TROCELLEN PRO THERMAL INSULATION

BS 476 Part 6 & 7 Class 0
MS 2095 Certified

TROCELLEN
INSULATION

TROCELLEN PRO

Project Reference: Kuala Lumpur Convention Centre

Trocellen Cross-linked Polyethylene foam finds many applications in the HVAC, plumbing, construction and roofing industries. It is used for insulation of hot and cold water pipes, air ducts, computer raised floor, wall and floor insulation, roofing structures, heat exchangers, split air conditioning systems, and many internal components found in large air handling units. In transportation markets, Trocellen can also be found in automotive, rail and marine applications.

A good insulation product has always been determined by its thermal conductivity and water resisting performance until now. Fire safety has increasingly gained importance throughout the years and is a required safety standard by fire departments around the world.

Trocellen Pro is a line of product that complies with the safety standards of Class '0' in accordance to British Standards (BS) 476 part 6 and part 7. To satisfy the Class '0' classification, the material must adhere to the various testing methods of part 6 and 7.

At Trocellen S.E.A., besides providing quality, comfort and convenience to our customers, we also emphasize on safety of the products. We take fire hazard very seriously, by making our products comply with Class 0 certification, it can be the deciding factor in determining whether a fire can be contained and extinguished quickly or not. Our foams are low in smoke emission and toxicity, the leading cause of death during a fire outbreak. In most cases, pipes and ducts are the carrier of flames that spreads to other parts of a building as they are interconnected throughout the building, therefore it is imperative for these materials to strictly adhere to the fire standards.

Why Trocellen?

Trocellen Cross-linked Polyethylene foam contributes to both the Green Building Index (GBI) and the Leadership in Energy and Environmental Design (LEED) certification. We are proud to be part of the Energy Commisions Building Malaysia and Kompleks Kerja Raya 2 (KKR2), both platinum rated buildings by GBI standards. We are also a proud partner of the Malaysian Green Building Confederation.

Energy Efficiency

Heat gain is the number one energy-draining nemesis in hot climates. Heat energy naturally transfers from hot areas to cooler ones. Trocellen's foam excellent insulation properties improves energy efficiency by minimizing unnecessary heat gain, reducing energy consumption. This will help achieve long lasting energy savings and increase overall energy efficiency of the building.

Indoor Environment Quality

Trocellen's foam are non-toxic and contains no volatile organic compound materials. It is non-fibrous materials which alleviates any chance of fibre erosion. In addition to having good resistance against ozone and UV, it is also fire retardant and emits minimal, non-harming levels of smoke and toxicity.

Environmental Friendly

Trocellen's foam are certified by the Australian Green Star standard, which means they are free from toxic chemicals and heavy metals. Our foam is also produced without the use of CFC, HCFC, VOC, or HC's. Unlike fibre glass insulation, our foam has minimal, non-harming levels of cancer inducing, formaldehyde gasses.

World-Class Standards

Trocellen's foam has been tested on many international standards:

- British Standard (BS)
- DIN standard
- ASTM
- AS/NZS
- JIS Standard
- Australian Green Star
- European Standard (EN)
- MS 2095
- UL Standard
- ISO

Project Reference: Energy Commission Building (Diamond Building)

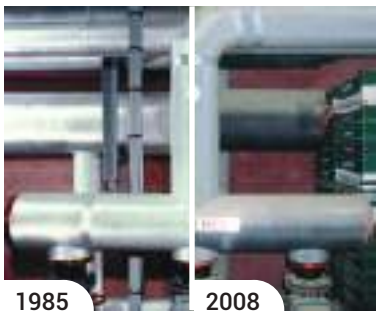
Trocellen AirPro

State-of-the-art Technology

Trocellen AirPro-Plus polyethylene foam comes laminated with a highly reflective reinforced aluminium foil specially designed to meet global air-conditioning duct insulation standards. It's flexibility allows the foam to be bent around the corners of air-conditioning ducts with ease, further reducing installation time and cost. Trocellen AirPro-Plus helps regulate the temperature inside and outside the air-conditioning duct with minimal thermal conductivity to prevent heat gain or heat loss. This minimizes energy loss, reduces energy consumption and ultimately enhances energy efficiency.

Trocellen AirPro-Plus

For added convenience, our optional Trocellen AirPro-Plus line of foam comes with our in-house factory coated industrial strength adhesive. Unlike conventional tissue interlayer glue in the market, which may be easily detachable in the presence of water moisture, our adhesive is both waterproof and long lasting. Perfect for projects that require minimal installation time and costs.



Unrivaled reliability

One of Trocellen's project, Vintage S.p.A., Italy, in 1985 was revisited after operation 23 years later in 2008. Thermal conductivity performance value of our foam remained constant despite all those years. This itself is a solid testimony to the quality of our product

PROPERTY	UNIT	1985	2008
Thermal Conductivity	W/mK	0.0394	0.0394

THICKNESS	LENGTH
6 mm	72 m
9 mm	47 m
12 mm	35 m
15 mm	28 m
20 mm	20 m
25 mm	18 m

Other thicknesses and dimensions available upon request. Standard width is 1.2m.

