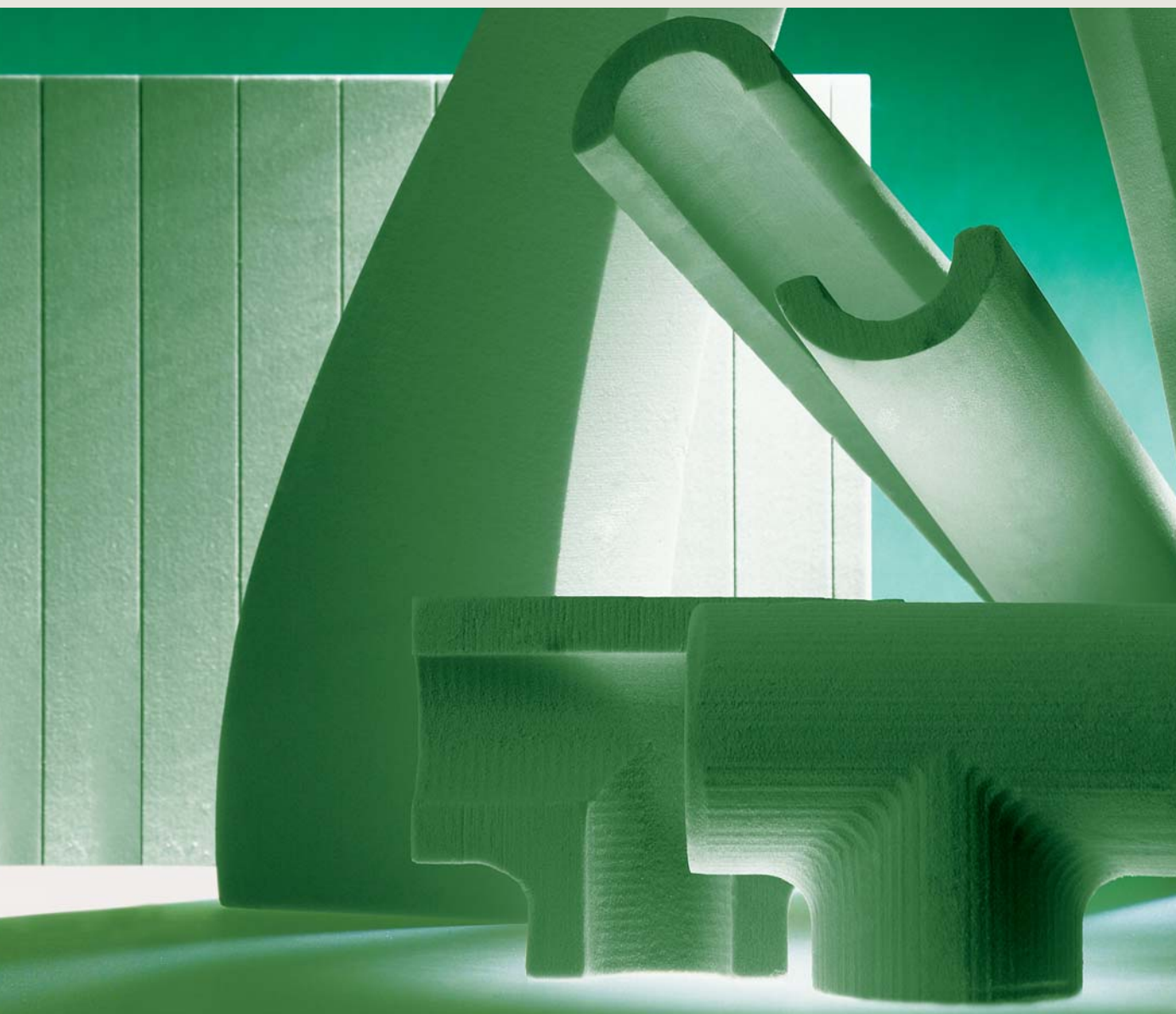


Second Issue March 2009



Tarecpir[®] Rigid Polyisocyanurate Insulation

TECHNICAL DATA



Prestige Projects



Project: Dahbol LNG India
Engineer: Kvanerner
Insulation Contractor: Punj Lloyd
Product: **Tarec**pir® 45 kg/m³ / 2.8 lb/ft³
Volume: 10,000 m³ / 35,4146 ft³



Project: Puerto Rico LNG
Engineer: PDM
Insulation Contractor: Insulations Inc
Product: **Tarec**pir® 35 kg/m³ / 2.2 lb/ft³

Insulation Benefits

Description

The **Tarecpir®** range of CFC/HCFC-free rigid polyisocyanurate (PIR) insulation is suitable for a wide spectrum of applications. Whilst retaining all of the benefits of rigid polyurethane insulation, **Tarecpir®** has a considerably increased resistance to burning and spread of flame.

