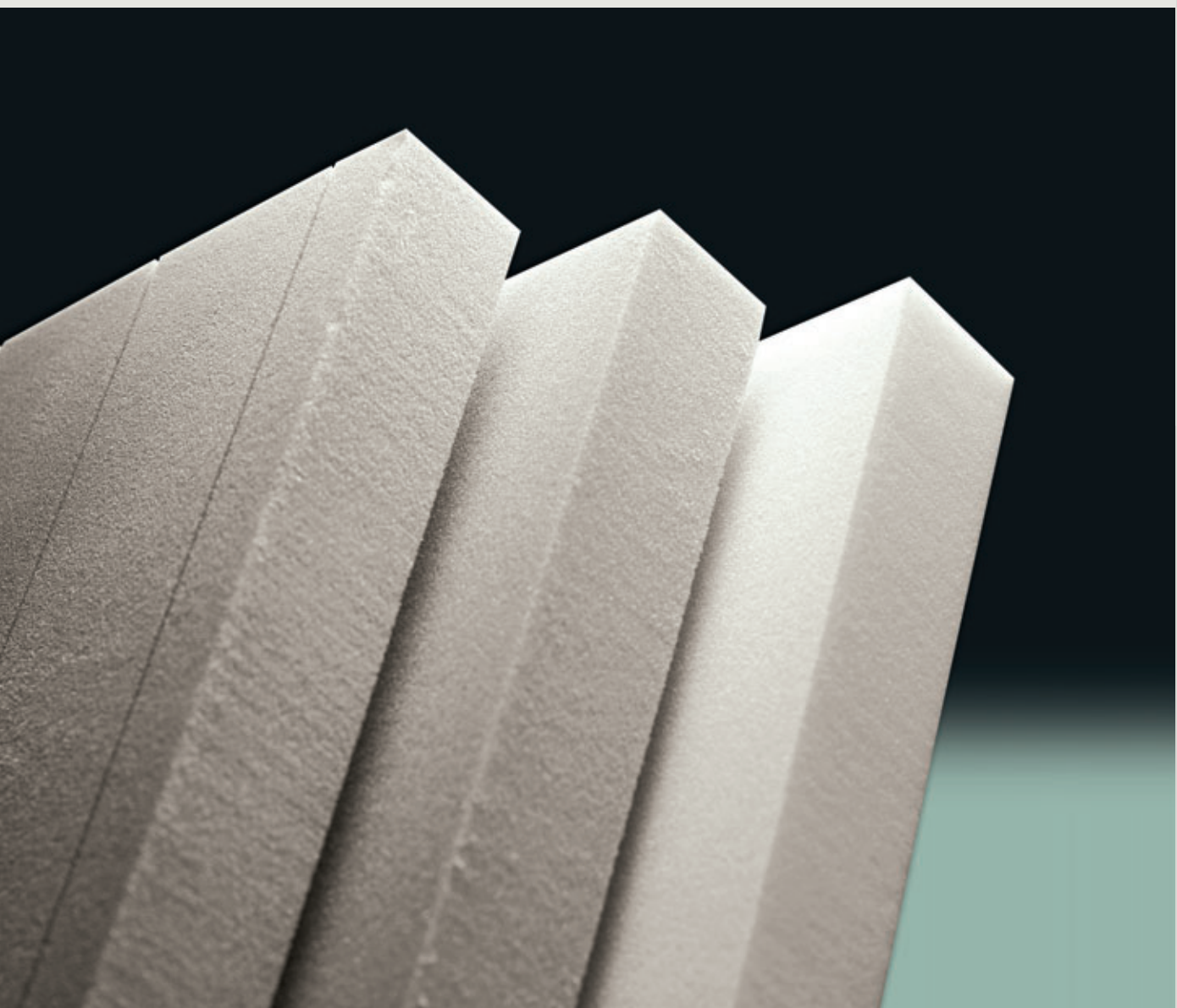


Second Issue March 2009



Tarecpur[®] Rigid Polyurethane Insulation

TECHNICAL DATA



Insulation Benefits

Description

The **Tarecpur**[®] range of CFC/HCFC-free rigid polyurethane (PUR) insulation is suitable for many types of use including:

- insulated panels and composites;
- temperature and hygiene controlled environments; and
- bodywork and refrigerated vehicles

Tarecpur[®] has been developed to provide optimum performance with regards to insulation efficiency, compressive strength, environment, health, safety and cost.

