial - cabinets, covers, chutes
- Machinery - sheet metal, guards

MARINE -

- Pleasure craft, luxury
- Super yachts, mega yachts
- Military and amphibious warfare
- Work boats, tugs and trailers
- Commercial, coast guard, rescue vessels
- Offshore oil and gas platforms
- Hulls - reduces wave slap noise and resonance
- Decks, under screed interior floor
- Wall partitions, interior lining
- Bulkhead and deckhead
- Bow thruster, transom, propeller tunnels
- Engine rooms, enclosures
- Superstructure

TRANSPORT & RAIL -

- Carriages - trams, high speed, locomotive, monorail, urban trains
- Military, personnel carriers, combat, utility and transport vehicles
- Mining vehicles and equipment
- Specialist vehicles - armoured vehicles
- Passenger rail carriages - interior linings, floor, wall and ceiling
- Diesel and electric motor carriages
- Bus and truck - floor pans, engine bay, under bonnet, firewall, wheel arches
- Underbody, and interior body applications

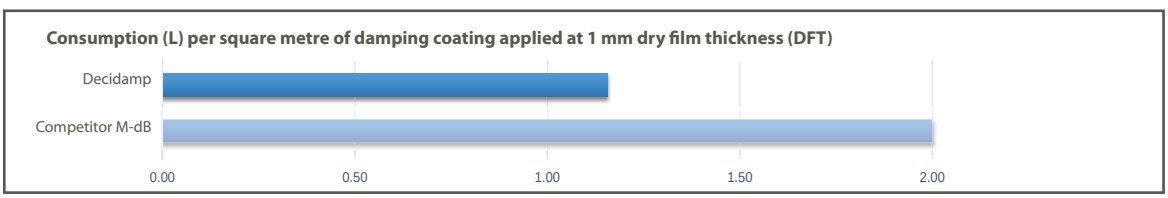
Highest certification in fire standards

Reduce vibration across challenging substrates and areas

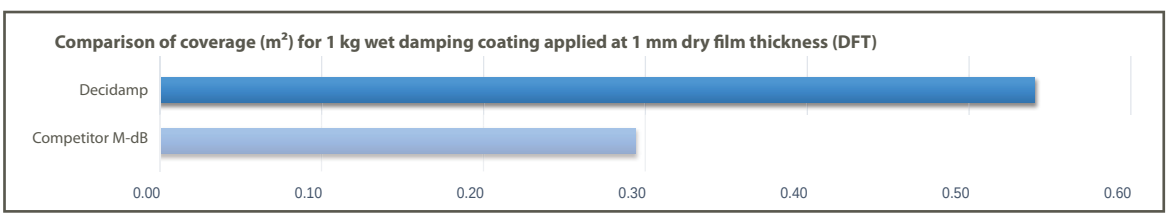
*Based on supplier technical datasheet & literature 2017

Better coverage apply less

OUTSTANDING CONSUMPTION AND COVERAGE



CONSUMPTION (L/m²/mm DFT)



COVERAGE (m²/kg/mm DFT)

15% lighter high solids

EASY INSTALLATION

Specifically formulated to provide high adhesion to many substrates including metal (electro galvanised steel, uncoated aluminium and stainless steel), and fibre reinforced plastics (FRP). The final cured layer of Decidamp varieties is water resistant and chip resistant. Decidamp is optimised to work best at typical temperatures of use.

INDEPENDENT CERTIFICATION AND TESTING HAS BEEN CONDUCTED BY:

Exova Warrington, UK
Van Cappellen Consultancy, Netherlands
Intersona, Netherlands
LA.P.I., Italy
Intertek, USA
SGS, France
Noise Control Engineering, USA
TÜV SÜD, Singapore

Pyrotek

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With over 40 years of noise control experience, Pyrotek® is a well trusted name for performance improving technical solutions. We offer global resources with dependable local support.

80+ locations in 30 countries

- Six research and development centres
- Five engineering centres
- Global headquarters in Spokane, Washington, USA

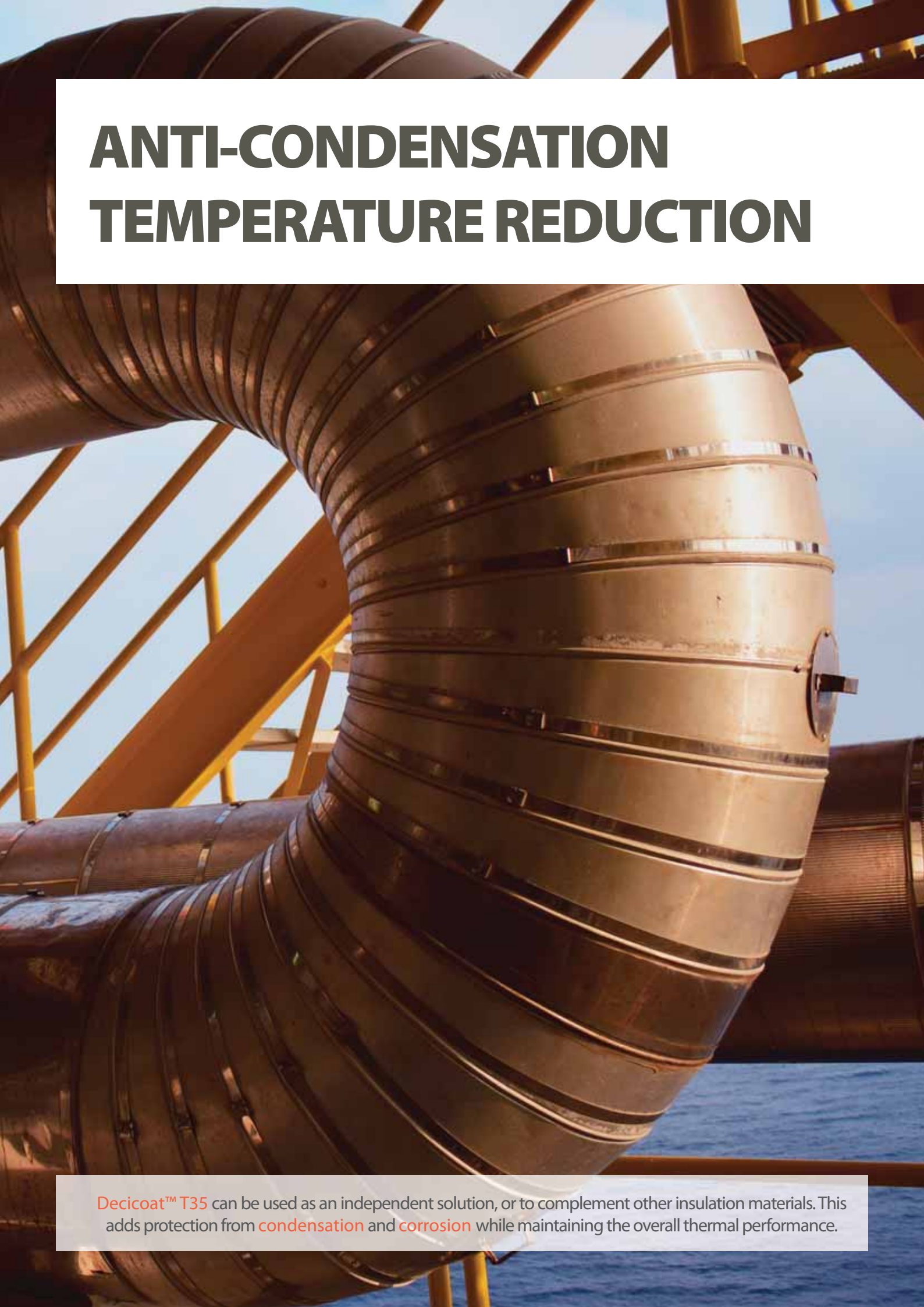
pyroteknc.com

CONTACT DETAILS
for further information or to see your local office
please visit our website

Pyrotek endorse forest sustainability and the preservation of natural environment. We procure the highest quality materials from suppliers who hold FSC (Forest Stewardship Council) Certification and PEFC (Programme for the Endorsement of Forestry Certification) amongst other certification programmes.