The **Tarecpir®** insulation range consists of:

- **Tarecpir® M1** (improved fire performance);
- **Tarecpir® B2** (improved thermal efficiency);
- **Tarecpir® CR** (cryogenic applications);
- **Tarecpir® HT** (high temperature); and
- **Tarecpir® HD** (high density).

Tarecpir® has been developed to provide optimum performance with regards to insulation efficiency, fire resistance, compressive strength, environment, health, safety and cost.

Tarecpir® has, over time, gained worldwide recognition in many industries including Building Services / HVAC, industrial process, petrochemical, cryogenic and LNG for outstanding product quality and performance.



Structure

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

Temperature Range

Tarecpir® may be used for pipework and equipment operating within the temperature range -200°C to $+120^{\circ}\text{C}$ / -328°F to $+248^{\circ}\text{F}$, and even up to $+200^{\circ}\text{C}$ / $+392^{\circ}\text{F}$ for **Tarecpir® HT**.

Thermal Performance

Tarecpir® is one of the most thermally efficient insulation materials commonly 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.

Tarecpir® has a thermal conductivity as low as $0.024 \text{ W/m}\cdot\text{K}$ / $0.166 \text{ Btu}\cdot\text{in/hr}\cdot\text{ft}^2\cdot^{\circ}\text{F}$.

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.

Insulation Benefits

Moisture Resistance

Tarecpir® 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. It is an ideal insulation material for cold, chilled and low temperature hot water pipework.

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



Chemical Resistance and Compatibility

Tarecpir® is resistant 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, allows it to maintain its physical integrity when in contact with such substances.

Quality Assurance

The **Tarecpir®** range is manufactured to the highest quality standards under a quality control system approved to EN ISO 9001: 2000.



Hygiene

Tarecpir® is resistant to fungus and mould growth, will not sustain vermin and is non-fibrous, odourless and non-tainting.

Fire Performance

Tarecpir® is a thermoset material. When subjected to fire, its outer surface forms a strong carbonaceous layer that retards further flame spread and penetration. Unlike thermoplastic materials, **Tarecpir®** does not melt or produce flaming droplets when exposed to fire. **Tarecpir®** satisfies the requirements of major industrial specifications.



Tarecpir® M1 Insulation

Tarecpir® M1 (improved fire performance) has been specially developed for industrial process and building services / HVAC applications where superior fire performance is required.

Tarecpir® M1 is classified as being Class 0 by the Building Regulations in England & Wales, Northern Ireland and the Republic of Ireland, and Low Risk by the Building Standards in Scotland. It also achieves a Flame Spread Index of < 35* under ASTM E 84.



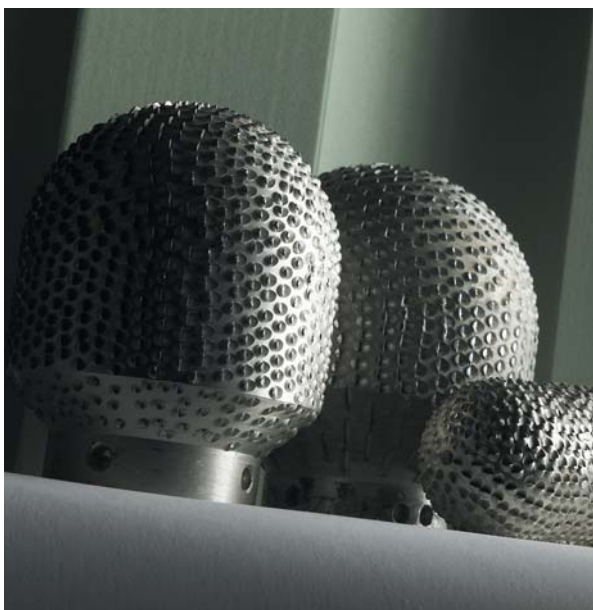
Tarecpir® CR Insulation

For cryogenic applications where excellent fire performance, enhanced compressive strength and resistance to thermal stress are required, **Tarecpir® CR** (cryogenic applications) has been developed.