The development of rigid polyurethane insulation began in the 1930's when its unique combination of being a low density and rigid material, and having excellent water resistance was utilised for improving buoyancy in the marine industry.

Subsequent recognition of its very low thermal conductivity and high resistance to oil and chemicals (e.g. styrene), led to its commercial development in the thermal insulation industry.

Structure

Tarecpur[®] has a high closed cell content and consists of a densely cross linked matrix which does not readily break down in service.



Temperature Range

Tarecpur[®] may be used for pipework and equipment operating within the temperature range -180°C to $+100^{\circ}\text{C}$ / -292°F to $+212^{\circ}\text{F}$.

For higher operating temperatures up to $+200^{\circ}\text{C}$ / $+392^{\circ}\text{F}$ the use of products from the **Tarecpir**[®] range of rigid polyisocyanurate insulation should be considered.

Thermal Performance

Tarecpur[®] is one of the most thermally efficient insulation materials available. It retains its thermal performance under the most severe operating conditions by virtue of its closed cell structure and high resistance to moisture absorption.

Tarecpur[®] has a thermal conductivity value of $0.024 \text{ W/m}\cdot\text{K}$ / $0.166 \text{ Btu}\cdot\text{in/hr}\cdot\text{ft}^2\cdot^{\circ}\text{F}$.

A low thermal conductivity allows specified thermal performance standards to be achieved with a minimal thickness of insulation. This is particularly significant where space saving is important.

A thinner insulant can facilitate installation in confined spaces. Furthermore, it can often result in a lower surface area and therefore savings in finishing materials.

Moisture Resistance

Tarecpur[®] has a 95% (or greater) closed cell content, which makes it non-wicking and highly resistant to moisture penetration. This is particularly valuable in humid conditions where the build up of moisture can compromise the performance of lesser insulation materials.



When used in conjunction with a vapour tight facing, **Tarecpur**[®] provides a system which is totally moisture resistant.

Chemical Resistance and Compatibility

Tarecpur[®] has an excellent resistance to a wide range of oils, solvents and chemicals. Its compatibility with most solvent based coatings and adhesives, and polyester and epoxy resin based coatings, and GRP resin systems, allows it to maintain its physical integrity when in contact with such substances.

Tarecpur[®] is particularly suited for applications where it comes into contact with liquid polyesters.



Hygiene

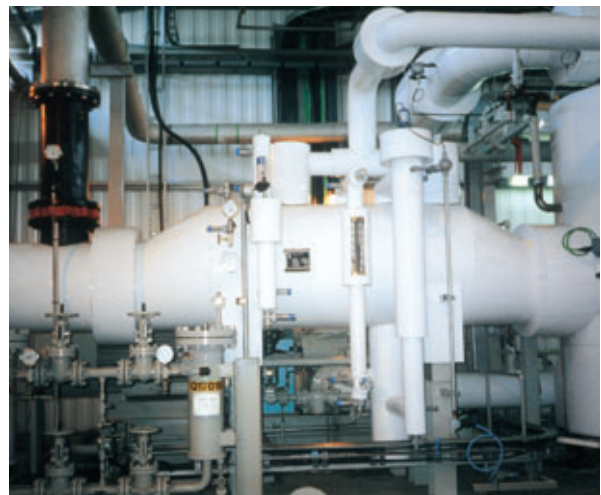
Tarecpur[®] is resistant to fungus and mould growth, will not sustain vermin and is non-fibrous, odourless and non-tainting. This is particularly significant in food processing / storage environments where hygiene is of the utmost importance.



Fire Performance

Tarecpur[®] is a thermoset material and unlike thermoplastic materials, it does not melt or produce flaming droplets when exposed to fire. It is rarely used without some form of additional facing. The type of application and facing material used should be considered in assessments of fire performance.

For applications where fire performance is a particular issue, the use of products from the **Tarecpir**[®] range of rigid polyisocyanurate insulation or the **Kooltherm**[®] range of rigid phenolic insulation should be considered.

