

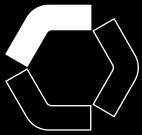
Creating  
insulations

Railway  
solutions



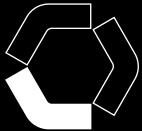
tecnospuma®





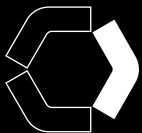
## Our Mission

Develop and produce innovative and sustainable solutions, increase the value of our customers, products, making them more efficient, comfortable, competitive and attractive for current and future market challenges.



## Our Vision

We aspire to strengthen our position to lead the European market for thermal and acoustic insulation. We want to be easily recognized for our capacity for innovation, competitiveness and reliability. We aim to consolidate our international presence through sustained and strategic growth.



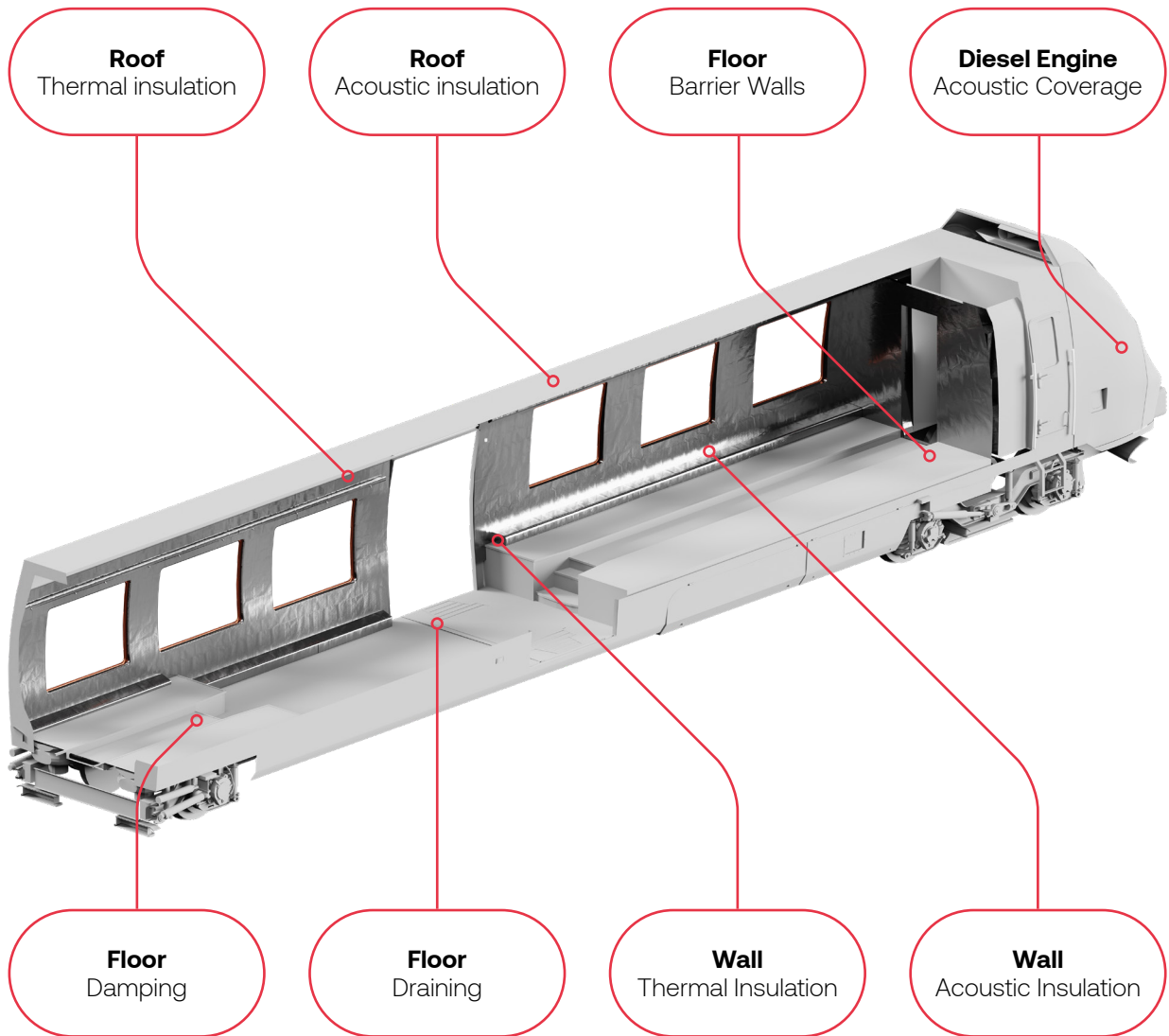
## Our Values

- ✓ **Family Commitment** We maintain a family business environment where trust and personal commitment are essential.
- ✓ **Sustainability** We are dedicated to operating responsibly with the environment and our communities, ensuring a sustainable future.
- ✓ **Transparency** We foster open and honest communication with employees, customers and suppliers, building lasting relationships based on trust.
- ✓ **Loyalty** We value and deeply respect the loyalty of our employees, customers and suppliers, ensuring fair and equitable treatment for all.
- ✓ **Integrity** We strive to keep our word and honour all our commitments, making effort and ethics the basis of our corporate culture.