Its fire performance (Class 0 to the Building Regulations in England & Wales, Northern Ireland and the Republic of Ireland, and Low Risk to the Building Standards in Scotland, plus a Flame Spread Index of < 25 under ASTM E 84), and its resistance to thermal stress makes **Tarecpir® CR** ideal for insulation applications with a working temperature as low as -200°C / -328°F.

Tarecpir® B2 Insulation

Tarecpir® B2 (improved thermal efficiency) is recommended for building services where increased thermal efficiency is priority. **Tarecpir® B2** has a thermal conductivity of 0.024 W/m·K / 0.166 Btu·in/hr·ft²·°F.



* Tarecpir® M1 40 kg/m³

Insulation Benefits



Tarecpir® HD Insulation

Tarecpir® HD (high density) is a specially modified rigid polyisocyanurate insulation available in a range of densities up to 320 kg/m³ / 20 lb/ft³. **Tarecpir® HD** is particularly suitable for use in load bearing applications, making it ideal for insulated pipe support inserts.

The use of **Tarecpir® HD** for insulated pipe support inserts can help to avoid the potential problems of cold bridging and / or energy loss between the pipework and support structure.

Tarecpir® HT Insulation

Tarecpir® HT (high temperature) is a specially modified rigid polyisocyanurate insulation with a standard density of 40 kg/m³ / 2.5 lb/ft³. Other densities are available upon request. Due to its special formulation, **Tarecpir® HT** is capable of dealing with a continuous working temperature of +200°C / +392°F.

When **Tarecpir® HT** is used at high temperatures, the insulation maintains its closed cell content and its dimensional stability throughout its in service life.

Tarecpir® HT has been used on many high demanding projects worldwide.

Applications

Tarecpir® is a versatile insulation material with a high strength to density ratio. It is lightweight, easy to transport, handle and install. **Tarecpir®** is specified for use in a wide range of applications including:

- industrial process, food, beverage, brewery, pharmaceutical and chemical plants;
- cryogenic, LNG, LPG, petrochemical, ethylene and ammonia production; and
- Building Services / HVAC applications.

In particular, **Tarecpir®** satisfies the strict requirements of major petrochemical and LNG specifications. As a result, **Tarecpir®** is synonymous with specifications for high quality thermal insulation worldwide.



Availability

Tarecpir® 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

Tarecpir® HT Rigid Polyisocyanurate Insulation 40 kg/m³ / 2.5 lb/ft³

General Physical Properties (Metric)

Property	Test Method	Unit	Typical Value
Nominal Density	(EN ISO 845) / (ASTM D 1622)	kg/m ³	40
Thermal Conductivity at +10°C	(EN 12667) / (ASTM C 518)	W/m·K	0,026
Colour			Gris
Closed Cell Content	(EN ISO 4590) Methode 1 / (ASTM D 2856) Methode B	%	≥ 95
Operating Temperature Limits	Limite maximale	°C	+200
	Limite minimale	°C	-180
Minimum Compressive Strength at +23°C	(EN 826) / (ASTM D 1621) Parallel	kPa	230
	Perpendicular	kPa	150
Minimum Tensile Strength at +23°C	(ASTM D 1623) Parallel	kPa	490
	Perpendicular	kPa	340
Linear Dimensional Stability	(EN 1604) / (ASTM D 2126) +93°C bij 24 hours	%	≤ 1
	-30°C bij 24 hours	%	≤ 1
	+70°C bij 24 hours and 95% RH	%	≤ 3
Friability for 10 mins	(ASTM C 421)	%	< 40
Linear Expansion Coefficient	(ASTM D 696)	m/m·K	40-70 x 10 ⁻⁶
Water Absorption	(ISO 2896)	Vol %	≤ 5,5
Water Vapour Permeability	(ASTM E 96)	ng/Pa·s·m	≤ 5,5

General Physical Properties (Imperial)

