



TarecTMpur

Quick Guide

Insulation for Refrigerated Applications



TarecTMpur

A 3D rendering of a yellow rectangular block of insulation material, likely TarecTMpur, shown from a low angle. The block is positioned on a light gray surface. The word "TarecTMpur" is printed in blue on the top surface of the block.

Insulation Benefits

Description

The Tarečpur 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

Tarečpur 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

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



Temperature Range

Tarečpur 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 Tarečpur range of rigid polyisocyanurate insulation should be considered.

Thermal Performance

Tarečpur 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.

Tarečpur 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

Tarečpur 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, Tarečpur provides a system which is totally moisture resistant.

Chemical Resistance and Compatibility

Tarečpur 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.

Tarečpur is particularly suited for applications where it comes into contact with liquid polyesters.



Hygiene

Tarečpur 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

Tarečpur 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 Tarečpir range of rigid polyisocyanurate insulation or the Kooltherm™ FM range of rigid phenolic insulation should be considered.



Insulation Benefits

Mechanical Performance

Tarec™pur is a lightweight insulation material with a high strength to density ratio, good dimensional stability and excellent mechanical characteristics.

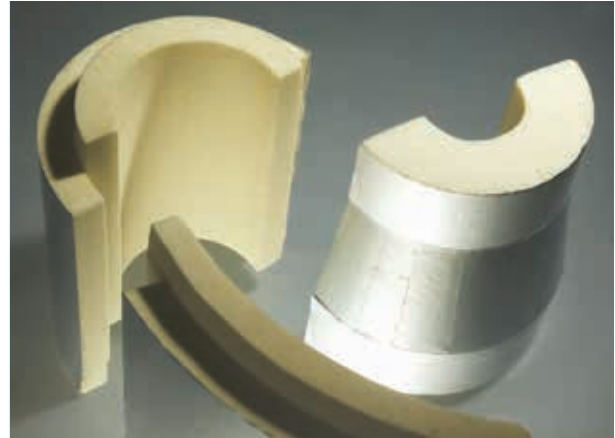
Due to the combination of its excellent thermal performance and remarkable mechanical strength, Tarec™pur is an exceptional insulation material for general thermal insulation applications or the insulation of refrigerated vehicles.

In particular, when utilised to insulate refrigerated vehicles, Tarec™pur maintains its physical integrity when subjected to repeated shocks and vibrations over the life of the vehicle.



Quality Assurance

Tarec™pur is manufactured to the highest quality standards under a quality control system approved to EN ISO 9001: 2000.



Applications

Tarec™pur is an extremely versatile material, and is lightweight, easy to transport, handle and install. Although Tarec™pur 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;
- liquified 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.

Availability

Tarec™pur is available in the following forms as standard:

- pipe sections and bends;
- pipeinsulated pipe support inserts;
- piperadiused and bevelled segments;
- pipestandard 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;
- pipestandard and non standard pipe sizes; and
- pipesingle layer, multi layer or rebated joints.

Technical Data

TarecTMpur 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 | 0 | 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 |



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