# Insulation

Products

Providing thermal and acoustic comfort to the railway vehicles



## Icon Key

Material Properties



Drain



Opened cells structure



Thermal insulation



Dampening



Closed cells structure



Sealing joint



Waterproof



Acoustic insulation



Recyclable



Flexibility adhesion



Flame retardant



Content in recycled

Tecnospuma is dedicated to design, development and production of thermal and acoustic insulation products based on technical foams, felts, elastomers and self-adhesives, mainly for industrial markets such as Railway, Buses, Heating-Ventilation-Air Conditioning-Refrigeration systems, Home Appliances, Automotive and Construction.

## Tecnospuma, more than 40 years developing added value



The main plant is located in Maçanet de la Selva (Spain). Our company is a part of an international group with factories in different countries. This brings a strong potential of sales and experience.

In our laboratory we have the capacity to measure, control and develop acoustic and thermal insulation as well as for sealing gaskets and for filtration.



In addition to the compliance with European standard (EN45545-2), our objective is to verify the suitability of our products with their final use in cooperation with our customers.

Non-woven Polyester felts, Melamine resin foam, other technical foams (Polyolefines, Rubbers, Silicones...) and elastomers (EPDM) are the main materials constituting Tecnospuma product range offer to the Railway Industry.

## 02. Research, Development and Innovation

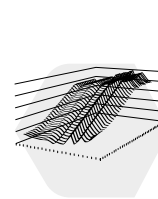
Design Feasibility



Material Engineering

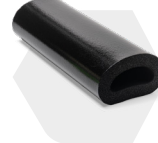
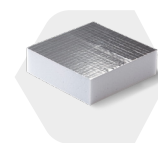


Process Development



Development Skills

Design feasibility&Lab.



Process Development

Material Engineering

## 03. Key Customers

ALSTOM

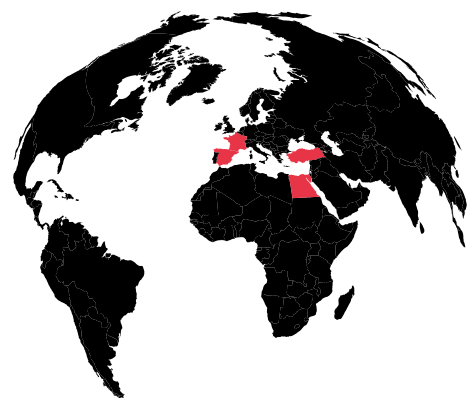
Talgo

SIEMENS

STADLER

CAF

## 01. World Facilities Location



### Spain

- ▶ Maçanet TS-1
- ▶ Maçanet TS-2
- ▶ Les Borges Blanques PT

### France

- ▶ Lumbin TDA
- ▶ Tremblay TDA
- ▶ Paris TS

### Egypt

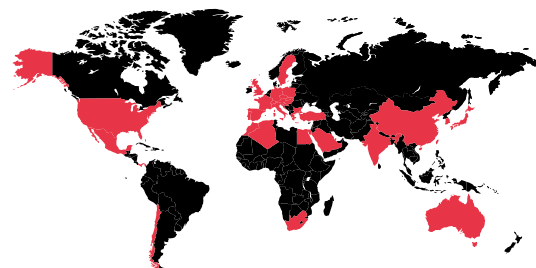
- ▶ Cairo TS Commercial Arabco

### Turkey

- ▶ Eskişehir TS Commercial Katay



## 04. Clients Location



### Europe

- ▶ UK
- ▶ Switzerland
- ▶ Germany
- ▶ France
- ▶ Spain
- ▶ Italy
- ▶ Sweden
- ▶ Poland
- ▶ Czechia

### America

- ▶ USA
- ▶ Mexico
- ▶ Panama
- ▶ Chili

### Asia

- ▶ Slovakia
- ▶ Hungary
- ▶ Austria
- ▶ Slovenia
- ▶ Croatia
- ▶ Bulgaria
- ▶ Greece
- ▶ Turkey

### Oceania

- ▶ Australia

### Africa

- ▶ Saudi Arabia
- ▶ Morocco
- ▶ Qatar
- ▶ Algeria
- ▶ India
- ▶ South Africa
- ▶ China
- ▶ Egypt
- ▶ Japan

Polyester non-woven felts for thermoacoustic insulation, Tecnosil is a wide range of different qualities and densities, mainly covered by an aluminium foil reinforced by a glassfiber net.

Tecnosil is adapted to the final function in rail vehicles (inner walls, ceilings and floors of body shells, air conditioning & ventilations systems, heating floors, trim panels, power boxes...).



The Widest Range

 **Tecnosil**

Tecnosil can be treated hydrophobic and oleophobic (HO), and it can be backed with a self-adhesive for easier installing.

Tecnosil and Tecnosil HO fulfil the latest smoke and fire requirements of the EN45545-2.

- Excellent acoustic absorption and thermal insulation.
- Good balance of weight.
- Flame resistance.
- Low emissions.
- Resistance to fungal and mold growth.

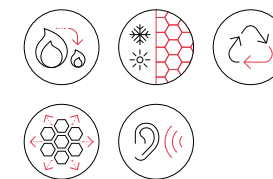
#### Optionally

- Aluminium foil coating as barrier against vapours and liquids penetration.
- Fiberglass fabric coating (VGF) which provides mechanical strength and improve acoustic performance.
- Material treated (HO) to be oil and water repellent surface layer.
- Combination structure with Thermobreak Drain to extra drainage capacity.