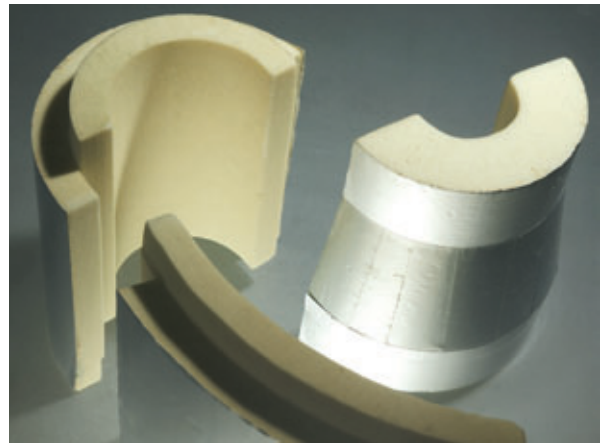


Mechanical Performance

Tarecpur[®] is a lightweight insulation material with a high strength to density ratio, good dimensional stability and excellent mechanical characteristics.

Due to the combination of its excellent thermal performance and remarkable mechanical strength, **Tarecpur**[®] is an exceptional insulation material for general thermal insulation applications or the insulation of refrigerated vehicles.

In particular, when utilised to insulate refrigerated vehicles, **Tarecpur**[®] maintains its physical integrity when subjected to repeated shocks and vibrations over the life of the vehicle.



Applications

Tarecpur[®] is an extremely versatile material, and is lightweight, easy to transport, handle and install. Although **Tarecpur**[®] was primarily designed for use in the thermal insulation industry, it is used in a variety of applications. Industries include:

- oil refinery and chemical process plant;
- liquefied gas and cryogenic process plant;
- refrigeration pipework and equipment;
- refrigerated road, rail and marine transport;
- refrigerated retail display cabinets;
- low temperature storage building panels;
- cold store panels;
- architectural construction panels;
- site assembled composite panels;
- glass reinforced plastics;
- computerised tool machining prototypes;
- ship building and flotation equipment;
- theatre, film and leisure park scenery; and
- encapsulation, structural and decorative furniture components.

Quality Assurance

Tarecpur[®] is manufactured to the highest quality standards under a quality control system approved to EN ISO 9001: 2000.



Availability

Tarecpur[®] is available in the following forms as standard:

- pipe sections and bends;
- insulated pipe support inserts;
- radiused and bevelled segments;
- standard slab: 2500 mm x 1000 mm / 98.4 in x 39.3 in & 2500 mm x 1250 mm / 98.4 in x 49.2 in;
- standard and non standard pipe sizes; and
- single layer, multi layer or rebated joints.

Technical Data

Tarecpur® Rigid Polyurethane Insulation 35-60 kg/m³ (2.1-5.0 lb/ft³)

General Physical Properties (Metric)

Property	Test Method	Unit	Typical Value					
Nominal Density	(EN ISO 845) / (ASTM D 1622)	kg/m ³	35	37	40	42	50	60
Thermal Conductivity at +10°C	(EN 12667) / (ASTM C 518)	W/m·K	0.024	0.024	0.024	0.024	0.024	0.024
Colour			Cream	Cream	Cream	Cream	Cream	Cream
Closed Cell Content	(EN ISO 4590) Method 1 (ASTM D 2856) Method B	%	≥ 95	≥ 95	≥ 95	≥ 95	≥ 95	≥ 95
Operating Temperature Limits	Upper Limit	°C	+100	+100	+100	+100	+100	+100
	Lower Limit	°C	-180	-180	-180	-180	-180	-180
Minimum Compressive Strength at +23°C	(EN 826) / (ASTM D 1621) Parallel	kPa	190	210	250	270	370	500
	Perpendicular	kPa	120	130	160	190	250	340
Minimum Tensile Strength at +23°C	(ASTM D 1623) Parallel	kPa	430	450	470	490	600	700
	Perpendicular	kPa	300	320	340	350	450	530
Linear Dimensional Stability	(EN 1604) / (ASTM D 2126) +93°C for 24 hours	%	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
	-30°C for 24 hours	%	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1
	+70°C for 48 hours and 95% RH	%	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3
Friability for 10 mins	(ASTM C 421)	%	< 15	< 15	< 15	< 15	< 15	< 15
Linear Expansion Coefficient	(ASTM D 696)	m/m·K	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶
Water Absorption	(ISO 2896)	Vol %	≤ 5.0	≤ 5.0	≤ 5.0	≤ 5.0	≤ 5.0	≤ 5.0
Water Vapour Permeability	(ASTM E 96)	ng/Pa·s·m	≤ 5.5	≤ 5.5	≤ 5.5	≤ 5.5	≤ 5.5	≤ 5.5