DECIDAMP 092018

ANTI-CONDENSATION TEMPERATURE REDUCTION



Decicoat™ T35 can be used as an independent solution, or to complement other insulation materials. This adds protection from condensation and corrosion while maintaining the overall thermal performance.

DECICOAT™ T35

Decicoat T35 is a water-based spray-on thermal insulation coating specially formulated with anti-condensation and corrosion protection properties. It also complies to international fire codes for building, rail and marine applications.

Packaging	19 L pail
	5 gal pail
	200 L drum
	53 gal drum

Features

- Thermal insulation, excellent anti-condensation and corrosion protection
- Lightweight, non-sag formulation with excellent adhesion to various metal substrates
- Complies to international standards for low spread of flame, smoke and toxicity
- Water-based compound – no volatile solvents or thinners required for cleaning (low odour environment)
- No primer required - easy, fast and seamless application
- Sprayable - air gun or airless spray system
- Long-lasting, cures to a hard chip,
- UV and moisture-resistant finish
- Can be used in conjunction with other insulation materials

Application

- Applications exposed to high humidity and temperature fluctuations such as: LNG or cryogenic pipes, building interiors or walls
- Underside of metal deck roofing and metal wall cladding
- Applied in conjunction with traditional fibrous or foam insulation to improve overall thermal insulation systems

Why Decicoat T35?

Condensation is associated with relative humidity, air pressure and occurs when temperature differentials between two areas pass over the 'dew point' threshold. **Decicoat T35** regulates surface temperatures of the component by inhibiting thermal transfer to effectively control the onset of condensation when applied with the appropriate coating thickness.

TECHNICAL DATA SHEET

0575

DECICOAT™ T35

water-based, sprayable thermal coating

Decicoat T35 is a water-based spray-on thermal insulation coating specially formulated with anti-condensation and corrosion protection properties. It has been developed to meet market requirements in the rail, off-shore, marine, chemical, petroleum, automotive and construction industries.

Unlike traditional insulation materials like glass wool or mineral fibre, Decicoat T35 provides a seamless and sprayable application with 100% coverage. This means Decicoat T35 successfully prevents thermal bridging.

With excellent adhesion to most metals, Decicoat T35 bonds flush with substrates even around uneven surfaces. Depending on the application requirement, it can be used as an independent solution, or to complement other insulation materials, when added protection from condensation and corrosion are required for overall thermal performance.

Condensation is associated with relative humidity, air pressure and occurs when temperature differentials between two areas pass over the 'dew point' threshold. With the right coating thickness, Decicoat T35 regulates surface temperatures of the component by inhibiting thermal transfer to effectively control the onset of condensation.

Near odourless, it complies with international fire codes for rail and marine applications, exhibiting a low spread of flame, low heat release, low toxicity and low smoke release during combustion.

SPECIFICATIONS

Colour	White
Available	Pail: 19 L, 5 gal
	Drum: 200 L

applications

- Marine vessels: interiors of superstructures and hulls in workboats, luxury yachts and super-liners.
- Rail applications: carriage ceiling and walls
- Industrial: on the underside of metal deck roofing, metal wall cladding or shipping containers
- Applications exposed to high humidity and temperature fluctuations
- Oil & gas/offshore: interior structures of habitable areas and LNG pipelines
- Automotive: heavy vehicles, buses, trailers, tractors
- Applied in conjunction with traditional fibrous or foam insulation to improve overall thermal insulation systems
- Domestic: pipes, walls, interiors

features

- Thermal insulation, excellent anti-condensation and corrosion protection
- Eliminate thermal bridging
- Complies to international standards - low spread of flame, smoke and toxicity
- Manufactured under ISO 9001 Quality Systems
- Use in conjunction with other insulation materials
- Decrease interior sound levels by damping panel resonance
- Lightweight, non-sag formulation with excellent adhesion to various metal substrates
- Long-lasting, cures to a hard chip, UV and moisture-resistant finish
- Water-based compound – no volatile solvents or thinners required for cleaning - low odour environment
- No primer required - easy, fast and seamless application
- Sprayable - air gun or airless spray system

PRODUCT SPECIFICATIONS

Colour	UOM	Weight	Consumption for 1 mm (0.04 in) DFT. Includes allowance for up to 10% material shrinkage	Service temp range (max short term)	Application guidance
White	19 L (5 gal) pail 200 L drum	0.39 kg/m²/mm DFT (0.08 lb/ft²/mm DFT)	1.1 L/m² (0.027 gal/ft²)	-40 °C to 120 °C (-40 °F to -248 °F)	Minimum recommended application: 0.5 mm DFT General purpose installation: 2 mm DFT Other thicknesses as per specification or requirement

To achieve a desired dry film thickness, provision for material shrinkage of up to 10% on average should be included when applying a wet coating.

Storage: Store between 10 °C to 45 °C (50 °F to 113 °F).

Shelf Life: 36 months from receiving goods (stored under recommended conditions).

MATERIAL PROPERTIES

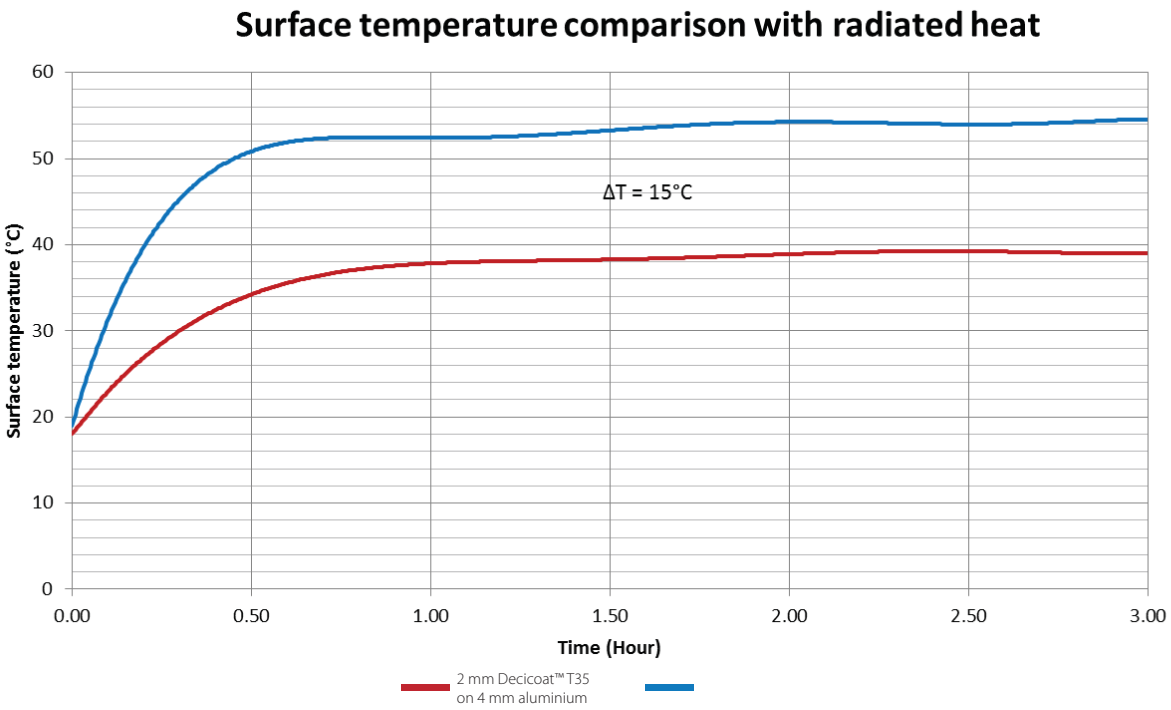
Test method	Property	Report	Results
IMO FTP Part 5	Surface flammability	376675	Complies for Bulkhead, walls and ceiling linings up to 2 mm thickness on metallic substrate. USCG Type approval granted.
IMO FTP Annex 2	Smoke and toxicity	376675	
MED B	EC Type Certificate (Module B) for Marine Equipment Directive	MEDB00007RS	
MED D	EC Type Certificate (Module D) for Marine Equipment Directive	MEDD000028J	
EN 45545-2 (ISO 5658-2)	Spread of flame	503996	R1, R7, R8, HL3
EN 45545-2 (ISO 5660-1 : 50kWm-2)	Heat release rate by cone calorimeter		
EN 45545-2 (ISO 5659-2 : 50kWm-2)	Smoke generation (optical density)		
RISSB AS 7529	Material fire performance	376677, 376678, 376679	Complies with requirements for combustible component material in Locomotive and Passenger rolling stock.
ASTM E 162	Surface flammability	101731845MID-001c	Complies for US (FRA) Federal railroad administration requirements and requirements of NFPA 130 - Complies for US (DOT) Department of transportation requirements for acoustic insulation of transit bus and vans (Docket 90A).
ASTM E 662	Optical Density of Smoke Generated	101731845MID-002c	
ASTM E 800 (SMP-800C)	Gases Present or Generated During Fires	101731845MID-003c	
FMVSS 302	Flammability of interior materials	20713JY	Complies to the requirements of US (DOT) Department of transportation for occupant compartments of motor vehicles.