#### Tecnosil HL



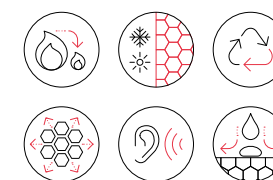
Thickness	5 → 50mm
Density	20kg/m <sup>3</sup>
Lamda (10°C) [ W / ( m · K ) ]	0,037
Hydrophobic	✗
Coating	✗
Fire&Smoke	R1-HL2/EN 45545-2 (50mm)



#### Tecnosil HL HO



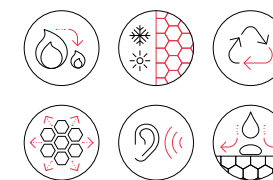
Thickness	5 → 50mm
Density	20kg/m <sup>3</sup>
Lamda (10°C) [ W / ( m · K ) ]	0,034
Hydrophobic	✓
Coating	✗
Fire&Smoke	On going



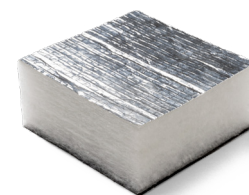
#### Tecnosil HO Alu. malla



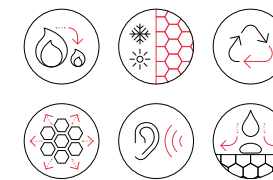
Thickness	5 → 130mm
Density	20 → 60kg/m <sup>3</sup>
Drain	✗
Hydrophobic	✓
Coating	✓
Fire&Smoke	R1-HL3/EN 45545-2



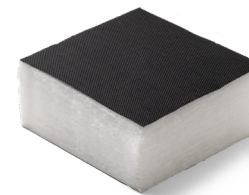
#### Tecnosil X3 Alu. malla



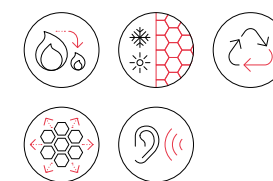
Thickness	10 → 130mm
Density	20 → 60kg/m <sup>3</sup>
Drain	✗
Hydrophobic	✗
Coating	✓
Fire&Smoke	R1-HL3/EN 45545-2



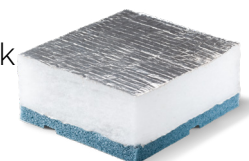
#### Tecnosil X3 VGF



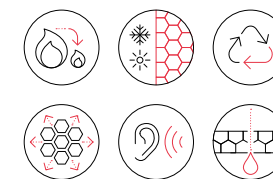
Thickness	10 → 50mm
Density	40kg/m <sup>3</sup>
Drain	✗
Hydrophobic	✗
Coating	✓
Fire&Smoke	R1-HL3/EN 45545-2



#### Tecnosil HO Thermobreak Drain



Thickness	15 → 130mm
Density	20kg/m <sup>3</sup>
Drain	✓
Hydrophobic	✓
Coating	✓
Fire&Smoke	Internal test



Fine and regular opened cell melamine foam, **Bactotect®** is a lightweight material providing high sound absorption level and low thermal conductivity with a high temperature resistance.



The Featherweight  
**Basotect®**

Bactotect® can be covered by a reinforced aluminium foil, treated against moisture (FOB HO), and it can be backed with a self adhesive for easier installing.

Bactotect® complies with the latest smoke and fire requirements of the EN45545-2 as well as with other main industry standards in the world (FMVSS, BS...).

- Excellent acoustic absorption and thermal insulation.
- High temperature resistance.
- Very low weight.
- Flame resistance: without the addition of Flame retardants.
- Resistance to fungal and mold growth.
- Combines dimensional stability and flexibility, ease of cutting and handling.

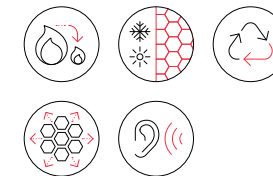
**Optionally**

- Aluminium foil coating as barrier against vapours and liquids penetration.
- Material treated to be oil and water repellent surface layer (FOB HO version).
- Combination structure with Moniflex to extra drainage capacity.

**Basotect®**  
G+



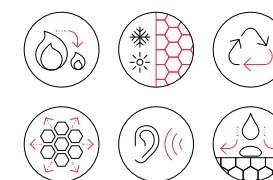
Thickness	5 → 100mm
Density	9kg/m <sup>3</sup>
Lamda (10°C) [ W/( m · K ) ]	0,035
Hydrophobic	✗
Coating	✗
Fire&Smoke	R1-HL3/EN 45545-2



**Basotect®**  
FOB  
HO



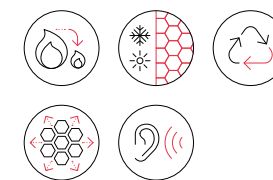
Thickness	5 → 60mm
Density	9kg/m <sup>3</sup>
Lamda (10°C) [ W/( m · K ) ]	0,035
Hydrophobic	✓
Coating	✗
Fire&Smoke	R1-HL3/EN 45545-2



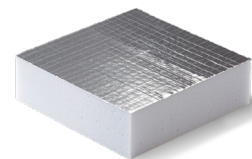
**Basotect®**  
UF+



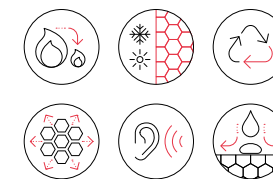
Thickness	5 → 100mm
Density	7kg/m <sup>3</sup>
Lamda (10°C) [ W/( m · K ) ]	0,035
Hydrophobic	✗
Coating	✗
Fire&Smoke	R1-HL3/EN 45545-2