Installation process

Our flexible AirPro-Plus foam allows for an effortless installation process. Just bend it around the duct and let the built-in glue do the work. Scan the QR code on the right to witness the convenience of installing our AirPro-Plus insulation polyethylene foam.

TECHNICAL DATA		TEST STANDARD	UNIT	TROCELLEN AIRPRO
BARE FOAM				
Density		ISO 845	Kg/m³	25
Tensile Strength	Longitudinal Transversal	ISO 1798	Mpa Mpa	0.20 0.16
Elongation At Break	Longitudinal Transversal	ISO 1798	% %	140 160
Compression Stress Strain At Deflection	10% 25% 50%	ISO 3386	KPa KPa KPa	6 24 69
Compression Set (22h 25% 23°C) After Compression Release	24hr	ISO 1856	%	<9
Water Absorption		JIS K 6767 Method B	g/cm²	0.0001
FOAM LAMINATED WITH REFLECTIVE FOIL				
Tear Strength	Longitudinal Transversal	DIN 53507	N/mm N/mm	0.9 0.9
Operating Temperature Range		-	°C	-40 to 95
Dimensional Stability		DIN 53431	°C	95
Emissivity Of Foil Face		ASTM C 1371	-	≤0.05
Thermal Conductivity	0°C 23°C 40°C	JIS A 1412-2	W/mK	0.032 0.034 0.035
Noise Reduction Coefficient		ASTM C 423	-	0.3
Ozone Depleting Substances (Namely CFCs, HCFCs, HBFCs)		US EPA 5021A (MDL 1PPM)	-	Not Detected
Green Star Specification - Total VOC Emission Rate		ASTM D 5116	-	Low VOC Emitting (<0.5mg/m²/hr)
Volatile Organic Compounds (VOCs)		US EPA 5021A (MDL 1PPM)	-	Not Detected
Resistance To Fungi		ASTM G 21	-	Zero Growth
FIRE BEHAVIOUR				
Fire Rating		BS 476 Part 6 & 7	-	Class 0
Burning Test		UL 94	-	HF-1
Burning Test - Flame Spread And Smoke Developed Index		ASTM E 84	-	Class A
Ignitability Index Spread Of Flame Index Heat Evolved Index Smoke Developed Index		AS/NZS 1530.3	-	0 0 0 1
Maximum Specific Optical Smoke Density		ISO 5659-2	-	Ds(Max) < 50
GLUE PERFORMANCE For AirPro-Plus				
Adhesive Strength				
90° Peeling Test (PET Film) 180° Peeling Test (PET Film)		JIS Z 0237	N/mm	> 0.5 > 1

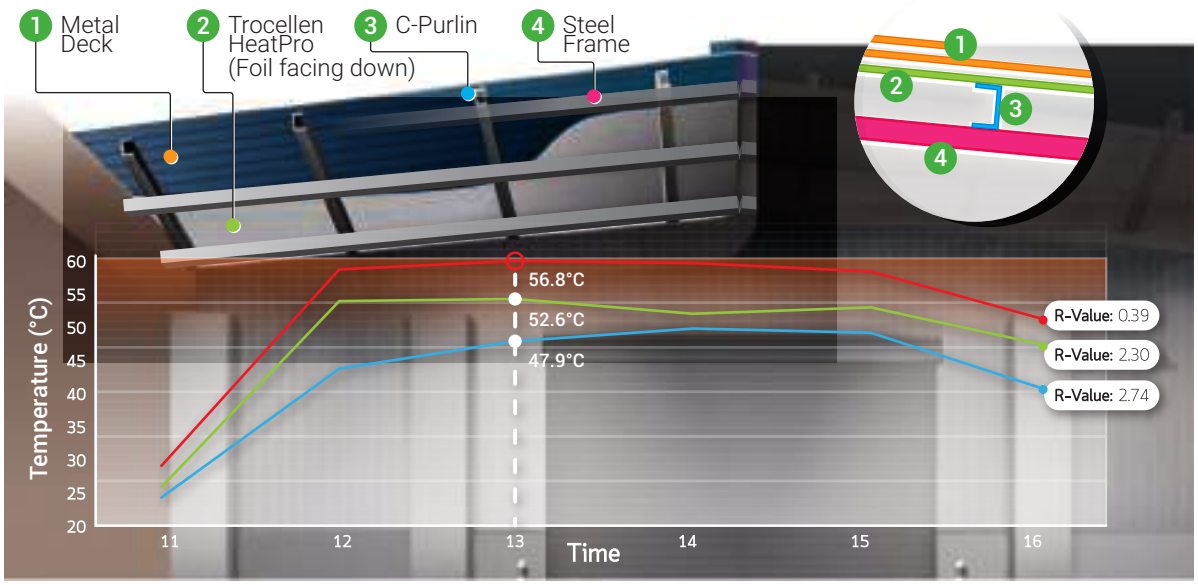
The data and information represented above are intended as general guide only and are not construed as specification limits.