Property	Test Method	Unit	Typical Value
Nominal Density	(EN ISO 845) / (ASTM D 1622)	lb/ft ³	2.5
Thermal Conductivity at +50°F	(EN 12667) / (ASTM C 518)	Btu-in/hr·ft ² ·°F	0.18
Colour			Grey
Closed Cell Content	(EN ISO 4590) Method 1 / (ASTM D 2856) Method B	%	≥ 95
Operating Temperature Limits	Upper Limit	°F	+392
	Lower Limit	°F	-292
Minimum Compressive Strength at +73°F	(EN 826) / (ASTM D 1621) Parallel	psi	33.4
	Perpendicular	psi	21.8
Minimum Tensile Strength at +73°F	(ASTM D 1623) Parallel	psi	71.0
	Perpendicular	psi	49.3
Linear Dimensional Stability	(EN 1604) / (ASTM D 2126) +199.4°F for 24 hours	%	≤ 1
	-22°F for 24 hours	%	≤ 1
	+158°F for 48 hours and 95% RH	%	≤ 3
Friability for 10 mins	(ASTM C 421)	%	< 40
Linear Expansion Coefficient	(ASTM D 696)	ft/ft·K	40-70 x 10 ⁻⁶
Water Absorption	(ISO 2896)	Vol %	≤ 5.0
Water Vapour Permeability	(ASTM E 96)	Perm inch	≤ 3.8

Fire Test Classifications

Property	Test Method	Typical Value
Epiradiateur	NF P 92-501	M4

Fire Test Specifications

Property	Test Method	Specification
Vertical Burning	DIN 4102-1: 1998	B2

Technical Data

Tarecpir® M1 Rigid Polyisocyanurate Insulation 33-80 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	33	40	50	80
Thermal Conductivity at +10°C	(EN 12667) / (ASTM C 518)	W/m·K	0.026	0.026	0.026	0.029
Colour			Green	Green	Green	Green
Closed Cell Content	(EN ISO 4590) Method 1 / (ASTM D 2856) Method B	%	≥ 95	≥ 95	≥ 95	≥ 95
Operating Temperature Limits	Upper Limit	°C	+120	+120	+120	+120
	Lower Limit	°C	-200	-200	-200	-200
Minimum Compressive Strength at +23°C	(EN 826) / (ASTM D 1621) Parallel	kPa	180	220	310	700
	Perpendicular	kPa	90	140	200	520
Minimum Tensile Strength at +23°C	(ASTM D 1623) Parallel	kPa	350	410	510	850
	Perpendicular	kPa	190	300	350	700
Linear Dimensional Stability	(EN 1604) / (ASTM D 2126) +93°C for 24 hours	%	≤ 1	≤ 1	≤ 1	≤ 1
	-30°C for 24 hours	%	≤ 1	≤ 1	≤ 1	≤ 1
	+70°C for 48 hours and 95% RH	%	≤ 3	≤ 3	≤ 3	≤ 3
	(ASTM C 421)	%	< 40	< 35	< 35	< 20
Friability for 10 mins	(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
Linear Expansion Coefficient	(ISO 2896)	Vol %	≤ 5.0	≤ 5.0	≤ 5.0	≤ 5.0
Water Absorption	(ASTM E 96)	ng/Pa·s·m	≤ 5.5	≤ 5.5	≤ 5.5	≤ 5.5
Water Vapour Permeability						

General Physical Properties (Imperial)

Property	Test Method	Unit	Typical Value			
Nominal Density	(EN ISO 845) / (ASTM D 1622)	lb/ft ³	2.1	2.5	3.1	5.0
Thermal Conductivity at +50°F	(EN 12667) / (ASTM C 518)	Btu-in/hr-ft ² ·°F	0.18	0.18	0.18	0.20
Colour			Green	Green	Green	Green
Closed Cell Content	(EN ISO 4590) Method 1 / (ASTM D 2856) Method B	%	≥ 95	≥ 95	≥ 95	≥ 95
Operating Temperature Limits	Upper Limit	°F	+248	+248	+248	+248
	Lower Limit	°F	-328	-328	-328	-328
Minimum Compressive Strength at +73°F	(EN 826) / (ASTM D 1621) Parallel	psi	26	32	45	102
	Perpendicular	psi	13	20	29	75
Minimum Tensile Strength at +73°F	(ASTM D 1623) Parallel	psi	51	60	74	123
	Perpendicular	psi	28	44	51	102
Linear Dimensional Stability	(EN 1604) / (ASTM D 2126) +199.4°F for 24 hours	%	≤ 1	≤ 1	≤ 1	≤ 1
	-22°F for 24 hours	%	≤ 1	≤ 1	≤ 1	≤ 1
	+158°F for 48 hours and 95% RH	%	≤ 3	≤ 3	≤ 3	≤ 3
	(ASTM C 421)	%	< 40	< 35	< 35	< 20
Friability for 10 mins	(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
Linear Expansion Coefficient	(ISO 2896)	Vol %	≤ 5.0	≤ 5.0	≤ 5.0	≤ 5.0
Water Absorption	(ASTM E 96)	Perm inch	≤ 3.8	≤ 3.8	≤ 3.8	≤ 3.8
Water Vapour Permeability						