General Physical Properties (Imperial)

Property	Test Method	Unit	Typical Value					
Nominal Density	(EN ISO 845) / (ASTM D 1622)	lb/ft ³	2.1	2.3	2.5	2.6	3.1	3.75
Thermal Conductivity at +50°F	(EN 12667) / (ASTM C 518)	Btu·in/hr·ft ² ·°F	0.166	0.166	0.166	0.166	0.166	0.166
Colour			Cream	Cream	Cream	Cream	Cream	Cream
Closed Cell Content	(EN ISO 4590) Method 1 (ASTM D 2856) Method B	%	≥ 95	≥ 95	≥ 95	≥ 95	≥ 95	≥ 95
Operating Temperature Limits	Upper Limit	°F	+212	+212	+212	+212	+212	+212
	Lower Limit	°F	-292	-292	-292	-292	-292	-292
Minimum Compressive Strength at +73°F	(EN 826) / (ASTM D 1621) Parallel	psi	28	31	36	39	54	73
	Perpendicular	psi	17	19	23	28	37	49.3
Minimum Tensile Strength at +73°F	(ASTM D 1623) Parallel	psi	62	65	68	71	87	102
	Perpendicular	psi	44	46	49	51	65	77
Linear Dimensional Stability	(EN 1604) / (ASTM D 2126) +199.4°F for 24 hours	%	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
	-22°F for 24 hours	%	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1
	+158°F for 48 hours and 95% RH	%	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3
Friability for 10 mins	(ASTM C 421)	%	< 15	< 15	< 15	< 15	< 15	< 15
Linear Expansion Coefficient	(ASTM D 696)	ft/ft·K	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶
Water Absorption	(ISO 2896)	Vol %	≤ 5.0	≤ 5.0	≤ 5.0	≤ 5.0	≤ 5.0	≤ 5.0
Water Vapour Permeability	(ASTM E 96)	Perm inch	≤ 3.8	≤ 3.8	≤ 3.8	≤ 3.8	≤ 3.8	≤ 3.8

Contact Details

Customer Service

For quotations, order placement and details of despatches please contact the Kingspan Tarec Industrial Insulation Customer Service Department on the numbers below:

UK and Ireland – Tel: +44 (0) 870 733 0021
– Fax: +44 (0) 870 733 0022
– email: sales.uk@KingspanTarec.co.uk

Rest of World – Tel: +32 (0) 14 44 25 21
– Fax: +32 (0) 14 44 25 37
– email: sales.be@KingspanTarec.com

Technical Advice

Kingspan Tarec Industrial Insulation supports all of its products with a comprehensive Technical Advisory Service for specifiers, stockists and contractors.

Calculations can be run to provide heat losses / gains, condensation / dew point risk, required insulation thicknesses etc... upon receipt of project specifications. Thereafter, any number of permutations can be run to help you achieve your desired targets.

General application advice and advice on design detailing and fixing etc... can also be given. Site surveys are also undertaken as appropriate. Please contact the Kingspan Tarec Industrial Insulation Technical Service Department on the numbers below:

UK and Ireland – Tel: +44 (0) 870 733 0021
– Fax: +44 (0) 870 733 0022
– email: technical.uk@KingspanTarec.co.uk

Rest of World – Tel: +32 (0) 14 44 25 36
– Fax: +32 (0) 14 42 72 21
– email: technical.be@KingspanTarec.com

Literature & Samples

Kingspan Tarec Industrial Insulation produces a comprehensive range of technical literature for specifiers, contractors, stockists and end users.

For copies please contact the Kingspan Tarec Industrial Insulation Marketing Department on the numbers below:

UK and Ireland – Tel: +44 (0) 870 733 0021
– Fax: +44 (0) 870 733 0022
– email: info.uk@KingspanTarec.co.uk

Rest of World – Tel: +32 (0) 14 44 25 21
– Fax: +32 (0) 14 44 25 37
– email: info.be@KingspanTarec.com

General Enquiries

For all other enquiries contact Kingspan Tarec Industrial Insulation on the numbers below:

UK and Ireland – Tel: +44 (0) 870 733 0021
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Rest of World – Tel: +32 (0) 14 44 25 25
– Fax: +32 (0) 14 42 72 21
– email: info.be@KingspanTarec.com

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