CHEMICAL RESISTANCE

UV	Water	Petrol	Diesel	10% HCl solution	10% NaOH solution	Permeability (ASTM1653) (Report no. 19013BD1)
2000+ hours	Excellent	Good	Good	Good	Good	< 3 metric perms

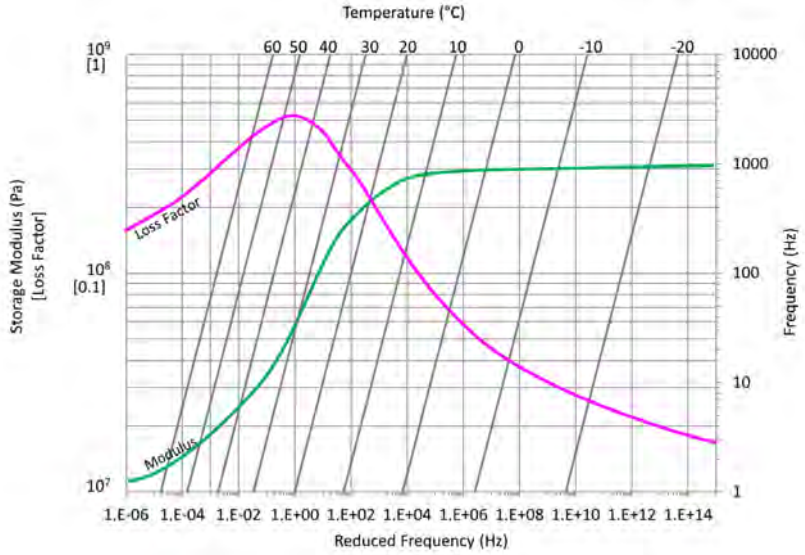
THERMAL PERFORMANCE

Thermal conductivity (ISO 8302) (Report no. 332/13)
0.07 $Wm^{-1}K^{-1}$



Report no.20613BD1

ACOUSTIC PERFORMANCE



Tested to ISO 6721-5:1996
Report Number: 06424CD

How to read a reduced frequency nomogram:

1. *Start by selecting the frequency (Hz) on the right-hand vertical axis.*
2. *Follow this value horizontally to the left to where the diagonal temperature isotherm intersects.*
3. *Draw a vertical line through the frequency and isotherm intersection, find the point where this line intersects the modulus and loss factor curves.*
4. *Draw horizontal lines from these points to the left-hand vertical axis to read the values.*

SYSTEM LOSS FACTOR

Temp (°C)	SLF at 2:1 Ratio on Steel	Noise reduction (dB) on a large panel	SLF at 2:1 Ratio on aluminium	Noise reduction (dB) on a large panel
-10	0.013	11.21	0.026	14.22
0	0.013	11.21	0.026	14.22
10	0.018	12.50	0.036	15.51
20	0.037	15.68	0.074	18.69
30	0.028	14.47	0.056	17.48
40	0.021	13.22	0.042	16.23
50	0.019	12.72	0.037	15.73

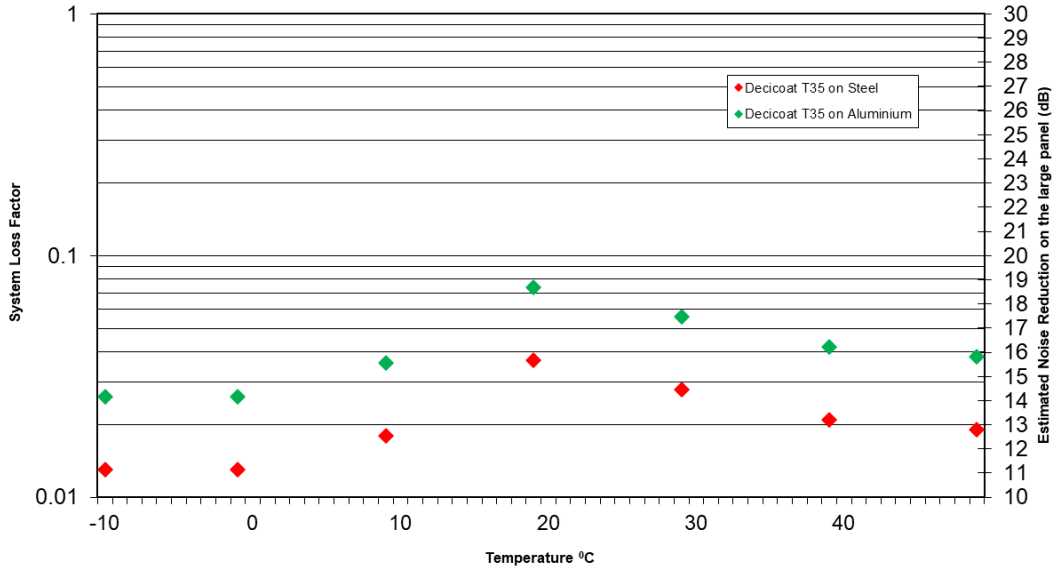
Test report: 34623CD

DECAY RATE AS PER ISO 7626-5:1994

Sample	Decay Rate (dB/sec)
1 mm steel	38
1mm steel with 2mm Decicoat T35 coating	3500

Test report: 20613BD1

Conversion of system loss factor to estimated noise reduction on the large panel (dB) over range of temperatures as tested to ASTM E756-83. The system being a ratio 2:1 coating to steel/aluminium substrate.



For further information and contact details, please visit our website pyroteknc.com

INSTALLATION GUIDE

DECICOAT™ T35

This installation guide provides recommendations to maximise the service life in various applications. Decicoat™ T35 is a water-based thermal insulation compound that is simple to apply using a range of spray systems.

WORK HEALTH AND SAFETY

Gloves, protective goggles, respiratory protective equipment, protective clothing and any other appropriate safety equipment based on local health & safety requirements and safe work practice must be worn by the applicator.