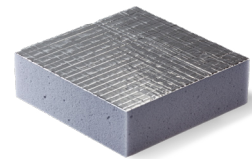
**Basotect®**  
G+  
Alu. malla



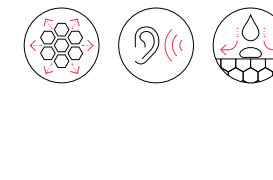
Thickness	3 → 100mm
Density	7 or 9kg/m <sup>3</sup>
Drain	✗
Hydrophobic	✗
Coating	✓
Fire&Smoke	R1-HL3/EN 45545-2



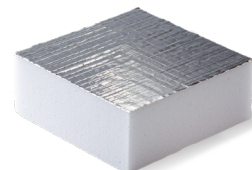
**Basotect®**  
UF+  
Alu. malla



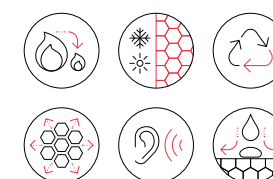
Thickness	3 → 100mm
Density	7 or 9kg/m <sup>3</sup>
Drain	✗
Hydrophobic	✗
Coating	✓
Fire&Smoke	R1-HL3/EN 45545-2



**Basotect®**  
FOB  
HO  
Alu. malla



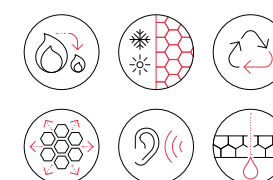
Thickness	3 → 100mm
Density	9kg/m <sup>3</sup>
Drain	✗
Hydrophobic	✓
Coating	✓
Fire&Smoke	R1-HL3/EN 45545-2



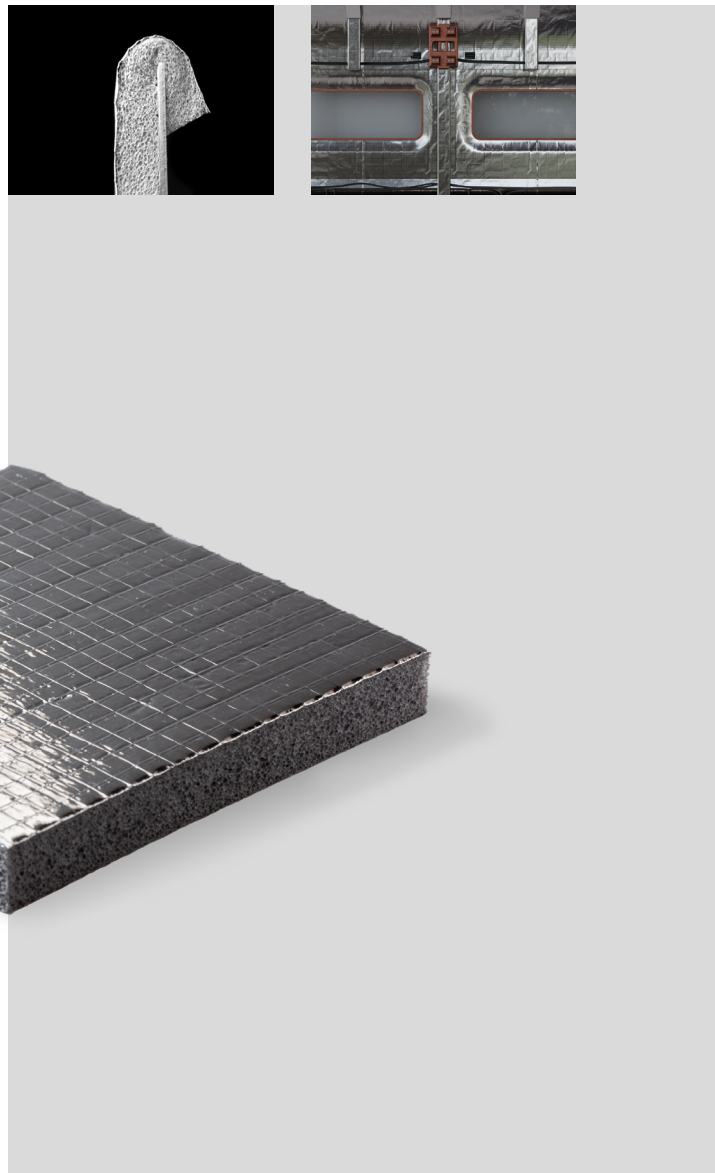
**Basotect®**  
UF+  
Moniflex



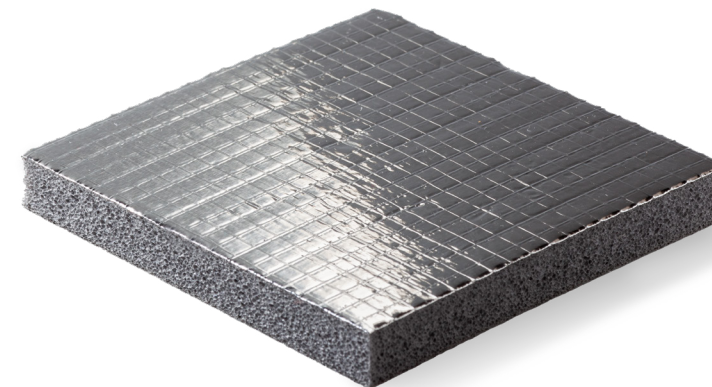
Thickness	15 → 100mm
Density	7kg/m <sup>3</sup>
Drain	✓
Hydrophobic	✗
Coating	✗
Fire&Smoke	Internal test



