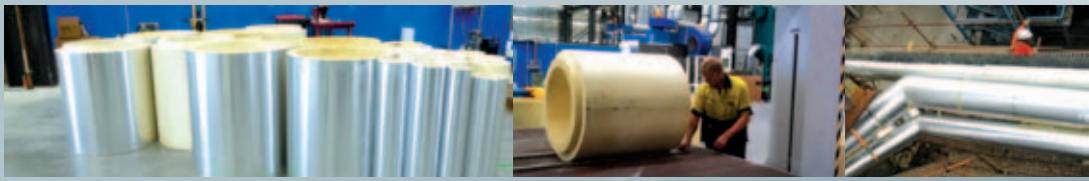




cetrafoam™ lodust enviropir
cryogenic pipe insulation





Cetrafoam™ LoDust EnviroPIR cryogenic pipe insulation



Quality
ISO 9001

SAI GLOBAL

Product Description

CETRAFOAM™ LoDust EnviroPIR is a 50 kg/m³ rigid, closed cell, HCFC free PUR/PIR foam supplied as moulded pipe sections and pipe fittings for a variety of cryogenic insulation applications.

CETRAFOAM™ LoDust EnviroPIR is manufactured and supplied as single and multi-layer cylindrical pipe sections up to 1,000mm in length and with an outer diameter of up to 1,100mm. The moulded pipe sections are factory cut into two matched 180 degree half shells with either flat or “ship lapped” longitudinal joints for assured thermal resistance irrespective of the thermal contraction of the piping and insulation system in cryogenic service.

The CETRAFOAM™ LoDust EnviroPIR moulded pipe sections can be manufactured with matching “ship-lap” shapes moulded into either end to ensure axial thermal resistance when the pipe sections are butted together along the pipe.

The CETRAFOAM™ LoDust EnviroPIR moulded pipe fittings include multi-layer elbows and flange boxes.

CETRAFOAM™ LoDust EnviroPIR is moulded using an ultra high overpack method that assures consistency in microcell size and shape throughout the product. This provides uniform density and identical mechanical and thermal properties both parallel and perpendicular to the direction of rise. The moulded product has a tough external high density skin which significantly reduces site wastage from transport and installation damage.

CETRAFOAM™ LoDust EnviroPIR moulded products are supplied with moulded-in fibreglass reinforcing mesh and multiplex mylar aluminium foil vapour barrier as standard.





Technical Data

Property	Unit	Test Method	Value
Density	kg/m ³	ASTM D 1622	≥ 45
Closed Cell Content	%	ASTM D 2856	≥ 90
Water Vapour Permeance 30°C and 100% RH	µg/N.s	ASTM E 96	≤ 4.5
Fire Properties			
Maximum mean extent of burn	mm	BS 4735	26
Maximum mean extinguishing time	secs	BS 4735	≤ 5
Maximum mean burning rate	mm/sec	BS 4735	0.41
Coefficient Thermal Expansion	mm/mmK x 10 ⁻⁶	ASTM D 696	50 - 70
Compressive Strength all directions @ 20°C at 10% deformation			
	kPa	ASTM D 1621	≥ 250
Tensile Strength all directions @ 20°C	kPa	ASTM D 1623	≥ 500
Leachable Halides	ppm	ASTM C 871	≤ 15
Thermal Conductivity @ 20°C			
Fresh Blown foam	W/m ⁰ K	ASTM C 177	0.022 +/- 0.001
Aged at 21°C for 180 days	W/m ⁰ K	ASTM C 177	0.025 +/- 0.001
Cryogenic Thermal Stress Resistance			> 2
Ozone Depletion Factor			0

- This information is given in good faith but without warranty and is supplied to users based on our general experience and, where applicable, on the results of tests on samples of typical manufacture.
- However, because of the many factors that are outside our knowledge and control that can affect the use of these products, we cannot accept liability for any injury, loss or damage resulting from the reliance upon such information.
- Appropriate safety precautions regarding liquid oxygen must be in place when using polyurethane products at temperatures below -180°C.



Applications

CETRAFOAM™ LoDust EnviroPIR is specially formulated for cryogenic insulation applications from +120°C to -200°C. The PUR/PIR formulation provides excellent fire resistance and a low tensile modulus which ensures a high Cryogenic Thermal Stress Resistance Factor (CTSR > 2).