KEY INSTALLATION REQUIREMENTS

Surface Preparation

This product is specially formulated to provide high adhesion to difficult substrates such as uncoated aluminium, however adequate surface preparation is essential.

- Remove any dust, dirt, oil, grease, rust, mould-release agent, etc. from the surface using a suitable solvent.
- Abrading the surface by wire brushing, sandblasting or abrasive paper is recommended for highly polished surfaces.
- On steel substrates, surface priming is recommended to prevent flash rusting.

METHODS OF APPLICATION

Decicoat T35 can be applied using the following methods:

- **Trowel:** Simply apply and smooth as required.
- **Brush:** For brush applications, we recommend adding 0.3% of water by weight per kg of product. This will assist in easier and smoother application. Use a wide 100 mm (3.9 in) thick nylon bristle brush. Keep brush well loaded with Decicoat T35 and use short strokes, applying a thick coat of approximately 2 mm (0.08 in). Avoid "painting" back and forth as this will cause the coat to become too thin.
- **Air-assisted and airless spray systems:** Please see page 3 for the recommended spray system for the application of Decicoat T35 range.

Trowel Brush Spray

Decicoat T35 is a water-based spray-on thermal coating specially formulated to provide an anti-condensation solution.

The product is designed to be installed in industries such as rail, offshore, marine, and automotive.

applications

- Rail: locomotive and passenger rolling stock (interiors, floors, cabin)
- Industrial: underside of metal deck roofing and metal wall cladding
- Offshore platforms: interior structures of habitable areas
- Automotive: heavy vehicles, buses, trailers, and tractors
- In conjunction with traditional fibrous insulation

Ensure proper preparation, mixing and application for best results. Decicoat T35 range should always be applied to surfaces that are clean, dry and free of contaminants.

MIXING & APPLICATION

- Mix thoroughly before application using a ribbon or paddle mixer as shown. The product should be mixed until it is a smooth, creamy consistency.
- The pail can be placed upside down for 24 hours before use or opening to make mixing easier.
- Apply above ambient temperatures of 10 °C (50 °F).
- If required, the viscosity of the product can be altered by a maximum of 2% addition of water. Application testing performed under end-use conditions is required for water additions greater than 2%.

APPLICATION RATE & COVERAGE

- The minimum dry film thickness (DFT) should be 0.5 mm (0.02 in).
- A DFT of 2 mm (0.08 in) is recommended when applied to a system.
- Each coating should be 0.5 mm (0.02 in) to 1 mm (0.04 in) thick.
- Installation on maritime vessel to be done at recommended nominal thickness of 2.0 mm (0.08 in) DFT. Approved for use as paint systems on a metallic substrate with thickness of at least 2.25 mm (0.09 in).
- Additional thickness can be applied to achieve the desired result. The final thickness of the application will vary based on your requirement.
- When applied, thicker applications (as a single coat) are possible but will require longer drying time.
- To achieve the desired dry film thickness, provision for material shrinkage of up to 10% on average should be included when applying the wet coating.
- Use of a tack coat is recommended for the first 0.5 mm (0.02 in) coating.
- It is important to apply evenly to ensure proper curing and to reduce waste.
- Use of thermometer, hygrometer or humidity meter is recommended for monitoring application conditions. High-temperature or low humidity conditions may lead to crack formation.
- Surface defects can be avoided by reducing applied wet film thickness (WFT) to accommodate poor application conditions.
- A cracked coating can be remedied by application of an additional coat applied to the affected area.
- Excessively cold or high humidity conditions may lead to sagging. Assisted drying may be required.
- Ensure application is adequately dry before any additional coating is added.
- Lower WFT application will have a faster drying time and will allow for a quicker recoat time.

DRYING AND CURING

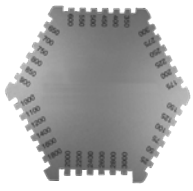
- For best results, allow the compound to dry naturally. Forced drying may result in cracking of the coat.
- In cold conditions, the substrate can be warmed to aid drying.
- Forced ventilation can be used to help coating dry. Air movement should be both in/out during drying process.
- It is recommended before install that a small section of the area is applied with the product to test and determine the adequacy of drying conditions.

Drying time	
Initial drying 1 mm	1 hour
Initial drying 2 mm	4 to 6 hours
Completely dry	24 to 72 hours

Please note: drying and curing times are only general guides. Testing should be performed by the end user, as end-use conditions (thickness of application, substrate type, temperature and humidity) will affect drying times.

WET GAUGE FILM THICKNESS CHECK

To ensure the correct film build is achieved, a wet film gauge can be used (as shown on the right).



RECOMMENDED SPRAYING SETUPS

Below displays typical configurations - other configurations and settings can also be suitable

	Airless Spray System		Air-Assisted Spray System	
	Graco Xtreme 70:1 pneumatic pump	Wagner ProSpray 3.39	Pneumatic piston pump	Bottom entry pressure pot
Gun type	XTR-7 airless spray guns	Wagner Vector Pro or Grip airless gun	GNG/T3005 texture gun, bottom entry	GNG/T3005 texture gun, bottom entry
Operating line pressure *"Hose pressure rating to match requirement of pump"*	Typically 138 to 207 bar (2000 to 3000 psi). Higher pressure required for longer hose lengths	Up to 230 bar (3335 psi)	Max. 30 bar (440 psi)	Max. 4 bar (60 psi)
Length of hose from pump to gun	30 m (98.4 ft)	15m (50 ft)	Up to 30 m (98.4 ft)	5 to 20 m (16.4 to 65.6 ft)
Diameter of hose	9.5 mm ID (3/8 in)	12.5mm (½ in)	19 mm ID (3/4 in)	19 mm ID (3/4 in)
Whip	0.5 m (1.6 ft) whip 6 mm (0.24 in) hose *Higher pressure required when whip used*	1 m x 9.5 mm (3.3 ft x 3⁄8 in.)	-	-
Diameter of nozzle	0.5 to 0.7 mm (0.019 to 0.029 in) (Reversible tip 419 to 429)	Reversible tip: 0.43 to 0.74 mm (0.017 to 0.029 in.)	2 mm (0.08 in)	2 mm (0.08 in)
Pump type	Ratio 70:1 piston pump	2.68 kW rated brushless DC motor	Ratio: 4:1 or greater Flow: 3 L/min (0.8 gal/min) 2-ball piston pump	20 litre (5.3 gal) bottom entry pressure pot
Air pressure requirement	2 to 5 bar (30 to 70 psi)	Site-air not required	Up to 7 bar (100 psi)	Pressure in gun: up to 6 bar (85 psi) Pressure in pot: max 4 bar (60 psi)

PRODUCT INFORMATION

Product	Decicoat T35
Weight	0.39 kg/m²/mm DFT
Consumption for 1 mm (0.04 in) DFT *Includes allowance for up to 10% material shrinkage*	1.1 L/m²
1mm DFT (dry film thickness) coverage using 19L pail	17 m²

Substrates: Can be used on steel and aluminium.

Shelf life and Storage:

- 36 months from date of manufacture under recommended storage conditions.
- Product to be stored and transported between 10 and 45 °C (50 to 113 °F). **Do not allow to freeze.**
- Partially used pails of the product can be reused if sealed firmly after first use.
- The opened product should be resealed and used within 2 months. Frequent opening of the seal must be avoided.

Clean up and Safety:

- Equipment easily cleaned with water
- Personal Protection Equipment (PPE) including eye protection, gloves and safety clothing are highly recommended.

Please contact Pyrotek® for further information or detailed advice on your specific application.