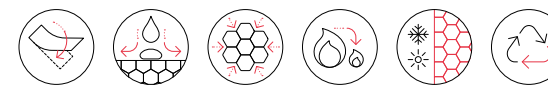
Closed cell polyolefin foam of low smoke emissions and fireproofed, with a high performance self-adhesive, and covered by a reinforced aluminium foil, Tecnolen offers a range of thin thermal insulations, lightweight, flexible, and well adapted for complex shapes (angles and edges, reinforcements...) inside the rail vehicles.



**Tecnolen**  
HL 25  
Alu. malla  
ADH.AT1-90PP



Thickness	3 / 5,6 / 11,5 / 15mm
Density	25kg/m <sup>3</sup>
Lamda (10°C) [ W / ( m · K ) ]	0,035
Hydrophobic	✓
Coating	✓
Fire&Smoke	R1-HL3/EN 45545-2



The Contorsionist

 **Tecnolen**

Tecnolen is tearproof, very easy to cut and to lay, it offers strong adhesion on the steel surfaces with or without pain-ting and it follows the complex shapes without disbonding to ensure continuity of the thermal resistance and avoid water condensation.

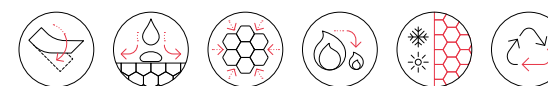
Tecnolen complies with the latest smoke and fire requirements of the EN45545-2.

- Excellent thermal insulation properties.
- Very low water absorption.
- Flame resistance.
- Low emissions.
- Resistance to fungal and mold growth.
- Aluminium foil coating reflection of heat radiation, prevents the penetration of dust and liquids.

**Tecnolen**  
HL 25  
Alu. malla  
ADH.AT73



Thickness	3 / 5,6 / 11,5mm
Density	25kg/m <sup>3</sup>
Lamda (10°C) [ W / ( m · K ) ]	0,035
Hydrophobic	✓
Coating	✓
Fire&Smoke	R1-HL3/EN 45545-2



Thermobreak® RT is a leading flexible thermal insulation material, physically cross-linked, closed cell polyolefin foam.

Material designed to meet the highest level (HL3) requirements for fire and smoke in the railway sector, in accordance with the EN 45545-2 standard.



The Multifunction

# Thermobreak®

Thermobreak® AcoustiPlus is a new generation, physically cross-linked polyolefin foam with a partially open cell structure.

Thermobreak Acoustiplus meets international fire and smoke standards, demonstrates excellent acoustic properties while providing exceptional thermal performance.

Thermobreak® RT and Thermobreak® AcoustiPlus, its have extremely low water absorption, which prevents bacterial growth and odours, are supplied with reinforced aluminium.

foil and are available with pressure sensitive adhesive. Also with a new presentation format with easy drainage option.

- Excellent thermal insulation properties.
- Good acoustic absorption properties (Acoustiplus reference).
- Very low water absorption.
- Flame resistance.
- Low emissions.
- Resistance to fungal and mold growth.
- Aluminium foil coating reflection of heat radiation, prevents the penetration of dust and liquids.

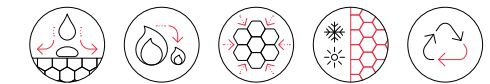
**Optionally:**

Drain version presentation with a series of channels to allow prompt drainage of accumulated moisture.

## Thermobreak® RT19



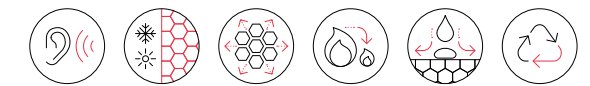
Thickness	4 → 50mm
Density	19kg/m³
Lamda (10°C) [ W/( m · K ) ]	0,034
Hydrophobic	✓
Coating	✓
Fire&Smoke	R1-HL3/EN 45545-2



## Thermobreak® Acoustiplus



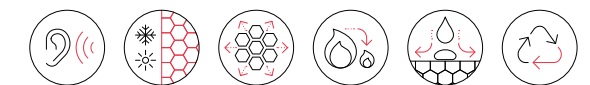
Thickness	5 → 50mm
Density	25kg/m³
Lamda (10°C) [ W/( m · K ) ]	0,030
Hydrophobic	✓
Coating	✓
Fire&Smoke	R1-HL3/EN 45545-2



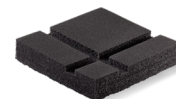
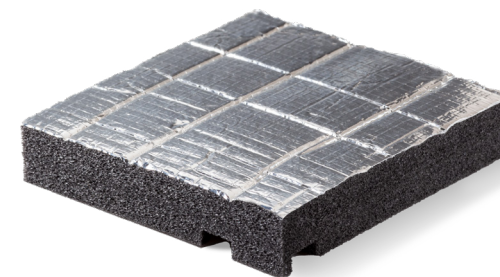
## Thermobreak® Acoustiplus Drain



