

# **THERMOBREAK<sup>®</sup> RT**

**INSULATION FOR RAILWAY VEHICLES**



Closed cell, physically crosslinked insulation designed for demanding fire and smoke requirements in railway vehicles.

**SEKISUI**

**FOAM**  
**INTERNATIONAL**  
Global Foam Solutions

**PHYSICALLY**  
**CROSSLINKED**  
SEKISUI TECHNOLOGY



## Enhancing passenger comfort and safety

*Effective thermal insulation protects passengers from high or low exterior temperatures, maintaining a balanced interior environment. Thermal insulation of the HVAC systems provides improved energy efficiency thus reducing loads and energy consumption. These key factors highlight the importance of insulation in enhancing passenger comfort whilst at the same time reducing environmental impact.*

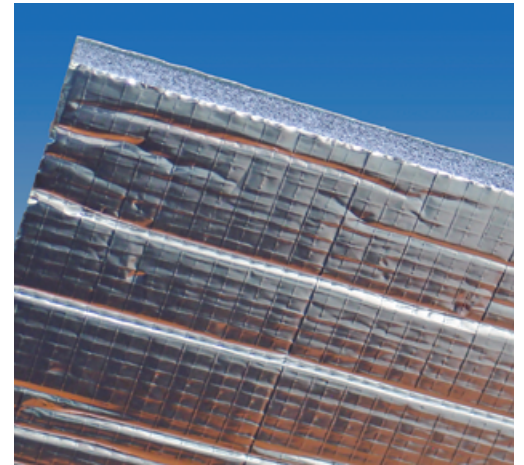
**Thermobreak® RT** is a thermal insulation material specifically designed for the railway and HVAC transportation equipment market.

**Thermobreak®**, developed in Australia, is widely used by leading railway HVAC equipment manufacturers and has been supplied to numerous projects around the world for many years.

**Thermobreak® RT** is manufactured from closed physically crosslinked polyolefin foam, invented and commercialised by the Sekisui Chemical group.

Today Sekisui Chemical is the largest polyolefin foam manufacturer in the world with multiple manufacturing facilities throughout Europe, USA, Asia and Australia, employing over 23,000 people. All foam manufacturing facilities are ISO 9001 and ISO 14001 certified.

Thermobreak RT is available globally through the Sekisui group companies.



## Technically Superior Insulation

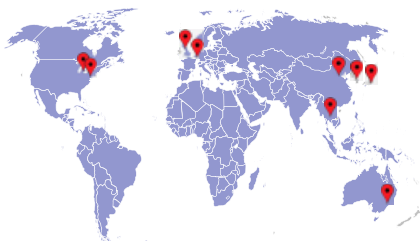
Our unique physically crosslinked technology results in a smaller and more evenly distributed closed cell structure. Cell structure directly affects thermal conductivity and vapour permeability. Both are key factors in insulation performance. Coupled with low emissivity reinforced aluminium foil facing, Thermobreak® RT offers superior insulation performance and durability compared to any other flexible insulation.

Thermobreak® RT utilises a very low density foam (25 Kg/m<sup>3</sup>) thus significantly reducing weight in the railcar and therefore improving energy efficiency.



<b>Thermal Conductivity (k)</b>	0.032 W/mK ( 23° C mean)	Superior thermal performance at lower thicknesses
<b>Vapour Permeability</b>	2.3 X 10 <sup>-15</sup> Kg/ Pa.s.m	Relatively constant k value over a 10 year period
<b>Permeability Resistance factor</b>	μ > 80,000	Optimum resistance to vapour transmission
<b>Density</b>	25 Kg/m <sup>3</sup>	Low density ensures minimum weight

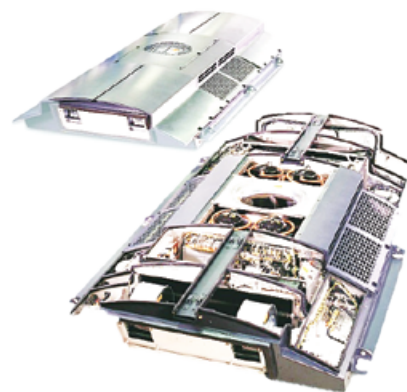
**SEKISUI**



# Fire and Smoke safety

Thermobreak® RT range offers the highest fire and smoke ratings to meet most major National and International Standards.