GRACO XTREME 70:1 PNEUMATIC PUMP

XTR-7 Airless Spray Gun

GNG/T3005 Texture Gun Bottom Entry

Bottom Entry Pressure Pot

ProSpray 3.39

BROCHURE

thermal insulation, anti-condensation
and corrosion protection

DECICOAT T35

SOUNDPROOFING SOLUTIONS FOR ALL INDUSTRIES

pyroteknc.com

Decicoat® T35 is a one-part, water based thermal insulation coating, specially formulated to provide excellent properties for anti-condensation and protection from corrosion under insulation (CUI).

SEAMLESS INSTALLATION - CONTROLS THERMAL BRIDGING

Thermal bridges are pathways for heat transfer, typically caused when insulation is not continuous. Being sprayable, Decicoat T35 bonds flush around uneven surfaces, tight areas and provides 100% coverage even around mechanical assemblies. This reduces the occurrence and impact of thermal bridging where even high performance foam insulation systems with radiant barrier faces fail.

LIGHTWEIGHT AND SPRAYABLE

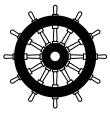
It's a lightweight acrylic system, with excellent adhesion and non-sag formulation. It can be easily and quickly sprayed like paint with a range of spray systems.

THERMAL PROPERTIES

Decicoat T35 provides the benefits of both good thermal resistance (R value) and acts as a good radiant barrier (low emissivity). It controls both, rapid heat dissipation and heat absorption and exhibits increased performance with additional coatings thereby offering weight and space efficiency.

APPLICATIONS

- Marine vessels - interiors of structures and hulls in workboats, luxury yachts and super-liners etc
- Off-shore platforms - interior structures of habitable areas
- Industrial: the underside of metal deck roofing and metal wall cladding
- Automotive: heavy vehicles, buses, trailers, tractors.
- Rail cars: applied in conjunction with traditional fibrous or foam insulation to improve overall thermal insulation systems
- Domestic: pipes, walls, interiors
- Applications exposed to high humidity and temperature fluctuations



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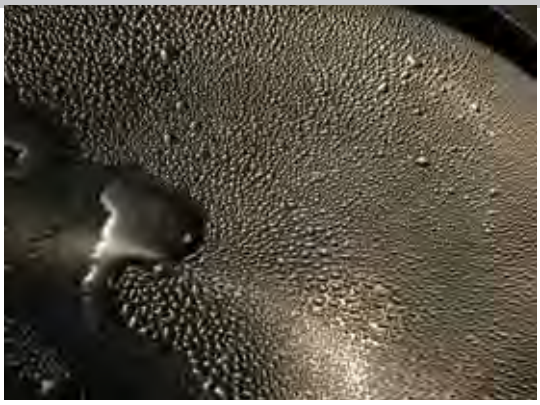
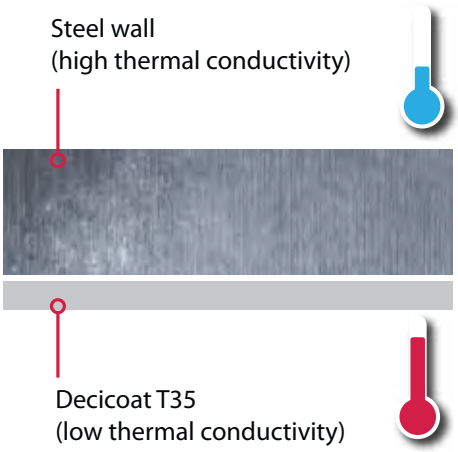
FIRE CERTIFICATION

Decicoat T35 achieves a wheelmark and complies with stringent international fire standards for building, industrial, rail and marine applications. It is low VOC and near odourless.



PREVENTS CONDENSATION

When thermal conduction takes place through a substrate, condensation occurs on the surface, when its temperature reaches the 'dew-point' threshold. i.e. the point of onset of condensation. Decicoat T35 has proven low thermal conductivity and permeability properties. When used on substrates exposed to high humidity or temperature variations, it inhibits thermal transfer and effectively regulates the temperature of the substrate surface to remain above the dew-point threshold, thereby preventing the onset of condensation.



PREVENTING CORROSION

Corrosion is a chemical and physical change that occurs in a material due to its interaction with its environment. Decicoat T35 provides a protective coating to metallic substrates, aiding in the prevention of condensation. Condensation can typically act as an electrolyte as part of galvanic corrosion. It will also cause dissolution of chloride and sulfide ion contaminants that exacerbate the corrosion process.

Decicoat T35 is formulated for ease of installation by spray application, directly onto ferrous and nonferrous surfaces.

INHIBITS CORROSION UNDER INSULATION (CUI)

Chemical contaminants typically found in materials such as glass wool or mineral fibre react with moisture trapped in the air gaps, under poorly installed insulation, to form an acidic reaction which corrodes the metallic substrate.

Corrosion under Insulation (CUI), is difficult to detect and treat in situ, and leads to degradation and reduced performance of the system over a period of time.

In eliminating the occurrence of thermal bridging, Decicoat T35 inhibits CUI and enhances the durability of such insulation systems. It maintains the overall thermal performance of the system besides offering a weight, space, cost and time efficient solution.

pyroteknc.com

PYROTEK WORLDWIDE LOCATIONS

AUSTRALIA
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INDIA
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SINGAPORE
NEW ZEALAND
TAIWAN
THAILAND
TURKEY
UNITED ARAB EMIRATES
UNITED KINGDOM
UNITED STATES OF AMERICA
VIETNAM

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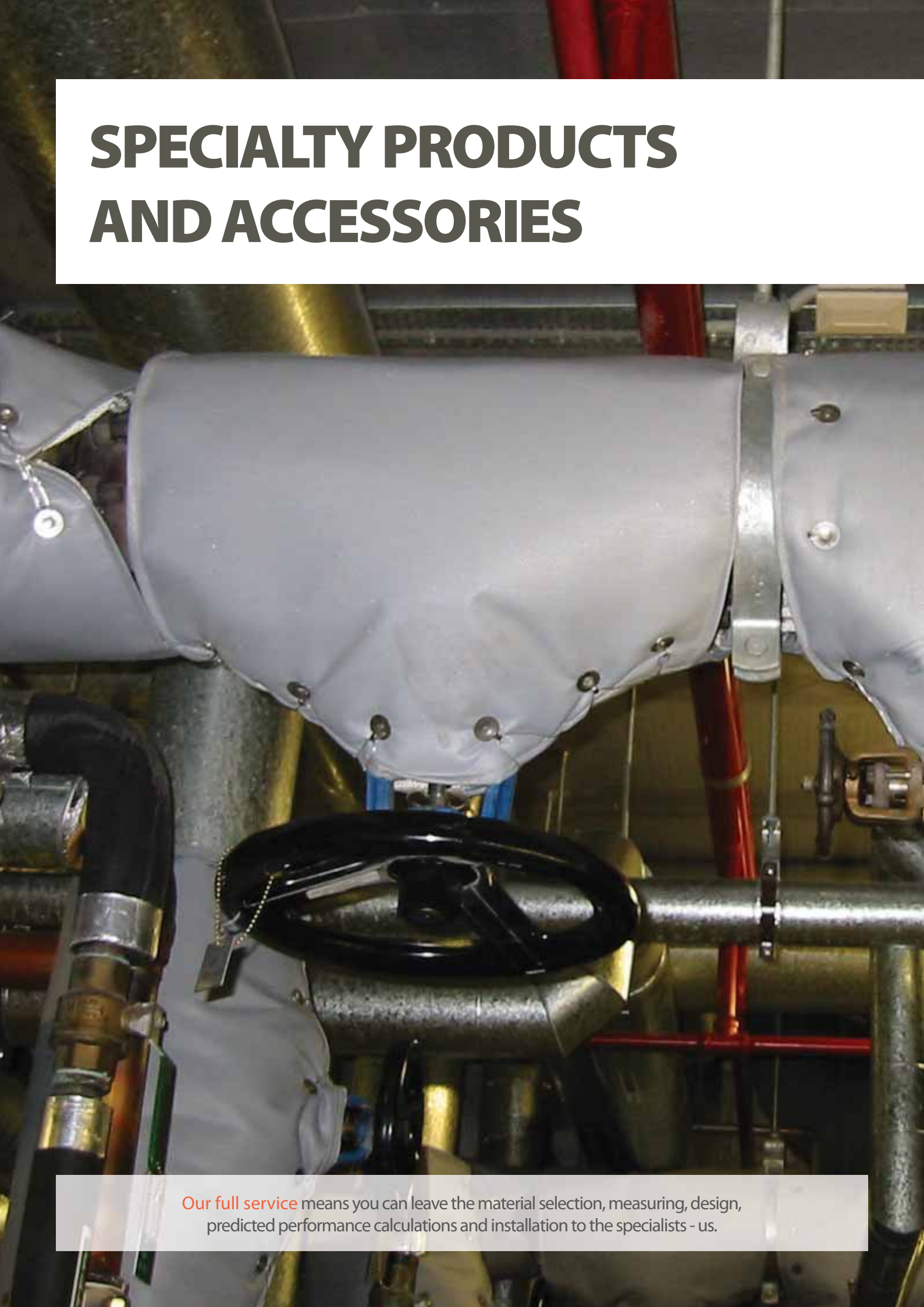
SPECIALTY PRODUCTS AND ACCESSORIES