All the above information is given in good faith and in accordance with our knowledge and experience. Any written and illustrated application instructions are without legal obligation and do not relieve you from testing and confirming the goods with regard to their suitability for the intended application, use or conversion. The high quality of our products is guaranteed according to our general sales condition.

Trocellen HeatPro

Impeccable performance

Our HeatPro line of foam are specifically engineered to insulate the intense heat of hot climates. HeatPro foam is especially suitable but not limited to roofing insulation. Our cutting-edge closed cell structure allows thermal conductivity to be at its optimal performance.



*This compilation of thermal performance facts are based on our own test system assemblies for the purpose of comparison. Individual results may vary depending on your roofing system.

- Roof temperature
- Indoor temperature with Trocellen HeatPro 5
- Indoor temperature with Trocellen HeatPro 10
- Peak roof temperature

THICKNESS	LENGTH
5 mm	80 m
10 mm	45 m

Other thicknesses and dimensions available upon request.

Standard width is 1.2m.

Quality assurance at its best

Stringent quality checks paired with the finest materials, our foam insulation never fails to impress when it comes to quality. Every HeatPro is supplied with factory laminated reinforced aluminium foil, providing additional physical strength and reducing thermal induction to the minimum.

Installation process

Installation of our foam is hassle-free, just unroll over the roof and secure it. Then mount roof sheets on top of it. No wiremesh required. Scan the QR code on the right to witness the convenience of installing our HeatPro insulation polyethylene foam.

TECHNICAL DATA		TEST STANDARD	UNIT	TROCELLEN HEATPRO
BARE FOAM				
Density		ISO 845	Kg/m³	33
Tensile Strength	Longitudinal Transversal	ISO 1798	Mpa Mpa	0.28 0.19
Elongation At Break	Longitudinal Transversal	ISO 1798	% %	100 120
Compression Stress Strain At Deflection	10% 25% 50%	ISO 3386	KPa KPa KPa	10 32 83
Compression Set (22h 25% 23°C) After Compression Release	24hr	ISO 1856	%	<10
Water Absorption		JIS K 6767 Method B	g/cm²	0.000084
FOAM LAMINATED WITH REFLECTIVE FOIL				
Tear Strength	Longitudinal Transversal	DIN 53507	N/mm N/mm	0.9 0.9
Operating Temperature Range		-	°C	-40 to 100
Dimensional Stability		DIN 53431	°C	100
Emissivity Of Foil Face		ASTM C 1371	-	≤0.05
Thermal Conductivity	0°C 23°C 40°C	JIS A 1412-2	W/mk	0.032 0.035 0.037
Noise Reduction Coefficient		ASTM C 423	-	0.1
Ozone Depleting Substances (Namely CFCs, HCFCs, HBFCs)		US EPA 5021A (MDL 1PPM)	-	Not Detected
Green Star Specification - Total VOC Emission Rate		ASTM D 5116	-	Low VOC Emitting (<0.5mg/m²/hr)
Volatile Organic Compounds (VOCs)		US EPA 5021A (MDL 1PPM)	-	Not Detected
Resistance To Fungi		ASTM G 21	-	Zero Growth
FIRE BEHAVIOUR				
Fire Rating		BS 476 Part 6 & 7	-	Class 0
Burning Test		UL 94	-	HF-1
Burning Test - Flame Spread And Smoke Developed Index		ASTM E 84	-	Class A
Ignitability Index Spread Of Flame Index Heat Evolved Index Smoke Developed Index		AS/NZS 1530.3	-	0 0 0 1
Maximum Specific Optical Smoke Density		ISO 5659-2	-	Ds(Max) < 50

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KL Convention Center, Malaysia


Four Towers of Madrid, Spain


Al Reem Tower, Dubai


The Leela Palace, India


Ministry of Finance, Malaysia


Airbus A320 Models


Taj Palace Hotel, India


Burj Khalifa, Dubai

TROCELLEN
A FURUKAWA COMPANY

Cert no: MY02/20014

Cert no: MY05/0153

SIRIM
Certified to: MS2095:2022
Certification no: PC002745

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TROCELLEN PRO
THERMAL PIPE INSULATION