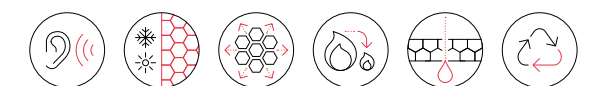
Thickness	5 → 50mm
Density	25kg/m³
Drain	✓
Hydrophobic	✓
Coating	✓
Fire&Smoke	R1-HL3/EN 45545-2



## Thermobreak® RT19 Drain

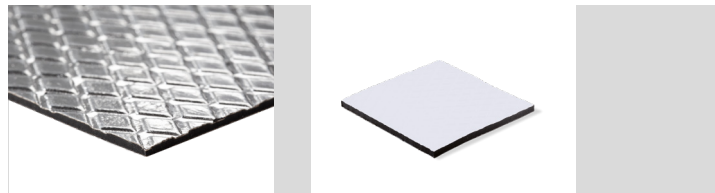


Thickness	4 → 50mm
Density	19kg/m³
Drain	✓
Hydrophobic	✓
Coating	✓
Fire&Smoke	R1-HL3/EN 45545-2

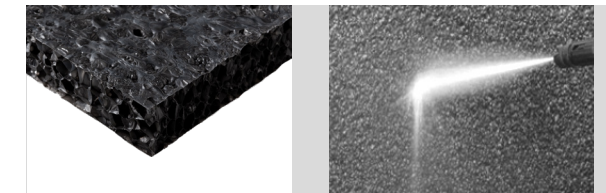




Acoustic insulation heavy layer composed of a polymeric matrix based on flame retardant bitumen with a high addition of mineral charges and coated one side with aluminium foil paper "diamond-embossed", and self-acrylic adhesive based adhesive other side.



Closed cell polyethylene foam with cells that are subsequently opened and large, Tecnopack W is resulting in an efficient sound absorbent material with many unique features.

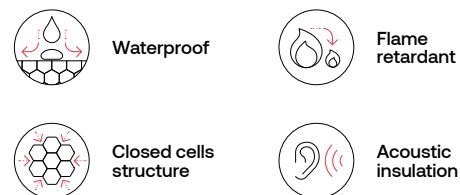


The Soundproofing

# Lcp-Bit FR2 + Alu.

An acoustic insulation for reducing air-borne noise, impact noise and vibration. Developed to comply the fire performance to railways applications, fire resistance, low smoke density and toxicity.

- Excellent sound insulation properties.
- Flame resistance.
- Aluminium foil coating reflection of heat radiation, prevents the penetration of dust and liquids.



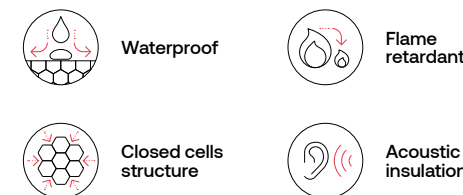
Thickness	1,8 → 5,5mm
Weight/m <sup>2</sup>	3,5 → 10kg/m <sup>3</sup>
Coating	✓
Temperature range	-25°C → +80°C
Fire&Smoke	R1-HL3/R10-HL3/EN 45545-2

The Waterproof

# Tecnopack W FR

Tecnopack W has the ability to remain almost unaltered when exposed to water or humidity, the product's acoustic performance remains consistent. Rigid and self supporting, Tecnopack W foam is easy to cut and easy to install on site for applications in Road and Rail noise barriers (floors), Marine, Automotive and Commercial vehicles.

- Excellent acoustic absorption.
- Good balance of weight.
- Flame resistance.
- Low emissions.
- Resistance to fungal and mold growth.



Thickness	20 → 50mm
Density	25kg/m <sup>3</sup>
Coating	0,104
Temperature range	<5 Vol. %
Fire&Smoke	R1/R7-HL1/R10-HL3/ EN 45545-2 (50mm)



Tecnoflex SL product range in silicone based elastomeric foam, offers different grades of materials, mainly depending on their compressive strength and density. Cellular, solid and special grades.

Tecnoflex SL provides excellent vibration isolation and damping performance for pads or strips under floating floors to mitigate the amount of vibration generated through the floor of train car (plywood, honeycomb or composite floors).

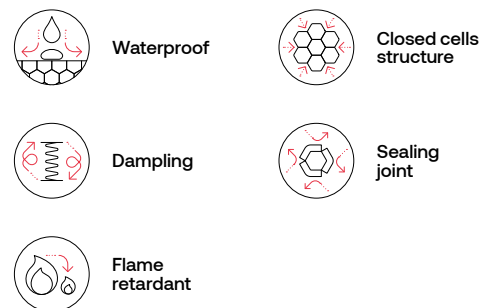


The Good Seal

# Tecnoflex TTF

Closed cell EPDM rubber foam with a good compression set, fire resistance and low smoke emission, Tecnoflex TTF is adapted for seals against dust, water and also vibrations.

- Closed-cell.
- Excellent compression set.
- Very good weathering resistance.
- Good temperature resistance.
- Good fire resistance and low smoke.