Our full service means you can leave the material selection, measuring, design, predicted performance calculations and installation to the specialists - us.

Pyrotek®

SPECIALTY PRODUCTS SUMMARY

ACOUSTIC AND THERMAL SOLUTIONS

Pyrotek®

ACOUSTIC AND THERMAL SOLUTIONS

oil and gas

- Metal fabrication & cladding
- Cryogenic insulation
- Flexible valve covers
- Condensation protection
- Acoustic and vapour barriers
- Covers and high temperature material
- Expansion joints

power generation

- Turnkey solutions for acoustic enclosures
- Custom fabricated removable thermal jacketing
- Acoustic louvre design and fabrication
- Vibration damping products
- On-site noise level testing
- Expansion joints

transport

- Custom-designed cab insulation to meet the current noise regulations
- Thermal exhaust and turbo covers for personal protection
- Heat shielding products
- Noise and vibration monitoring and control
- High temperature seals and exhaust tapes

Pyrotek was established in 1956. Our high temperature and acoustic products are developed through innovation and understanding of market needs. Our advanced material expertise and product engineering knowledge provides product solutions for the most demanding applications. Our goal is to provide high quality products and services to all areas of industry and to be at the forefront of technology in product application and design. We are able to offer products to reduce noise and fire risk in the oil and gas, marine, offshore, power generation, mining, thermal, fire and welding protection, petrochemical, transport and aerospace domains.

- Turbocharger covers
- Valve covers
- Insulation blankets
- Exhaust lagging
- Acoustic insulation
- Accommodation fire panels
- Fire protection to meet B, A, H and J class

marine and offshore

- Flexible hoses
- Dust and flange covers
- Anti-static materials
- Fabricated insulation covers
- Acoustic treatments
- Seals and flanges

mining

Research, Development and Capabilities

Pyrotek's more than 50 years' experience supports our premium thermal and noise insulation products and services. These products reduce noise and heat to comfortable safe levels in a range of applications.

Our world-class team of engineers and scientists bring a wealth of knowledge and experience to successfully control and reduce heat and noise in demanding environments. They refine existing products and create new materials as required to meet the unique needs of our customers.

Working with a diverse range of impregnated fabrics for high temperature applications allows us to select textiles that are engineered for strength, dependability and long service life in the toughest of environments. Pyrotek offers services such as:

- CNC cutting technology including laser, waterjet and multi-axis tables
- digitally created patterns using the latest software for repeatability
- fully equipped laboratory to simulate international fire and mechanical testing
- onsite installation service including project management, underground, cryogenic and hot work installation

Acoustic Insulation

Pyrotek helps control noise. Our world-class team of engineers and scientists bring a wealth of knowledge and experience to design and develop products that successfully control noise in demanding environments.

Vibration Damping

Vibration noise can be minimised by applying vibration damping materials that dissipate vibration energy in the structure and convert it to heat. Our products include constrained layer damping, extensional damping and vibration isolation.

Noise Barriers

Noise barriers are a flexible, mass-loaded vinyl, offering superior acoustic transmission loss. Our range includes noise-reducing floor mats, mass barriers, low spread of flame, low smoke & fire retardant noise barriers.

Sound Absorbers

Sound absorbers are applied to reduce noise energy. We provide a range of materials such as fibreglass, foam and polyester with a variety of surface coverings to suit each application.

Barrier Absorber Composites

Pyrotek has created a unique acoustic solution – combining acoustic foam and a noise barrier, developed with the aim of simplifying the acoustic treatment of enclosures, engine bays and plant rooms.

Fabricated Covers - Metallic and Fabric

All exhaust gas duct work requires expansion joints or vibration eliminators to absorb any movement in the duct work.

We manufacture a range of fabric and metallic expansion joints. The correct materials are selected depending on temperature and the type of corrosive gases present. We supply fabric expansion joints made from high temperature fabrics and are also able to incorporate high density noise barrier materials to provide a sound barrier in joints on or near fans.

We offer a complete service including design, manufacture and supply of the fabric and metallic expansion and associated steelwork.

- Fabric expansion joints custom designed and fabricated
- Custom-made metallic bellows for high temperature, pressure and chemical resistance.
- High noise reduction acoustic expansion joints
- Variety of specialty fabrics to withstand highly corrosive, acidic and alkaline conditions
- Complete expansion joint assemblies ready for installation
- On-site supervision of installation

Expansion Joints - Metallic and Fabric

Pyrotek speciality products custom makes and designs covers that utilise our range of fabrics, felts and blankets to suit a variety of conditions from cryogenic to high temperature metal smelting. There is an increasing demand for removable insulation covers for all types of high temperature equipment. Our covers provide excellent personal protection from heat and are easy to remove and replace when performing maintenance.

Our full service means you can leave the material selection, measuring, design, predicted performance calculations and installation to the specialists - us.

- Industrial machinery and turbine covers
- Custom-made valve and flange covers for the off-shore industry
- Exhaust and manifold covers for the mining and marine industry
- Aerospace-approved products
- Prefabricated jackets for pipes, holding vessels and tanks
- High temperature acoustic curtains and covers
- Fire-rated curtains

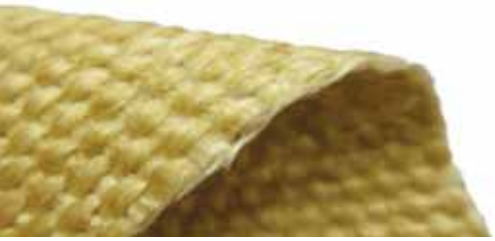
Fabrics

Plain fibreglass

Pyrotek manufactures and coats fibreglass fabric offering an extensive range of fibreglass fabrics in an extensive range of weights, finishes, colours and textures. Weights are available from 50g/m^2 up to 3000g/m^2. All our loom state fabrics are available with a weave set finish to reduce fraying.

Wire-reinforced fibreglass

A unique method of introducing stainless steel continuous fibres gives us the ability to design high temperature fabrics where additional strength and integrity is required. Our wire-reinforced fabrics are also available with graphite, vermiculite or silicon coatings.