- > EN 45545-2 ( HL3)
- > PRIIA-NFPA 130
- > BS 6853 (Cat 1a, 1b)
- > DIN 5510-2



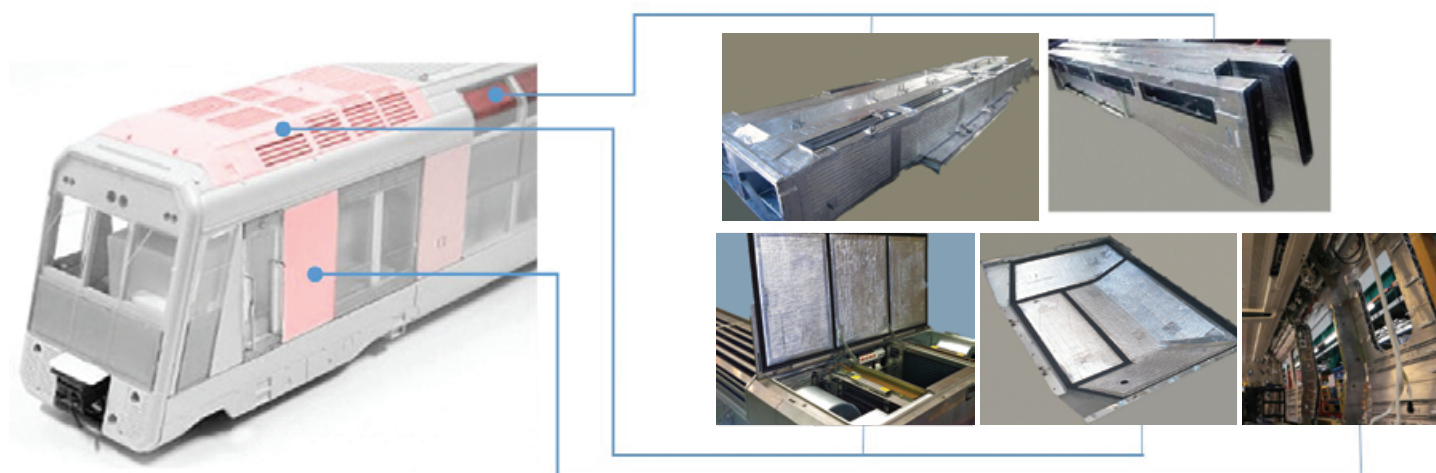
# Environmental and Health & Safety

Thermobreak® RT is manufactured to a ISO 14001 certified environmental management system and supports environmental initiatives and directives.

- > Compliant to REACH directives
- > Compliant to RoHS directive
- > Zero ODP (Montreal Protocol)
- > Zero PVC, zero formaldehyde
- > Resistant to mould growth
- > Low GWP

# Application Areas

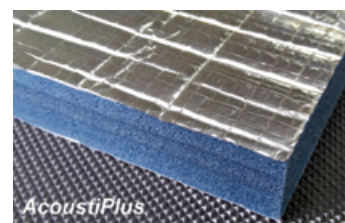
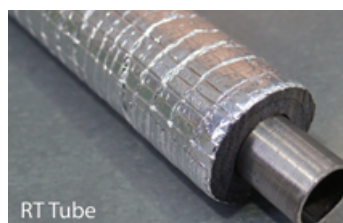
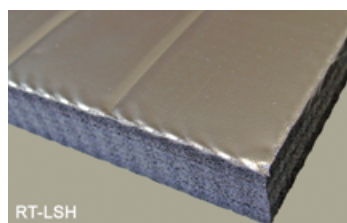
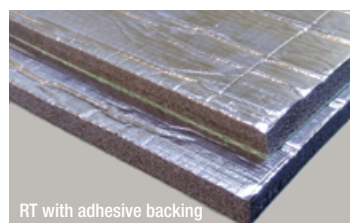
Major applications include duct insulation, AC insulation and body/wall insulation.



