



Company Profile

- A Sekisui (Japan) company. Annual group turnover £ 7 billion.
- World's largest and leading crosslinked polyolefin foam manufacturer with plants in USA, Europe, Japan, Thailand, China, Korea and Australia.
- Australia is group's commercial insulation manufacturing centre.
- Est. in 1976. Based in Sydney, Australia.
- ISO 9002 Quality System accreditation. (1995)















What is Thermobreak ?

- Thermobreak is a flexible ALL- IN -ONE insulation material.
- Made from Electron Beam Crosslinked, <u>closed cell</u> polyolefin foam. It is flame fused to high grade, <u>reinforced, 9um</u> <u>pure aluminium foil</u> and factory applied acrylic adhesive.
- Engineered cell size for optimum insulation performance.
- The special crosslinking process, as well as its completely closed cell structure result in insulating properties that are superior to fibreglass, rubber based or chemically crosslinked foams.
- Year of introduction : 1987 (Australia)
- Made in Australia.
- Exported worldwide









Advantages as a glance

- <u>Physically</u> Crosslinked foam.
- Best insulation of any flexible insulation materials (0.032 W/mK) @ 23 Deg C
- Better vapour permeability resistance than any other flexible insulation material 8.19 X10⁻¹⁵ Kg/Pa.s.m)
- Fastest installation than any other flexible insulation material
- Engineered cell size for optimum insulation performance.
- Certified to international Fire and Smoke standards
- Supported by <u>ThermaCalc®</u> computer selection program.
- Made in Australia to ISO9000 standards.









Major Applications

Duct
Pipe
Raised floor
Roofing
Underslab















The Thermobreak process.



RAW MATERIALS

Only materials meting Pilon's exacting specifications are used.



EXTRUSION

Resin and foaming agent and other additives are mixed together and Extruded as a solid plastic sheet.



IRRADIATION

Crosslinking is precisely controlled to meet the rigorous quality specifications



FOAMING Precisely controlled vertical foaming provides consistent properties, a fine closed cell structure and a smooth sealed surface.



FOIL LAMINATION

The foam and aluminium foil are fused together using FUSION process. The result is a permanent bond.















Features

- Superior insulation capacity due to very low Thermal Conductivity (k) value of 0.032 W/mK (23 C, 65-70 % R.H.)
- * Almost zero vapor permeability μ >15,000
- Insulation performance remains unchanged during the life of the project.
- Wide temperature range (-80 C to + 100 C)
- Will not absorb or allow the spread of water vapour thus preventing formation & spread of condensation. <u>No additional vapour</u> <u>barrier required.</u>
- NO compression around corners due to closed cell structure.









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Critical Insulation factors

Thermal Conductivity (k value)

• Thermal Conductivity defines how good an insulating material is. The lower the K value the better the performance per unit thickness.

Thermobreak	0.032	W/mK
Fibreglass (32Kg)	0.036 - 0.038	W/mK
Elastomeric	0.036	W/mK

Vapour Permeability

- Perhaps the most critical factor in service. Due to differing vapour pressures on the cold and hot side of the insulation, vapour permeates through the insulation . The result is condensation . Open cell materials will allow the spread of condensation , thus significantly reducing insulation performance. Closed cell materials exhibit variable rates
- Thermobreak : 0.005 perm-inch, Fibreglass : 75 perm-inch, Elastomeric : 0.02 perm-inch

Water absorption

- Any insulation material absorbing water will reduce its insulation performance considerably, leading to higher energy costs.
- eg. If fibreglass absorbs 1-1.5% moisture, its insulation performance is reduced by 36% (HVAC manual – 10.6 McGraw Hill)







Condensation prevention

CONDENSATION IS A MAJOR PROBLEM CAUSING EXTENSIVE PROPERTY DAMAGE AND COSTLY REPAIRS.

Main reasons for condensation

- 1. Inadequate insulation used (thickness selection)
- 2. Insulation material with high vapour permeability
- 3. Poor installation technique.



Condensation

Fibrous /open cell materials will absorb water formed from condensation and allow it to spread throughout the ducting system. <u>Wet Insulation</u> <u>will no longer be able to insulate properly.</u>

Closed cell materials WILL NOT ALLOW THE SPREAD OF CONDENSATION







Vapour Permeability

Vapour permeability is a critical factor in insulation performance. It is one of the major cause of condensation.

- Vapour Pressure (Vp) proportional to temperature.
- Vapour will permeate through insulation, until it condenses.







Does more insulation mean more savings?



Insulation Thickness







Insulation Thickness L (mm)	Internal Surface Coefficient fi	External Surface Coefficient fo	Thermal Conductivity k <i>(W/mK)</i>	T(op) <i>Celcius</i>	T(amb) Celcius	L/k	1 <i>/</i> fi	1 <i>/</i> fo	T(op) -T(amb) Celcius	Heat Flow Q <i>(W/m</i> 2)	% Reduction of Heat Flow	
0	22	8	0.032	12	40	0	0.0455	0.1250	28	164	0%	
10	22	5.7	0.032	12	40	0.313	0.0455	0.1754	28	52	68%	
12	22	5.7	0.032	12	40	0.375	0.0455	0.1754	28	47	71%	
20	22	5.7	0.032	12	40	0.625	0.0455	0.1754	28	33	80%	
30	22	5.7	0.032	12	40	0.938	0.0455	0.1754	28	24	85%	
40	22	5.7	0.032	12	40	1.25	0.0455	0.1754	28	19	88%	
50	22	5.7	0.032	12	40	1.563	0.0455	0.1754	28	16	90%	









Fire and Smoke Standards

0

0

BS 476 parts 6 & 7 (British Standard)

Class 0 (Range 0 - 3)

- AS 1530.3 (Australian Building Code Standard)
 - Spread of Flame Index
 - Ignition Index
 0
 - Smoke Developed Index 0-1
 - Heat Evolved Index
- UL Listed product
- ISO 5659(2) (International Standard)
 - Smoke Density : Ds< 200 (50 KW/m2 exposure)
 - Emissions of HCL, SO2, HCN, HBr, HF, CO, Nox are negligible and within safe limits

ALL THERMOBREAK TESTS ARE CERTIFIED BY INDEPENDENT LABORATORIES







- (Range 0 10)
- (Range 0 10)
- (Range 0 10)
- (Range 0 20)



Easy, quick installation



















PROJECTS- Madinat Jumeirah, Dubai







PROJECTS- Governor Philip Tower, Sydney, Aus









PROJECTS – Wyeth Pharmaceutical - Singapore









6T Project – Abu Dhabi









Healthcare City - Dubai









PROJECTS - ADNOC Headquarters, Abu Dhabi,









SSMC Semiconductor - Singapore









Roshana & Concorde Towers - Dubai











Cultural Village- Doha Qatar



LEFT SIDE VIEW

CULTURAL VILLAGE - DOHA, QATAR

Maunsell Consultancy ACO Stand & And A Bone Wells Associates







PROJECTS - Khalifa Stadium, Doha, Qatar.









PROJECTS – Sharjah Exhibition Centre, Sharjah UAE.









Made in Australia by

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