This allows Cetrafoam™ LoDust EnviroPIR to be applied in a single layer up to thicknesses of 110mm.

CETRAFOAM™ LoDust EnviroPIR can withstand the thermal shrinkage stresses associated with insulating across a thermal gradient of up to 190°C.

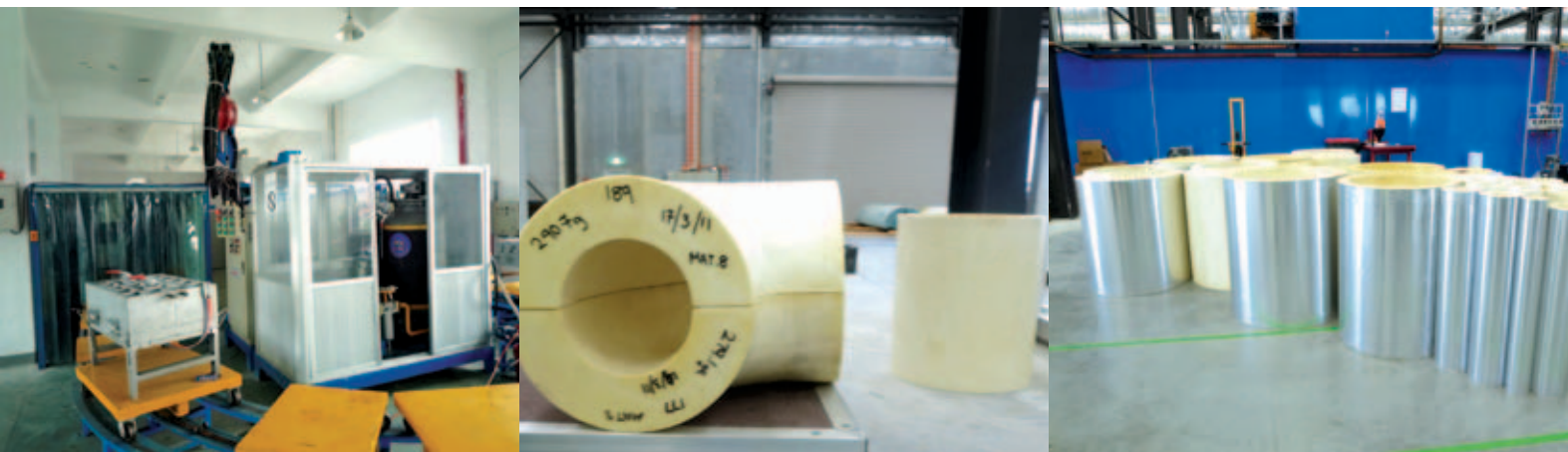
Safety

CETRAFOAM™ LoDust EnviroPIR is a non toxic expanded polyurethane/polyisocyanurate foam that combines the fire resistance properties of polyisocyanurate foam and the tensile flexibility of polyurethane foam at cryogenic temperatures.

Environmental Data

CETRAFOAM™ LoDust EnviroPIR is specifically formulated to provide exceptional physical and thermal insulation properties without the use of chlorofluorocarbon (CFC), hydrochlorofluorocarbon (HCFC) or hydrocarbon blowing agents in conformance with the Montreal Protocol and the Clean Air Act.





Long Term Stability

The uniform density, cell size and structure of moulded CETRAFOAM™ LoDust EnviroPIR makes it structurally more stable than preformed pipe sections cut from free rise bunstock.

CETRAFOAM™ LoDust EnviroPIR is blown without HCFC blowing agents and does not suffer the degradation of the cell walls that occurs in HCFC blown foams due to the solvate action of the HCFC.

CETRAFOAM™ LoDust EnviroPIR is therefore able to retain the high efficiency gaseous blowing agent within the closed cells without the characteristic inter cell gas migration that plagues HCFC blown foams. This allows CETRAFOAM™ LoDust EnviroPIR to retain its excellent thermal resistance and structural strength properties for many years.