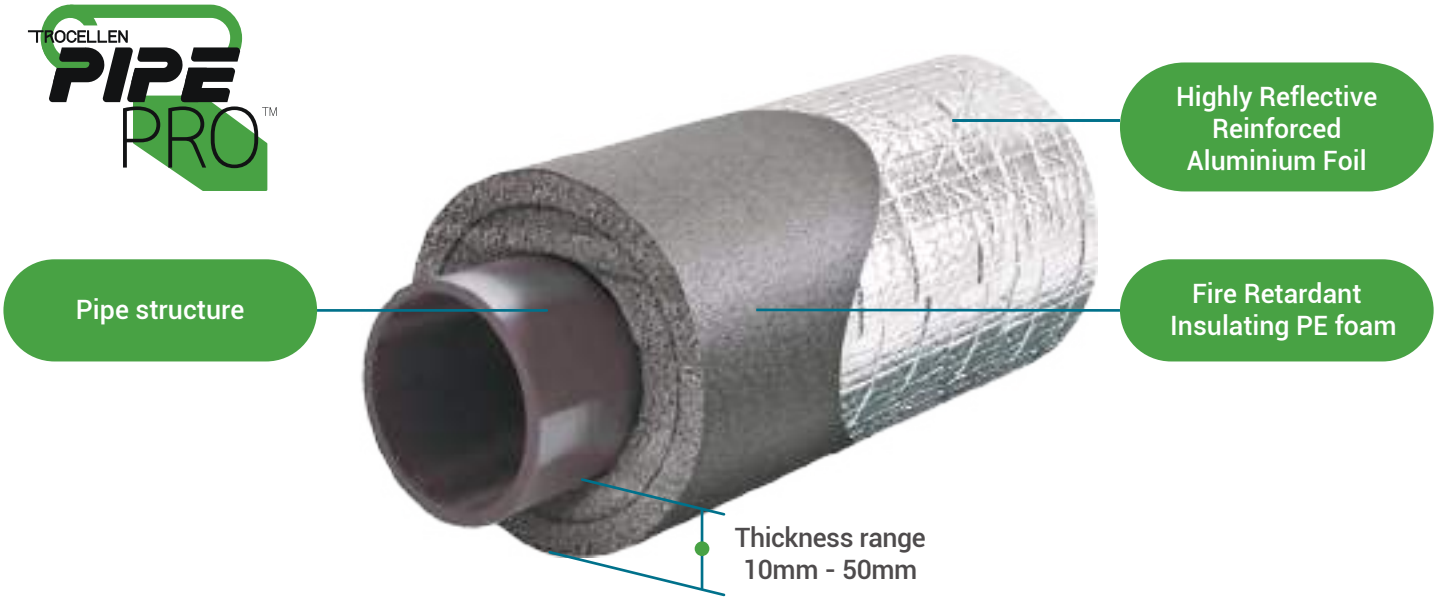
BS 476 Part 6 & 7 Class 0

TROCELLEN
INSULATION

TROCELLEN PIPEPRO™

Trocellen PipePro is specially engineered to help reduce heat transfer by creating an insulation barrier between your piping system and the atmosphere in order to prevent moisture condensation. The low thermal conductivity properties of Trocellen PipePro also helps reduce energy loss, allowing the piping system to work more efficiently with less energy usage. The closed-cell nature of Trocellen PipePro means it is naturally water resistant, preventing the growth of fungi. All Trocellen PipePro products are certified under the stringent fire safety test of BS 476 Part 6 & 7 standard, in which we have achieved the highest rating of Class 0.

Tested under **BS 476 part 6 & 7** with **Class 0**



PIPE NOMINAL SIZE		PIPEPRO INTERNAL DIAMETER (ID)	PIPEPRO THICKNESS							PIPEPRO LENGTH
Inches	DN	mm	mm							m
1	25	36	10	15	20	25	30	40	50	
2	50	63	10	15	20	25	30	40	50	
2 ½	65	76	10	15	20	25	30	40	50	
3	80	92	10	15	20	25	30	40	50	
4	100	117	10	15	20	25	30	40	50	2
5	125	144	10	15	20	25	30	40	50	
6	150	171	10	15	20	25	30	40	50	
8	200	222	10	15	20	25	30	40	50	
10	250	276	10	15	20	25	30	40	50	
12	300	327	10	15	20	25	30	40	50	

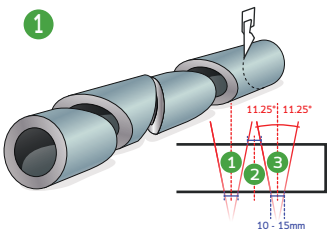
Various fittings & conversions

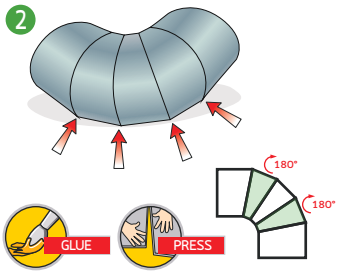
The pre-formed tube shape and lightweight nature of **Trocellen PipePro** means it can be easily slipped over pipes, allowing for a quick and easy installation. Plus, the excellent formability of PE foam allows it to be easily converted into tees and elbow joints of your piping system, making it extremely versatile to fit any of your projects. Saving you both time and cost.

Installation guide & video

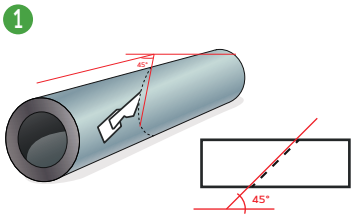
Refer to our installation guide and videos for more detailed steps on the fitting and conversion.