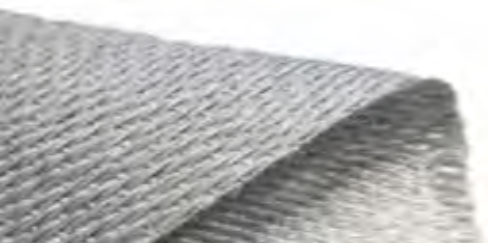


Vermiculite-coated fibreglass

Our vermiculite-coated fabrics exhibit excellent temperature and abrasion resistance. The vermiculite treatment improves the fabrics temperature resistance to withstand temperatures up to 800ºC. A vermiculite coating can also be applied onto silica glass or ceramic fabric. Typically these fabrics are supplied in weights of 600 and 1000g/m^2.

Graphite-impregnated fibreglass

Our graphite-treated fabrics are impregnated using a dip coating method to provide a uniform coverage. We offer several graphite treatments for an assortment of applications. Graphite treatment improves the base fabric's heat resistances and also offers excellent abrasion resistance.



Silicon-coated fibreglass

Silicon-coated fabrics are available in various weights from 180 to 1200g/m^2. Our optimised formula offers excellent heat resistances allowing the fabric to remain flexible and durable during prolonged use at high temperatures. Our silicon fabrics are available with a single-sided or double-sided coating and in a range of standard colours. Silicon also has excellent UV durability and is resistant to water, oils, grease, fuels and many chemicals.

Foil and mylar-faced fibreglass

Our fibreglass fabrics can be supplied with a layer of pure aluminium foil, stainless steel foil or mylar-faced films. These facings offer a highly reflective surface and also act as a vapour and liquid barrier. The films are bonded using the latest technology and are resistant to higher temperatures than traditional laminations.

Neoprene-coated fibreglass

Neoprene offers excellent fire resistance and also provides high resistance to chemical and liquid attack. Neoprene-coated fabrics provide excellent protection against hot metal grindings and weld splatter. A full range of weights and sizes is available.

Silica glass

Silica glass fabrics have been developed for use in applications requiring higher temperature performance than traditional fibreglass. Fibreglass fabrics are typically rated to 550ºC, silica glass fabrics can withstand temperatures of up to 1000ºC. Silica fabrics also have excellent chemical resistance and electrical insulation properties.

Teflon®-coated fibreglass

Teflon® (PTFE) is a high temperature non-reactive polymer coating. Our Teflon coated fabrics are resistant to most reactive and corrosive chemicals and also have high abrasion resistance. These fabrics are often used as a weather or chemical resistant barrier. A comprehensive range of weights and sizes is available.

Ceramic-coated woven fabric

Offering the highest temperature resistance in woven fabrics, our ceramic fabrics have excellent chemical, abrasion and thermal resistance. These fabrics are able to withstand temperatures up to 1600ºC without melting. They can easily be cut, sewn and fabricated into various shapes, and are available with stainless steel or Inconel® wire reinforcing.

Thermal Insulation

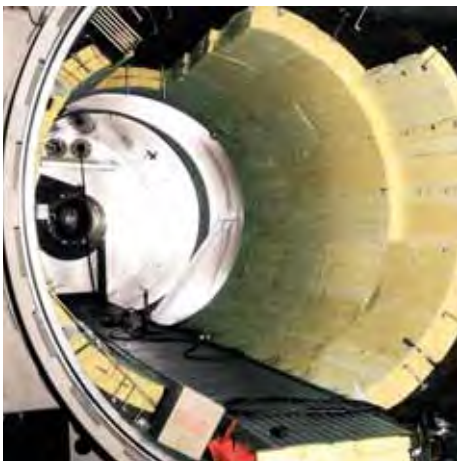
Pyrotek supplies a wide range of thermal insulation products to meet different requirements.

- Polyester from 20 to 80kg/m^3 for thermal and acoustic applications from -10^{0}C to 110^{0}C
- Traditional glasswool, 16 to 130kg/m^3 for temperature from -10^{0}C to 530^{0}C
- Quilted fibreglass blanket for thermal and acoustic applications for applications needing better mechanical strength
- Cryogenic fibreglass for temperatures from -150^{0}C to 530^{0}C
- Needlemat, 130kg/m^3 fibreglass felt with high mechanical strength and rated to 650^{0}C
- Rockwool from 45 to 130kg/m^{3,} Rockwool is suitable for temperatures up to 830^{0}C
- ULTIMATE, a marine certified thermal and acoustic fire insulation achieving A0 to A60 requirements
- Ceramic fibre for service temperatures 1200^{0}C to1600^{0}C
- BioSoluble fibre (or low bio-persistence fibres for temperatures between 1000^{0}C to1200^{0}C

Accessories

Pyrotek offers a range of consumable items to complement our products

- Weld pins and clips in a range of styles and sizes, both Arc and CD pins are available in plain or bimetallic versions
- Industrial insulation pins and clips are available with either a perforated based plate or pressure sensitive adhesive
- Fire proof mastic compounds rated to 1000^{0}C for sealing penetrations in high temperature applications
- High temperature fibreglass or ceramic tapes and ropes for door seals and lagging
- High temperature silicone coated fibreglass tubing
- Braided ropes and tadpole seals available in a comprehensive range of sizes
- Insulcoat - anti condensation coating
- Stainless steel knitted mesh
- Lacing hooks, eyelets and sewing treads



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Pyrotek®

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TAIWAN
THAILAND
TURKEY
UNITED ARAB EMIRATES
UNITED KINGDOM
UNITED STATES OF AMERICA
VIETNAM

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FABRICATED **COVERS**

Pyrotek® designs and manufacture custom covers that utilise our range of fabrics, felts and blankets to suit a variety of conditions from cryogenic to high temperature applications. There is an increasing demand for removable insulation covers for all types of high-temperature equipment. Our covers provide excellent personal protection from heat and are easy to remove and replace when performing maintenance.

TAPE **MVT**

Tape MVT is a high-performance insulation reinforced aluminium foil tape, designed for use as a joining and covering tape for Pyrotek's aluminium foil faced products such as Quadzero MVT.

The low permeability properties of Tape MVT blocks moisture entry into the insulation system, maintaining its thermal performance, and preventing corrosion under insulation (CUI).

The reinforcing mesh in Tape MVT provides good mechanical stability during application and once in place prevents further movement.

For our complete product range, visit pyroteknc.com/industries/oil-and-gas/

TECHNICAL DATA SHEET

TAPE MVT

aluminium foil tape / vapor barrier

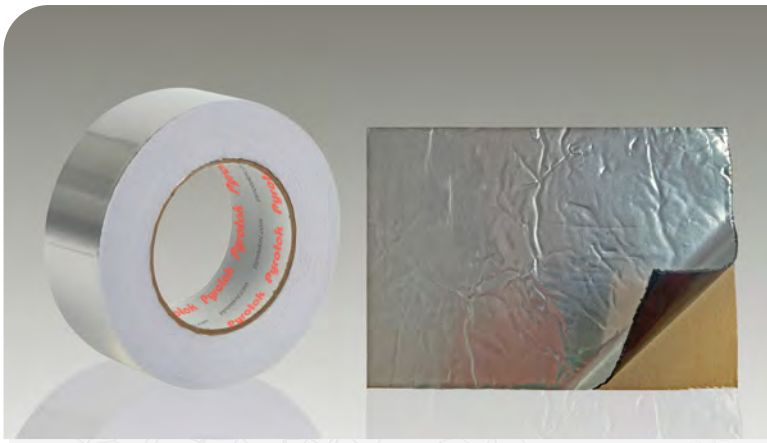
Tape MVT is a high-performance, aluminium foil membrane specifically designed to act as a vapour barrier in critical applications where prevention of CUI (corrosion under insulation) is of highest priority . It can be used either as a joining and covering tape for Pyrotek foil faced products, such as Quadzero MVT (Tape MVT-R) or as a blanket membrane by itself (Tape MVT-B). Cold pipelines with exposure to ambient temperatures create perfect conditions for moisture buildup inside equipment. The low permeability properties of Tape MVT blocks moisture entry into the insulation system, maintaining its thermal performance, and preventing corrosion under insulation (CUI).