Fire Test Classifications

Fire Test	Test Method	Typical Result			
Fire Propagation	BS 476-6: 1989	Index of performance (I) not exceeding 12 and sub index (i ₁) not exceeding 6*			
Surface Spread of Flame	BS 476-7: 1997	Class 1*	Class 1*	Class 1*	Class 1*
Horizontal Burning	EN ISO 3582: 2000	≤ 25 mm / 1 in	≤ 25 mm / 1 in	≤ 25 mm / 1 in	≤ 25 mm / 1 in
Oxygen Index	EN ISO 4589-2: 1996	≥ 30%	≥ 30%	≥ 30%	≥ 30%
Temperature Index	EN ISO 4589-3: 1996	> 390°C / 734°F	> 390°C / 734°F	> 390°C / 734°F	> 390°C / 734°F
Flame Spread Index	ASTM E 84	≤ 30	≤ 25	≤ 25	-
Fire Propagation	NEN 6065	Class 2	-	-	-
Smoke Index	NEN 6066	1.5** / 2.2***	-	-	-

* These test results combined enables a Class 0 classification to the Building Regulations in England & Wales, Northern Ireland and the Republic of Ireland, and a Low Risk classification to the Building Standards in Scotland. These tests were conducted on samples of 25 mm / 1 in thickness faced with a reinforced aluminium foil vapour barrier jacket.

** Faced with a glass reinforced aluminium foil vapour barrier jacket

*** Faced with a multiple layered polyester and aluminium foil vapour barrier jacket.

Fire Test Specifications

Fire Test	Test Method	Specification			
Epiradiateur	NF P 92-501	M1	M1	M1	M1
Vertical Burning	DIN 4102-1: 1998	B2	B2	B2	B2

Tarecpir® B2 Rigid Polyisocyanurate Insulation 33-60 kg/m³ / 2.1-3.75 lb/ft³

General Physical Properties (Metric)

Property	Test Method	Unit	Typical Value		
Nominal Density	(EN ISO 845) / (ASTM D 1622)	kg/m ³	33	40	60
Thermal Conductivity at +10°C	(EN 12667) / (ASTM C 518)	W/m-K	0.024	0.024	0.025
Colour			Cream	Cream	Cream
Closed Cell Content	(EN ISO 4590) Method 1 / (ASTM D 2856) Method B	%	≤ 95	≤ 95	≤ 95
Operating Temperature Limits	Upper Limit	°C	+120	+120	+120
	Lower Limit	°C	-180	-180	-180
Minimum Compressive Strength at +23°C	(EN 826) / (ASTM D 1621)				
	Parallel	kPa	180	250	430
Minimum Tensile Strength at +23°C	(ASTM D 1623)				
	Parallel	kPa	350	450	690
Linear Dimensional Stability	(EN 1604) / (ASTM D 2126)				
	+93°C for 24 hours	%	≤ 1	≤ 1	≤ 1
Friability for 10 mins	(ASTM C 421)	%	< 30	< 30	< 30
	-30°C for 24 hours	%	≤ 1	≤ 1	≤ 1
Linear Expansion Coefficient	(ASTM D 696)	m/m-K	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶
	+70°C for 48 hours and 95% RH	%	≤ 3	≤ 3	≤ 3
Water Absorption	(ISO 2896)	Vol %	≤ 5.0	≤ 5.0	≤ 5.0
Water Vapour Permeability	(ASTM E 96)	ng/Pa-s-m	≤ 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	2.5	3.75
Thermal Conductivity at +50°F	(EN 12667) / (ASTM C 518)	Btu-in/hr-ft ² -°F	0.166	0.166	0.173
Colour			Cream	Cream	Cream
Closed Cell Content	(EN ISO 4590) Method 1 / (ASTM D 2856) Method B	%	≤ 95	≤ 95	≤ 95
Operating Temperature Limits	Upper Limit	°F	+248	+248	+248
	Lower Limit	°F	-292	-292	-292
Minimum Compressive Strength at +73°F	(EN 826) / (ASTM D 1621)				
	Parallel	psi	26	36	62
Minimum Tensile Strength at +73°F	(ASTM D 1623)				
	Parallel	psi	51	65	100
Linear Dimensional Stability	(EN 1604) / (ASTM D 2126)				
	+199.4°F for 24 hours	%	≤ 1	≤ 1	≤ 1
Friability for 10 mins	(ASTM C 421)	%	< 30	< 30	< 30
	-22°F for 24 hours	%	≤ 1	≤ 1	≤ 1
Linear Expansion Coefficient	(ASTM D 696)	ft/ft-K	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶	40-70 x 10 ⁻⁶
	+158°F for 48 hours and 95% RH	%	≤ 3	≤ 3	≤ 3
Water Absorption	(ISO 2896)	Vol %	≤ 5.0	≤ 5.0	≤ 5.0
Water Vapour Permeability	(ASTM E 96)	Perm inch	≤ 3.8	≤ 3.8	≤ 3.8