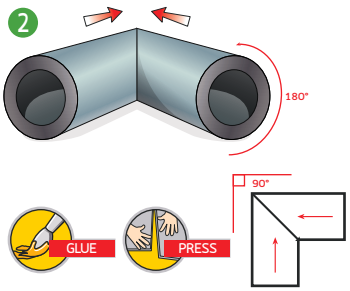
Curved



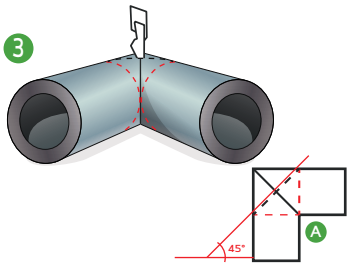


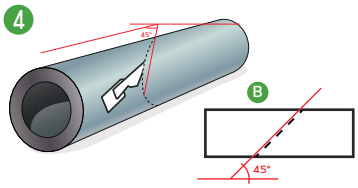
Right-angled

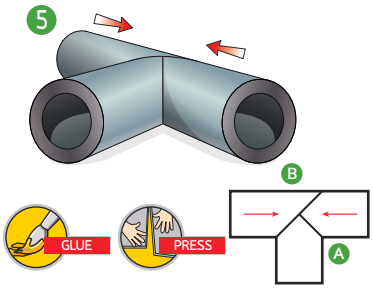




T-joint







Installation accesories

It is important to properly glue and seal installation work for best results, avoiding large losses of energy. A good bond would ensure durability and resistant to weathering.

We recommend using **contact adhesive** glue for our PipePro installation. Contact adhesive is a synthetic polymer-based glue which is ideal for bonding PE foam together. It can be easily purchased from your local hardware store.

To seal the PipePro connecting joints, we recommend using our **Trocellen DuraSeal** foil tape which are made with acrylic adhesive as opposed to rubber adhesive. This will not only allow for a stronger bond but also a much greater longevity once they cure and stick to the surface of Trocellen PipePro.

TECHNICAL DATA		TEST STANDARD	UNIT	TROCELLEN PIPEPRO
BARE FOAM				
Density		ISO 845	Kg/m³	25 - 33
Tensile Strength	Longitudinal Transversal	ISO 1798	Mpa Mpa	0.28 0.19
Elongation At Break	Longitudinal Transversal	ISO 1798	% %	100 120
Compression Stress Strain At Deflection	25% 50%	ISO 3386	KPa KPa	30 79
Compression Set (22h 25% 23°C) After Compression Release	24hr	ISO 1856	%	<10
FOAM LAMINATED WITH REINFORCED ALUMINIUM FOIL				
Tear Strength	Longitudinal Transversal	DIN 53507	N/mm N/mm	0.9 0.9
Operating Temperature Range		-	°C	-40 to 100
Dimensional Stability		DIN 53431	°C	100
Emissivity Of Foil Face		ASTM C 1371	-	≤0.05
Thermal Conductivity	24°C 49°C	ASTM C 335	W/mk	0.040 0.045
Ozone Depleting Substances (Namely CFCs, HCFCs, HBFCs)		US EPA 5021A (MDL 1PPM)	-	Not Detected
Green Star Specification - Total VOC Emission Rate		ASTM D 5116	-	Low VOC Emitting (<0.5mg/m²/hr)
Volatile Organic Compounds (VOCs)		US EPA 5021A (MDL 1PPM)	-	Not Detected
Resistance To Fungi		ASTM G 21	-	Zero Growth
FIRE BEHAVIOUR				
Fire Rating		BS 476 Part 6 & 7	-	Class 0
Maximum Specific Optical Smoke Density		ISO 5659-2	-	Ds(Max) < 50
STORAGE				
Store In Cool And Dry Condition, Out Of Direct Sunlight				