Two grades of Tape MVT are available:

Tape MVT-R is designed with a reinforcing mesh, which provides good mechanical stability during application and once in place prevents further movement. The nature of the tape is such that it provides a rare combination of high strength, flexibility and conformability. The pressure sensitive adhesive backing gives high initial tack and holding power.

Tape MVT-B is a composite aluminium facing laminated to self-adhesive membrane. The composite aluminium facing provides extra strength and reinforcement as well as excellent resistance to vapor and UV. Combining this with flexible self-adhesive layer makes Tape MVT-B easy to install across wide range of applications and temperatures.

Both tapes are protected by a silicone coated, removable release paper which provides easy release properties and aids ease of application.



applications

- Liquefied natural gas (LNG) and cryogenic pipes
- Wrapped around other noisy pipes, valves and fan casings e.g. fluid or gas pulsation in chemical, petrochemical and waste water treatment plants
- Industrial application for tanks and other LNG facilities
- Compressor jackets where acoustic and thermal tratment and/ or waterproofing is required
- HVAC industry wrapping for air-conditioning ducts

features

- Polyethylene fibre mesh/film composite reinforced aluminium foil
- High-performance vapour barrier
- High-performance synthetic pressure sensitive adhesive backing, excellent initial tack and grab
- Broad operating temperature range
- High-performance in heat, humidity and environmental conditions
- Resistant to dust, oils and solvents
- Reflects and insulates against heat
- Easily cut, shaped and fabricated
- Puncture and tear resistant
- Tougher than similar products
- Up to 25-year life expectancy under recommended conditions
- Dimensionally stable

SPECIFICATIONS

Colour	Silver
Available	**Tape MVT-R** Standard width: 72 mm (2.8 in) Standard roll length: 50 m (164 ft) **Tape MVT-B** Standard width: 1000 mm (3.28 ft) Standard roll length: 15 m (49 ft)
	Custom sizes available depending on MOQ

PRODUCT SPECIFICATIONS

Standard product nomenclature	Colour	Standard roll length	Standard width	Application temperature range	Operating temperature range
Tape MVT-R	Metallic silver facing	50 m (164 ft)	72 mm (2.8 in)	+10 to +40 °C (+50 to +104 °F)	-5 to +93 °C (+23 to +200 °F)
Tape MVT-B	Matte silver facing	15 m (49 ft)	1000 mm (3.28 ft)	+10 to +40 °C (+50 to +104 °F)	-52 to +120 °C (-40 to +248 °F)

Dimensional tolerance: ±3%. Custom sizes available on request depending on MOQ.

MATERIAL PROPERTIES

Product	Tensile strength	Adhesion strength	Elongation at break	Permeance (metric)	Permeance (perms)
Tape MVT-R	100N/25mm (22.5 lbf/in)	20 N/25mm (4.5 lbf/in)	15%	6.1 ng.Pa^{-1}.s^{-1}.m^{-2}	0.1

Product	Density kg/m^3	Flammability	Permeance (metric)	Permeance (perms)
Tape MVT-B	1500 +/- 50	FMVSS302, Pass	0.33 ng. Pa^{-1}. s^{-1}. m^{-2}*	0.00567*

**Typical values for PET encapsulated aluminium foil as per ASTM E96*

SURFACE PREPARATION

- Surfaces must be smooth, clean and free from grease, loose or flaking paint, dirt, and contaminants
- Surfaces can be cleaned with a degreasing solvent cleaner before applying the product
- Pressure should be used when applying to any surface, with Tape MVT-B, release liner gradually to avoid wrinkling
- Adhesion tests are recommended for powder coated surfaces
- Ageing trials should be performed on plasticised PVC
- Ideal for sealing joints and strengthening mechanical fasteners or fixings. Not to be used as mechanical joining devices
- It is essential, that the user evaluate product suitability for a particular application

STORAGE AND SHELF LIFE

Tape MVT needs to be stored away from direct sunlight in a clean, and dry environment with a stable temperature of between +10 to +40 °C (+50 to 104 °F) . It will have a shelf life of 12 months from the date of purchase if stored correctly.

PROJECT LIST

Image owned by Woodside Energy Ltd.

Projects	North West Shelf (NWS)
Builder	Woodside
Owner	Woodside/BHP
Year	1989 onwards
Location	Western Australia

Projects	Darwin LNG
Builder	Bechtel
Owner	ConocoPhillips
Year	2003 to 2006
Location	Northern Territory, Australia

Image owned by ConocoPhillips Australia

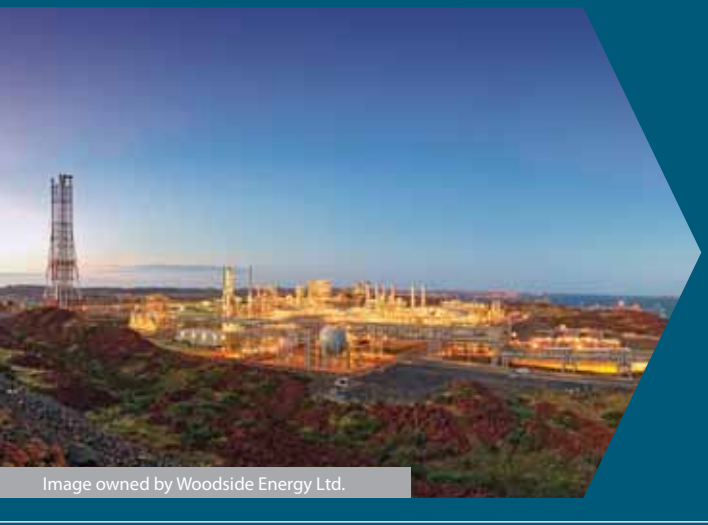


Image owned by Woodside Energy Ltd.

Projects	Pluto Gas Trains 1, 2 and 4
Builder	John Holland
Owner	Woodside
Year	2009 to 2013
Location	Western Australia

Projects	Pluto Gas Trains 3 and 5
Builder	AMEC Foster Wheeler WorleyParsons
Owner	Woodside
Year	2011
Location	Western Australia

Image owned by Woodside Energy Ltd.

Image owned by Santos

Projects	CSG Compressor Stations
Builder	Santos GLNG
Owner	Santos
Year	2013 to 2016
Location	Queensland, Australia

Projects	Gorgon
Builder	Chevron Australia
Owner	Joint venture - Chevron (Majority)
Year	2013 to 2017
Location	Western Australia

Image owned by Chevron Australia

Image owned by Chevron Australia

Projects	Wheatstone
Builder	Chevron
Owner	Joint venture - Chevron (Majority)
Year	2014 to 2017
Location	Western Australia

Projects	Gina Krog/Mariner
Builder	DSME, Daewoo Shipbuilding and Marine Engineering
Owner	Statoil
Year	2014 to 2018
Location	North Sea

Image owned by Inpex

Projects	Ichthys LNG Project
Builder	JKC Australia
Owner	Inpex
Year	2014 to 2018
Location	Western Australia

Projects	Curtis Island LNG
Builder	Bechtel
Owner	APLNG
Year	2015 to 2017
Location	Queensland, Australia

Image owned by Australia Pacific LNG

Image owned by Bechtel

Projects	Curtis Island LNG
Builder	Bechtel
Owner	QGC
Year	2015 to 2017
Location	Queensland, Australia

Projects	Curtis Island LNG
Builder	Bechtel
Owner	GLNG
Year	2015 to 2017
Location	Queensland, Australia

Image owned by Santos

PYROTEK
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THAILAND

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UNITED ARAB EMIRATES

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