Fire Test Classifications

Fire Test	Test Method	Typical Result		
Horizontal Burning	EN ISO 3582: 2000	≤ 125 mm / 5 in	≤ 125 mm / 5 in	≤ 125 mm / 5 in
Temperature Index	EN ISO 4589-3: 1996	> 390°C / 734°F	> 390°C / 734°F	> 390°C / 734°F
Brandkennziffer		5.3	5.3	5.3

Fire Test Specifications

Fire Test	Test Method	Specification		
Vertical Burning	DIN 4102-1: 1998	B2	B2	B2

Technical Data

Tarecpir® CR Rigid Polyisocyanurate Insulation 42-50 kg/m³ / 2.6-3.1 lb/ft³

General Physical Properties (Metric)

Property	Test Method	Unit	Typical Value			
Nominal Density	(EN ISO 845) / (ASTM D 1622)	kg/m ³	42	45	48	50
Thermal Conductivity at +10°C	(EN 12667) / (ASTM C 518)	W/m-K	0.025	0.026	0.026	0.026
Colour			Green	Green	Green	Green
Closed Cell Content	(EN ISO 4590) Method 1 / (ASTM D 2856) Method B	%	≥ 95	≥ 95	≥ 95	≥ 95
Operating Temperature Limits	Upper Limit	°C	+120	+120	+120	+120
	Lower Limit	°C	-200	-200	-200	-200
Minimum Compressive Strength at +23°C	(EN 826) / (ASTM D 1621) Parallel	kPa	260	310	320	340
	Perpendicular	kPa	180	200	220	230
Minimum Tensile Strength at +23°C	(ASTM D 1623) Parallel	kPa	430	490	500	510
	Perpendicular	kPa	330	380	390	400
Linear Dimensional Stability	(EN 1604) / (ASTM D 2126) +93°C for 24 hours	%	≤ 1	≤ 1	≤ 1	≤ 1
	-30°C for 24 hours	%	≤ 1	≤ 1	≤ 1	≤ 1
	+70°C for 48 hours and 95% RH	%	≤ 3	≤ 3	≤ 3	≤ 3
	(ASTM C 421)	%	< 30	< 30	< 30	< 25
Friability for 10 mins	(ASTM C 421)	%	< 30	< 30	< 30	< 25
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
Water Absorption	(ISO 2896)	Vol %	≤ 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

General Physical Properties (Imperial)