Thickness	2 → 20mm
Density	190kg/m <sup>3</sup>
Compression*	≤50%
Temperature range	-50°C → +120°C
Fire&Smoke	R22-R23-R24/HL2 EN 45545-2

\*Set at 22h/50%/40°C

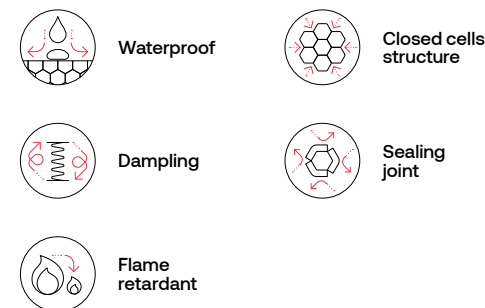
The Damper

# Tecnoflex SL

Tecnoflex SL has a very low compression set, excellent stress relaxation properties and temperature resistance which guarantee constant performance over time. Good fire resistance, meets UL flame ratings, railways and automotive fire standards. Wide range of qualities for use in many rail interior applications such as seals and gasket, vibration isolation and anti-squeak.

Optionally backing with a self-adhesive (acrylic or silicone) may facilitate installing.

- Extremely resilient to mechanical fatigue.
- Resistant to temperatures extremes, UV and ozone.
- Good fire resistance.
- Excellent memory and low stress relaxation, implies low compression set.



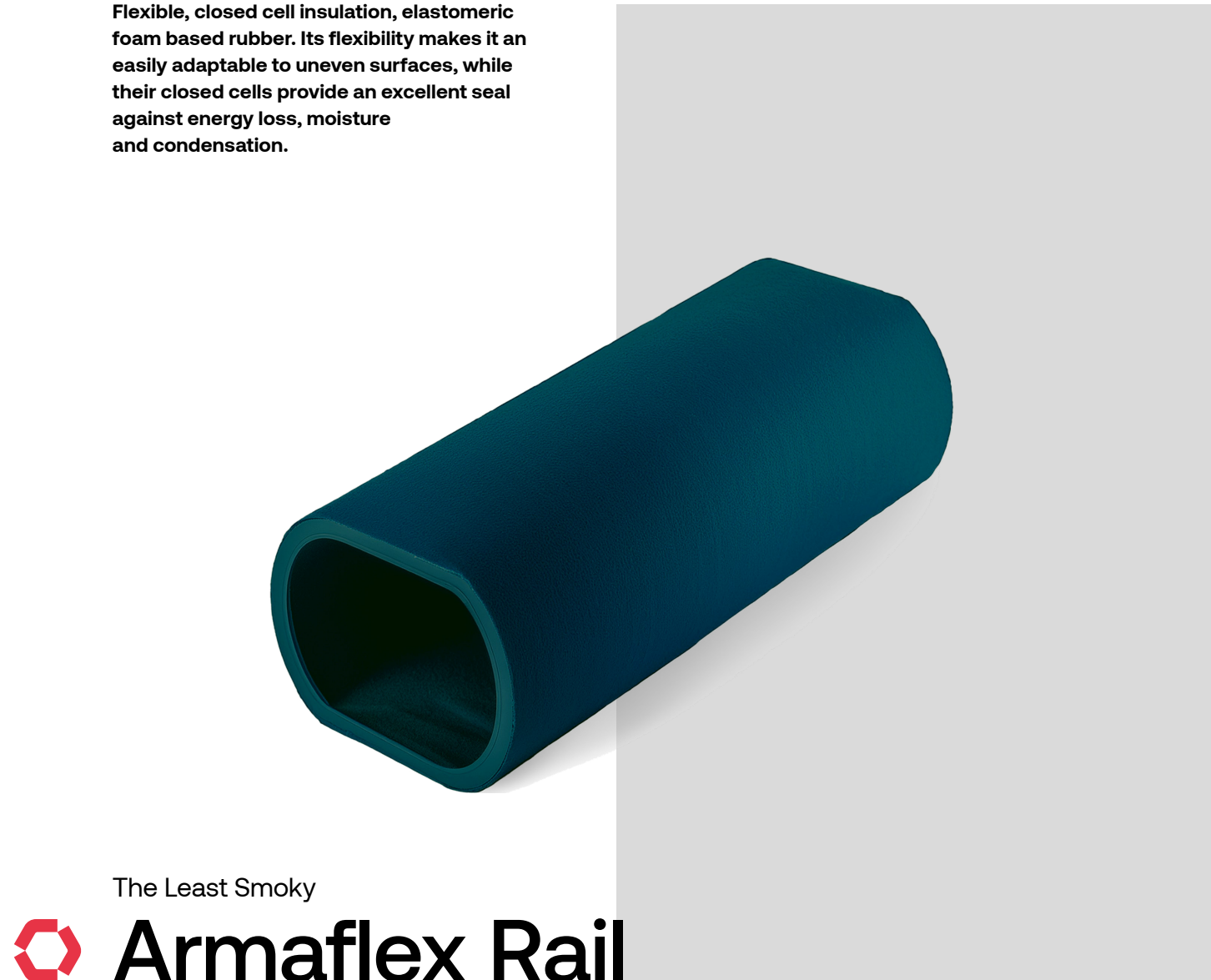
Thickness	3,18 → 12,7mm
Density	175kg/m <sup>3</sup>
Compression*	<12
Temperature range	-55°C → +200°C
Fire&Smoke	R22 / R23-HL3 EN 45545-2

\*Set at 22h/50%/100°C

Armagel Rail is an flexible aerogel insulation mat, laminated on both sides with aluminium foil, suitable for railway applications.