Cert no: MY02/20014

Cert no: MY05/0153

SIRIM
Certified to: MS2095:2022
Certification no: PC002745

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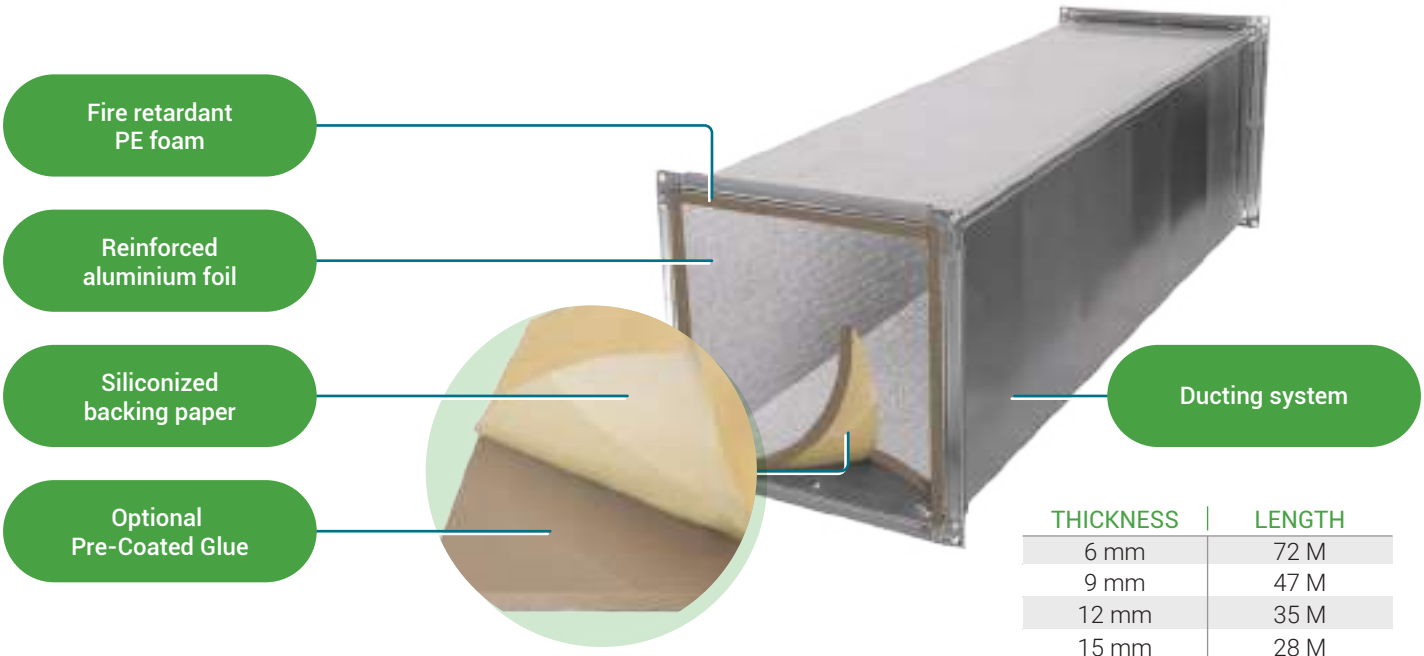
TROCELLEN SOUNDPRO™

Trocellen SoundPro™ is a chemically cross-linked polyethylene (PE) foam specially formulated with noise reduction in mind, all while maintaning the fire retardant properties of our Trocellen Pro series of products which meets the Class 0 safety standard. Our PE foam is naturally non-fibrous and water resistant, eliminating the possibility of any mould growth. It is also produced without the use of any toxic chemicals or heavy metals, making it the most suitable and safest material for indoor occupants. **Trocellen SoundPro™** is available with an optional adhesive backing for your convenience, saving you both installation time and cost.

BS 476 Part 6 & 7 with Class 0



THICKNESS	LENGTH
6 mm	72 M
9 mm	47 M
12 mm	35 M
15 mm	28 M
20 mm	20 M
25 mm	18 M

Other thicknesses and dimensions available upon request.

Trocellen SoundPro™ advantages

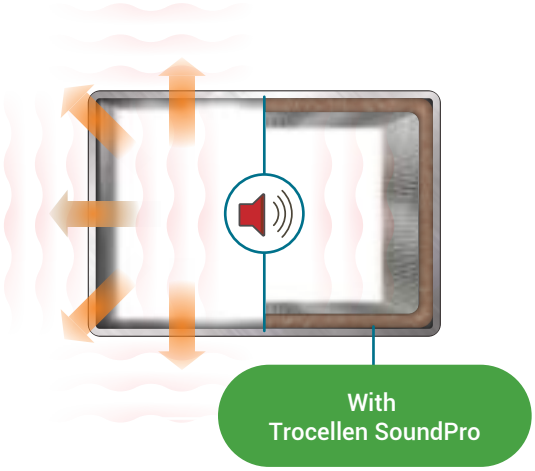
High durability with constant performance for the entire service life

Non-fibrous and **lightweight** nature of our foam makes it a breeze to install

Superior **thermal insulation** properties for both heat and cold

Built-in fire retardancy tested under the **BS476 Part 6 & 7 Class 0**

Open cell structure for excellent sound dampening properties to reduce sound transmission



Reduced sound transmission

Sound is a form of energy and travels in every direction within the air-conditioning duct, during the distance that it travels it causes vibrations whenever it hits air or the wall of the duct. **Trocellen SoundPro™** work to reduce or control the sound pressure created within from travelling outside the duct. The laminated foil surface helps reflect sound waves while our PE foam continues to dampen the transmission of sound to the outside environtment. If you are looking to make your environment quieter and more comfortable for your occupants, **Trocellen SoundPro™** is the right solution for you!