Property	Test Method	Unit	Typical Value			
Nominal Density	(EN ISO 845) / (ASTM D 1622)	lb/ft ³	2.6	2.8	3.0	3.1
Thermal Conductivity at +50°F	(EN 12667) / (ASTM C 518)	Btu-in/hr-ft ² -°F	0.17	0.18	0.18	0.18
Colour			Green	Green	Green	Green
Closed Cell Content	(EN ISO 4590) Method 1 / (ASTM D 2856) Method B	%	≥ 95	≥ 95	≥ 95	≥ 95
Operating Temperature Limits	Upper Limit	°F	+248	+248	+248	+248
	Lower Limit	°F	-328	-328	-328	-328
Minimum Compressive Strength at +73°F	(EN 826) / (ASTM D 1621) Parallel	psi	38	45	46	49
	Perpendicular	psi	26	29	21	33
Minimum Tensile Strength at +73°F	(ASTM D 1623) Parallel	psi	62	71	73	74
	Perpendicular	psi	48	55	57	58
Linear Dimensional Stability	(EN 1604) / (ASTM D 2126) +199.4°F for 24 hours	%	≤ 1	≤ 1	≤ 1	≤ 1
	-22°F for 24 hours	%	≤ 1	≤ 1	≤ 1	≤ 1
	+158°F for 48 hours and 95% RH	%	≤ 3	≤ 3	≤ 3	≤ 3
	(ASTM C 421)	%	< 30	< 30	< 30	< 25
Friability for 10 mins	(ASTM C 421)	%	< 30	< 30	< 30	< 25
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
Water Absorption	(ISO 2896)	Vol %	≤ 5.0	≤ 5.0	≤ 5.0	≤ 5.0
Water Vapour Permeability	(ASTM E 96)	Perm inch	≤ 3.8	≤ 3.8	≤ 3.8	≤ 3.8

Fire Test Classifications

Fire Test	Test Method	Typical Result			
Fire Propagation	BS 476-6: 1989	Index of performance (I) not exceeding 12 and sub index (I ₁) not exceeding 6*			
Surface Spread of Flame	BS 476-7: 1997	Class 1*	Class 1*	Class 1*	Class 1*
Horizontal Burning	EN ISO 3582: 2000	≤ 10 mm / 0.4 in	≤ 10 mm / 0.4 in	≤ 10 mm / 0.4 in	≤ 10 mm / 0.4 in
Oxygen Index	EN ISO 4589-2: 1996	≥ 30%	≥ 30%	≥ 30%	≥ 30%
Temperature Index	EN ISO 4589-3: 1996	> 390°C / 734°F	> 390°C / 734°F	> 390°C / 734°F	> 390°C / 734°F

* These test results combined enables a Class 0 classification to the Building Regulations in England & Wales, Northern Ireland and the Republic of Ireland, and a Low Risk classification to the Building Standards in Scotland. These tests were conducted on samples of 25 mm / 1 in thickness faced with a reinforced aluminium foil vapour barrier jacket.

Fire Test Specifications

Fire Test	Test Method	Specification			
Flame Spread Index	ASTM E 84	< 25*	< 25*	< 25*	< 25*
Epiradiateur	NF P 92-501	M1	M1	M1	M1
Vertical Burning	DIN 4102-1: 1998	B2	B2	B2	B2

* These tests were conducted on samples of 25 mm / 1 in thickness faced with an aluminium foil vapour barrier jacket.

Tarecpir® HD Rigid Polyisocyanurate Insulation 120-320 kg/m³ / 7.5-20.0 lb/ft³

General Physical Properties (Metric)

Property	Test Method	Unit	Typical Value			
Nominal Density	(EN ISO 845) / (ASTM D 1622)	kg/m ³	120	160	224	320
Thermal Conductivity at +10°C	(EN 12667) / (ASTM C 518)	W/m·K	0.033	0.036	0.038	0.048
Colour			Green	Green	Green	Green
Closed Cell Content	(EN ISO 4590) Method 1 / (ASTM D 2856) Method B	%	≥ 95	≥ 95	≥ 95	≥ 95
Operating Temperature Limits	Upper Limit	°C	+120	+120	+120	+120
	Lower Limit	°C	-200	-200	-200	-200
Minimum Compressive Strength	(EN 826) / (ASTM D 1621)					
	Parallel at +23°C	kPa	1200	1900	2950	5750
	Parallel at -165°C	kPa	–	4600	9250	18750
	Perpendicular at +23°C	kPa	1000	1650	2750	5000
Minimum Tensile Strength	(ASTM D 1623)					
	Parallel at +23°C	kPa	1400	1750	3000	4900
	Parallel at -165°C	kPa	–	1950	3400	5400
	Perpendicular at +23°C	kPa	1300	1550	2800	4700
Linear Dimensional Stability	(EN 1604) / (ASTM D 2126)					
	+93°C for 24 hours	%	≤ 1	≤ 1	≤ 1	≤ 1
	-30°C for 24 hours	%	≤ 1	≤ 1	≤ 1	≤ 1
	+70°C for 48 hours and 95% RH	%	≤ 3	≤ 3	≤ 3	≤ 3
Friability for 10 mins	(ASTM C 421)	%	< 10	< 10	< 5	< 5
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
Water Absorption	(ISO 2896)	Vol %	≤ 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