Availability

Moulded pipe section

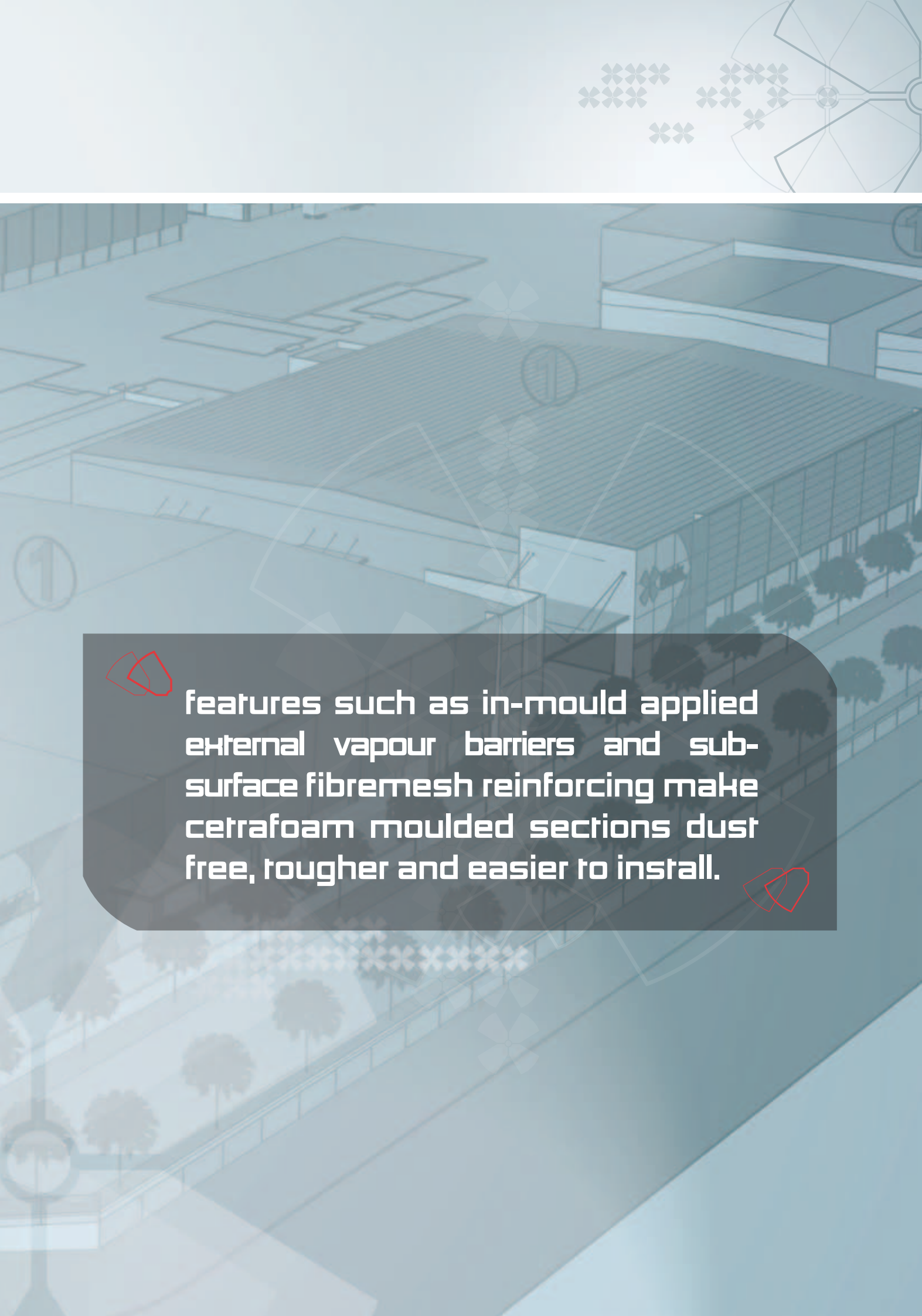
CETRAFOAM™ LoDust EnviroPIR is available in single and multi-layer moulded pipe sections and fittings for pipe sizes from ½" nps to 24" nps with insulation thicknesses up to 250mm thick or to a maximum outside diameter of 1,100mm.

Multiplex Mylar Aluminium Foil Vapour Barrier

CETRAFOAM™ LoDust EnviroPIR moulded pipe sections are available with a moulded external multiplex mylar aluminium foil vapour barrier.

Environmental Benefits

Moulding of pipe sections produces negligible waste whereas cutting pipe sections from rigid foam bunstock produces up to 50% waste. Using moulded insulation sections will save thousands of cubic meters of waste inorganic polyurethane foam material being buried in landfill for each LNG train insulated.



features such as in-mould applied external vapour barriers and sub-surface fibremesh reinforcing make cetrafoam moulded sections dust free, tougher and easier to install.



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