TECHNICAL DATA		TEST STANDARD	UNIT	SPECIFICATION
BARE FOAM				
Density		ISO 845	Kg/m³	25
Water Absorption		JIS K 6767 METHOD B	g/cm²	0.0001
FOAM LAMINATED WITH REFLECTIVE FOIL				
Thermal Conductivity	0°C 23°C 40°C	JIS A 1412-2	W/mK	0.035 0.036 0.038
Resistance to Fungi		ASTM G 21	-	Zero Growth
Green Star Specification - Total VOC Emission Rate		ASTM D 5116	-	Low VOC Emitting (<0.5 mg/m²/hr)
Operating Temperature Range		-	°C	-40 to 95
Noise Reduction Coefficient		ASTM C 423	-	0.3
FIRE BEHAVIOUR				
Ignitability Index Spread of Flame Index Heat Evolved Index Smoke Developed Index		AS/NZS 1530.3	-	0 0 0 1
Burning Test		UL 94	-	HF-1
Burning Test - Flame Spread and Smoke Developed Index		ASTM E 84	-	CLASS A
Fire Rating		BS 476 Part 6 & 7	-	CLASS 0
Maximum Specific Optical Smoke Density		ISO 5659-2	-	Ds (MAX) < 50
GLUE PERFORMANCE				
Adhesive Strength (PET Film)	90° Peeling Test 180° Peeling Test	JIS Z 0237	N/mm	>0.5 >1

*The data and information represented above are intended as general guide only and are not construed as specification limits.

Cert no: MY02/20014

Cert no: MY05/0153

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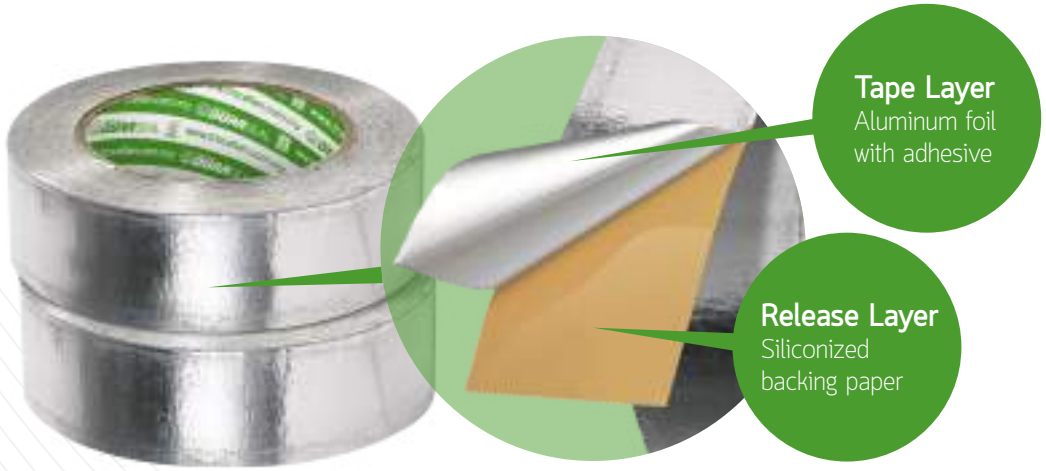
DURASEAL FOIL TAPE

TROCELLEN INSULATION

Trocellen's DuraSeal is an aluminum foil tape with strong adhesive protected by siliconized backing paper. The high quality adhesive provides good initial tack & permanent bonding for application on aluminum foil facing joints & seams. With outstanding temperature & aging resistance, along with low moisture vapor transmission rate, it is excellent for the HVAC industry.



TECHNICAL DATA		TEST STANDARD	UNIT	SPECIFICATION
ALUMINUM FOIL SPECIFICATIONS				
EMISSIVITY		ASTM C 1371	INDEX	≤ 0.05
ADHESIVE SPECIFICATIONS				
ADHESIVE STRENGTH		IN-HOUSE	N/50mm	≥ 10
LAMINATED ROLLS SPECIFICATIONS				
WIDTH		IN-HOUSE	mm	48 ± 5
LENGTH		IN-HOUSE	m	NOMINAL ± 1 %
TENSILE STRENGTH	Machine Direction Cross Direction	PRC TM 004/04	N/50mm	≥ 500 ≥ 450
ELONGATION	Machine Direction Cross Direction	PRC TM 004/04	%	≥ 12 ≥ 12
STORAGE				
STORE IN COOL AND DRY CONDITION (MUST BE FREE FROM DUST) SHELF LIFE: 12 MONTHS; STORED AT 21°C (70°F) / 50% RELATIVE HUMIDITY OUT OF DIRECT SUNLIGHT.				