Flexible, closed cell insulation, elastomeric foam based rubber. Its flexibility makes it an easily adaptable to uneven surfaces, while their closed cells provide an excellent seal against energy loss, moisture and condensation.

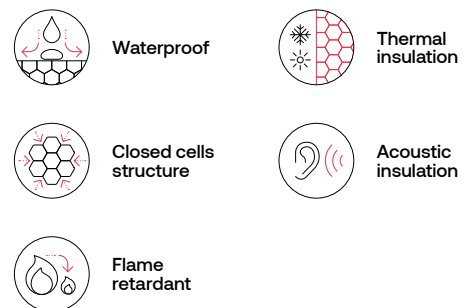


The Hyperinsulating

# Armagel Alu.

Also used for ceilings, walls, floors and doors. Reduced space requirements to achieve exceptional thermal insulation properties in hot and cold climates. Improved sound absorption properties.

- Effective thermal insulation with a very small material thickness.
- Good acoustic absorption
- Flame resistance
- Hydrophobic property
- Aluminium foil coating as barrier against vapours and liquids penetration, low water absorption.



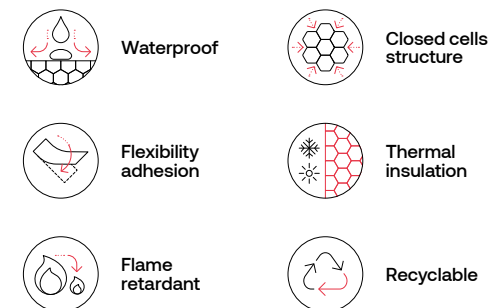
Thickness	5/10/15/20mm
Weight/m <sup>2</sup>	160 → 240kg/m <sup>3</sup>
Temperature range	Max. +110°C
Coating	Full covering
Fire&Smoke	R1/R7/R17-HLE EN 45545-2

The Least Smoky

# Armafex Rail

Insulation foam with improved fire retardant properties, low smoke generation and in-built antimicrobial protection for railway vehicles. Optionally product with self-adhesive coating on one side.

- Excellent thermal insulation properties.
- Very low water absorption.
- Flame resistance and low smoke generation
- Flexible and easy adaptable to uneven surfaces
- Resistance to fungal and mold growth



Thickness	3 → 25mm
Lamda (10°C) [ W / ( m · K ) ]	≤ 0,041
Water vapour diffusion resistance	μ ≥ 5.000
Temperature range	-50°C → +110°C
Fire&Smoke	R1-HL2 EN 45545-2

# Technical Summary

## Thermal&Acoustic

	Tecnosil HL	Tecnosil HL HO	Tecnosil HO + Alu. Malla	Tecnosil X3 + Alu. Malla	Tecnosil X3 + VGF	Tecnosil HO + Thermobreak Drain	Basotect® G+	Basotect® FOB HO	Basotect® UF	Basotect® G+ Alu. Malla	Basotect® UF Alu. Malla	Basotect® FOB HO Alu. Malla	Basotect® UF + Moniflex
<b>Using</b>	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal
<b>Acoustic insulation</b>	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓
<b>Thermal insulation</b>	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓
<b>Vibration damping</b>	×	×	×	×	×	×	×	×	×	×	×	×	×
<b>Sealing</b>	×	×	×	×	×	×	×	×	×	×	×	×	×
<b>Lightness</b>	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓
<b>Water resistance</b>	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓
<b>Product Category &amp; Hazard level</b>	R1-HL2 EN 45545-2	Material classified with alu. foil coating	R1-HL3	R1-HL3	R1-HL3	Internal test	R1-HL2	R1-HL2	R1-HL3	R1-HL3	R1-HL3	R1-HL3	Internal test
<b>Properties</b>													

	Thermal		Thermal&Acoustic		Thermal		Heavy mass	Gaskets/Pads/Strips		Thermal&Aco.	Thermal	
	Thermobreak R19	Thermobreak R19 Drain	Thermobreak Acoustiplus	Thermobreak Acoustiplus Drain	Tecnolen HL25 + Alu. malla + ADH. AT1-90PP	Tecnolen HL25 + Alu. malla + ADH. AT73	LCP-BIT FR2 + Alu.	Tecnoflex TTF	Tecnoflex SL BF2	Tecnopack W FR	Armagel Alu.	Armaflex Rail
<b>Using</b>	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal+External	Internal+External	Internal	Internal+External	Internal
<b>Acoustic insulation</b>	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	×	○○○ ⅓	○○○ ⅓	×	×
<b>Thermal insulation</b>	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	×	×	×	○○○ ⅓	○○○ ⅓	○○○ ⅓
<b>Vibration damping</b>	×	×	×	×	×	×	○○○ ⅓	○○○ ⅓	○○○ ⅓	×	×	×
<b>Sealing</b>	×	×	×	×	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	×	×	×
<b>Lightness</b>	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	×	×	×	○○○ ⅓	○○○ ⅓	○○○ ⅓
<b>Water resistance</b>	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓	○○○ ⅓
<b>Product Category &amp; Hazard level</b>	R1-HL3	R1-HL3	R1-HL3	R1-HL3	Internal test	R1-HL3	R1-HL3 R10-HL3	R22/R23/R24-HL2	R22-HL3 R23-HL3	×	R1/R7/R17-HL3	R1-HL2 R7-HL3
<b>Properties</b>												

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