General Physical Properties (Imperial)

Property	Test Method	Unit	Typical Value			
Nominal Density	(EN ISO 845) / (ASTM D 1622)	lb/ft ³	7.5	10.0	14.0	20.0
Thermal Conductivity at +50°F	(EN 12667) / (ASTM C 518)	Btu-in/hr·ft ² ·°F	0.23	0.25	0.26	0.33
Colour			Green	Green	Green	Green
Closed Cell Content	(EN ISO 4590) Method 1 / (ASTM D 2856) Method B	%	≥ 95	≥ 95	≥ 95	≥ 95
Operating Temperature Limits	Upper Limit	°F	+248	+248	+248	+248
	Lower Limit	°F	-328	-328	-328	-328
Minimum Compressive Strength	(EN 826) / (ASTM D 1621)					
	Parallel at +73°F	psi	174	276	428	834
	Parallel at -265°F	psi	–	667	1342	2720
	Perpendicular at +73°F	psi	145	240	399	725
Minimum Tensile Strength	(ASTM D 1623)					
	Parallel at +73°F	psi	203	254	435	711
	Parallel at -265°F	psi	–	283	493	783
	Perpendicular at +73°F	psi	189	225	406	682
Linear Dimensional Stability	(EN 1604) / (ASTM D 2126)					
	+199.4°F for 24 hours	%	≤ 1	≤ 1	≤ 1	≤ 1
	-22°F for 24 hours	%	≤ 1	≤ 1	≤ 1	≤ 1
	+158°F for 48 hours and 95% RH	%	≤ 3	≤ 3	≤ 3	≤ 3
Friability for 10 mins	(ASTM C 421)	%	< 10	< 10	< 5	< 5
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
Water Absorption	(ISO 2896)	Vol %	≤ 5.0	≤ 5.0	≤ 5.0	≤ 5.0
Water Vapour Permeability	(ASTM E 96)	Perm inch	≤ 3.8	≤ 3.8	≤ 3.8	≤ 3.8

Fire Test Classifications

Fire Test	Test Method	Typical Result			
Horizontal Burning	EN ISO 3582: 2000	≤ 20 mm / 0.8 in	≤ 20 mm / 0.8 in	≤ 20 mm / 0.8 in	≤ 20 mm / 0.8 in
Temperature Index	EN ISO 4589-3: 1996	> 390°C / 734°F	> 390°C / 734°F	> 390°C / 734°F	> 390°C / 734°F
Epiradiateur	NF P 92-501	M4	M4	M4	M4

Fire Test Specifications

Fire Test	Test Method	Specification			
Vertical Burning	DIN 4102-1: 1998	B2	B2	B2	B2

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 44 25 39
– 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
– Fax: +44 (0) 870 733 0022
– email: info.uk@KingspanTarec.co.uk

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

Kingspan Tarec Industrial Insulation reserves the right to amend product specifications without prior notice. The information, technical details and fixing instructions etc. included in this literature are given in good faith and apply to uses described. Recommendations for use should be verified as to the suitability and compliance with actual requirements, specifications and any applicable laws and regulations. For other applications or conditions of use, Kingspan Tarec Industrial Insulation offers a free Technical Advisory Service (see left) the advice of which should be sought for uses of Kingspan Tarec Industrial Insulation products that are not specifically described herein. Please check that your copy of the literature is current by contacting the Marketing Department (see above).



Kingspan Tarec Industrial Insulation

Glossop Brook Road, Glossop, Derbyshire, SK13 8GF, UK
Visbeekstraat 24, B-2300 Turnhout, Belgium
www.KingspanTarec.com

© Kingspan is a Registered Trademark of the Kingspan Group plc
© Tarec and Tarecopir are Registered Trademarks of Recticel NV

Kingspan Tarec Industrial Insulation Ltd. Registered in England & Wales, No. 05571822. Registered Office: Pembridge, Leominster, Herefordshire HR6 9LA, UK. VAT GB872003452.
Kingspan Tarec Industrial Insulation NV. Registered in Belgium, No. BTW BE 0876.525.355 RPR Brussel. Registered Office: Avenue des Olympiades 2, 1140 Brussel, Belgium.