# Product range

Thermobreak® RT Product Range	
<b>RT</b>	Standard product. Reinforced aluminium foil. Meets EN 45545-2 (HL3), NFPA 130, BS 6853 (1b)
<b>RT-LSH</b>	Enhanced Fire and Smoke properties. Heavy duty facing. Meets BS 6853 (1a)
<b>RT Tube</b>	Preformed tubes with reinforced aluminium foil. Meets EN 45545-2 (HL3), NFPA 130, BS 6853 (1b)
<i>Options</i>	Thermobreak is available with a factory applied adhesive backing designed to withstand 100° C

<b>AcoustiPlus®</b>	New generation open cell polyolefin foam with excellent sound absorbance characteristics ( <i>see separate brochure for details</i> )
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# THERMOBREAK<sup>®</sup> RT

## INSULATION FOR RAILWAY VEHICLES



### Technical Data

**Material:** Physically crosslinked closed cell polyolefin foam with factory applied reinforced aluminium foil. Optional pressure sensitive, high temperature adhesive backing

Density:	25kg/m <sup>3</sup> (foam core only)
Thermal Conductivity: (ASTM C518)	0.032 W/m/°K (@ 23° C mean temperature)
Water Vapour Permeability: (ASTM E96)	2.3 x 10 <sup>-15</sup> kg/(Pa.s.m) (0.0084 mg.m/N.h)
Water Vapour Permeance:	1.95 x 10 <sup>-4</sup> g/MN.s
Permeability Resistance Factor:	μ > 80,000
Water Absorption by Volume: (JIS K6767)	<0.1% v/v (0.00038g/cm <sup>2</sup> )
Resistance to Fungi: (ASTM G21)	Zero Growth
Ozone Resistance:	Excellent
UV Resistance:	Excellent
Operating Temperature:	-80° C ~ +100° C

### Product Range and availability

#### Thermobreak RT & RT-LSH

Sheets		Tubes	
Width	1200 mm	ID	5 ~ 273 mm
Length	2000 mm	Wall thickness	5 ~ 50 mm
Thickness range	3 mm ~ 50 mm	Length	2000 mm

Rolls also available for non adhesive backed product. Other sizes available on request

### Fire & Smoke Behaviour

#### Thermobreak<sup>®</sup> RT

Test Method	Description	Result	Tested thickness
ISO 5658 Part 2	Flame Spread	COMPLIES (EN 45545-2 R1, HL3 RATING)	25 mm
ISO 5659 Part 2	Smoke Toxicity	COMPLIES (EN 45545-2 R1, HL3 RATING)	
	Smoke Density	COMPLIES (EN 45545-2 R1, HL3 RATING)	
ISO 5660 Part 1	Heat Release Rate	COMPLIES (EN 45545-2 R1, HL3 RATING)	12 mm
ASTM E162	Surface Flammability	COMPLIES (PRIIA/NFPA 130)	
ASTM E662	Smoke Density	COMPLIES (PRIIA/NFPA 130)	
ASTM E1354	Heat Release Rate	COMPLIES (PRIIA)	
BSS 7239 (Boeing)	Smoke Toxicity	COMPLIES (PRIIA)	12 mm
BS 476 Parts 6 & 7	Class 0	COMPLIES (BS 6853, CLASS Ib RATING)	
BS 6853 Annex B2	Smoke Toxicity	COMPLIES (BS 6853, CLASS Ib RATING)	
BS 6853 Annex D8.4	Smoke Density	COMPLIES (BS 6853, CLASS Ib RATING)	

#### Thermobreak<sup>®</sup> RT-LSH

Test	Description	Result	Thickness
BS 476 Parts 6 & 7	Class 0	COMPLIES (BS 6853, CLASS Ia RATING)	25 mm
BS 6853 Annex B2	Smoke Toxicity	COMPLIES (BS 6853, CLASS Ia RATING)	
BS 6853 Annex D8.4	Smoke Density	COMPLIES (BS 6853, CLASS Ia RATING)	

**SEKISUI**

**FOAM**  
INTERNATIONAL  
Global Foam Solutions

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