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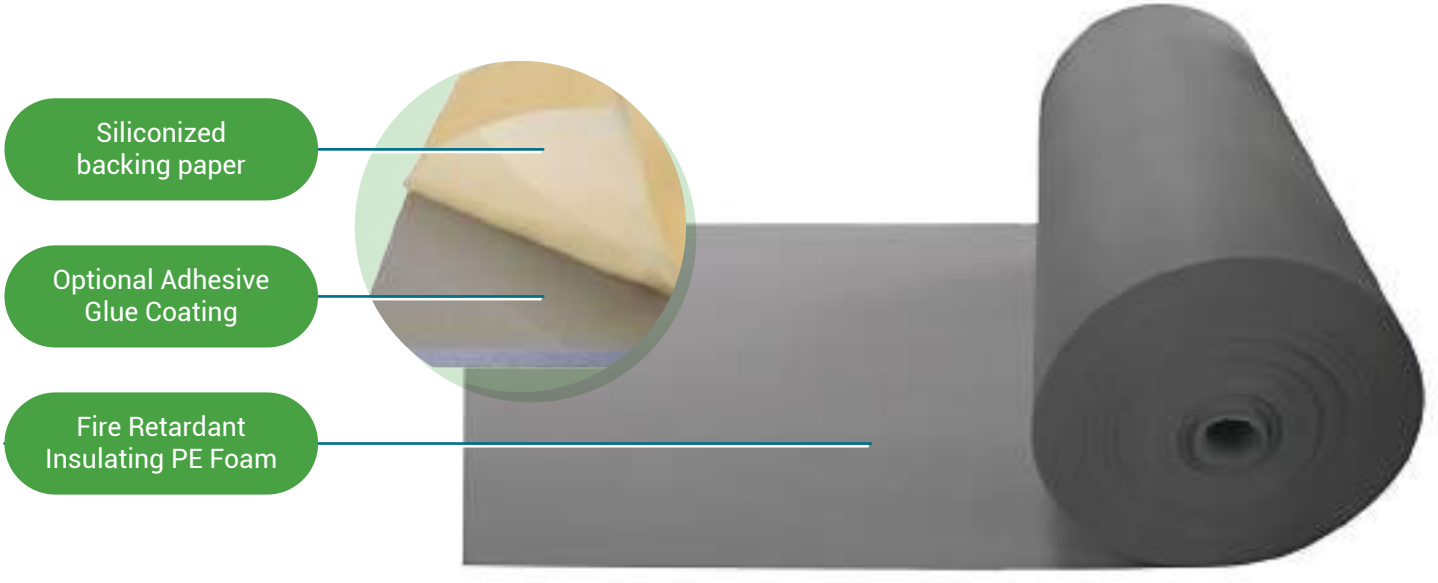
Cert no: MY02/20014

Cert no: MY05/0153

TROCELLEN CLASSIC

Trocellen Classic provides not only outstanding performance but world class qualities to our customers. Trocellen Classic is extensively tested to pass the stringent conditions of the UL94 standards, providing unparalleled fire-retardant performance in the market.



We recommend using **contact adhesive** glue; a synthetic polymer-based glue which is ideal for bonding PE foam together. It can be easily purchased from your local hardware store. Alternatively, for your added convenience, our Trocellen Classic foam also comes with an in-house factory pre-coated industrial strength adhesive option.

THICKNESS	LENGTH
6 mm	72 m
9 mm	47 m
12 mm	35 m
15 mm	28 m
20 mm	20 m
25 mm	18 m

Other thicknesses and dimensions available upon request.

Trocellen Classic advantages

- High durability with constant performance for the entire service life
- Non-fibrous and lightweight nature of our foam makes in a breeze to install
- Superior thermal insulation properties for both heat and cold
- Built-in fire retardancy tested under the UL94 standard
- Closed-cell structure of PE foam prevents water absorption
- Free of any cadmium, lead stabilizers, heavy metals, CFC, HCFC and HC

TECHNICAL DATA		TEST STANDARD	UNIT	TROCELLEN CLASSIC
BARE FOAM				
Density		ISO 845	Kg/m³	30
Tensile Strength	Longitudinal Transversal	ISO 1798	Mpa Mpa	0.22 0.18
Elongation At Break	Longitudinal Transversal	ISO 1798	% %	150 180
Compression Stress Strain At Deflection	10% 25% 50%	ISO 3386	KPa KPa KPa	9 27 78
Compression Set (22h 25% 23°C) After Compression Release	24hr	ISO 1856	%	<10
Tear Strength	Longitudinal Transversal	DIN 53507	N/mm N/mm	0.7 0.7
Water Absorption		JIS K 6767- METHOD B	g/cm²	0.00005
Operating Temperature Range		-	°C	-40 to 90
Dimensional Stability		DIN 53431	°C	90
Thermal Conductivity	0°C 23°C 40°C	JIS A 1412-2	W/mK	0.035 0.037 0.040
Ozone Depleting Substances (Namely CFCs, HCFCs, HBFCs)		US EPA 5021A (MDL 1PPM)	-	Not Detected
Volatile Organic Compounds (VOCs)		US EPA 5021A (MDL 1PPM)	-	Not Detected
Green Star Specification - Total VOC Emission Rate		ASTM D5116	-	Low VOC Emitting (<0.5mg/m²/hr)
Noise Reduction Coefficient		ASTM C423	-	0.2
Resistance To Fungi		ASTM G21	-	Zero Growth
FIRE BEHAVIOUR				
Burning Test		UL 94	-	HF-1

Cert no: MY02/20014

Cert no: MY05/0153

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