

GLOBAL RAIL SPECIFICATION

BISCO[®] SILICONES MATERIAL SELECTION GUIDE



Rogers...

leading the way with
global flame, smoke
and toxicity compliant
solutions and
technical expertise



Rogers' BISCO® material family offers a wide range of multi-functional silicone based elastomeric foams and solids for use in many rail interior applications such as seals, gaskets, floor isolation pads, seat cushions, thermal insulation, sound barriers and anti-squeak / rattle pads.

These materials are offered in continuous sheet form, enabling ease of fabrication whether slitting, die-cutting or laminating with adhesives.

A highly durable, long lasting and comfortable silicone seat cushion foam is supplied in bun stock form.

TECHNICAL EXPERTISE TO HELP DESIGN ROBUST SOLUTIONS

Design and application support:

- Cost-of-ownership analysis
- Floating floor isolation design
- Vibration, acoustic, sealing, and gasketing expertise
- In-house R&D, product development, and application testing

Preferred Converter Network:

- Providing advanced fabrication and assembly solutions
- Capabilities include laminating, die-cutting, contour cutting, CNC machining, and component assembly
- Seat cushion design, prototyping, conversion, and construction support

Need help with an application?
Rogers is here to support you.

Contact our product experts at the
Solutions Center: solutions@rogerscorp.com



RAIL STANDARDS INCLUDE:

EN45545

The European standard for railway applications. This standard classifies all materials on board into different groups which must fulfill specific "requirement sets" that often include the use of several test methods.

NFPA 130

Primary specification recognized throughout North American transit systems. Provides testing requirements for specific application areas for flame, smoke and toxic gases.

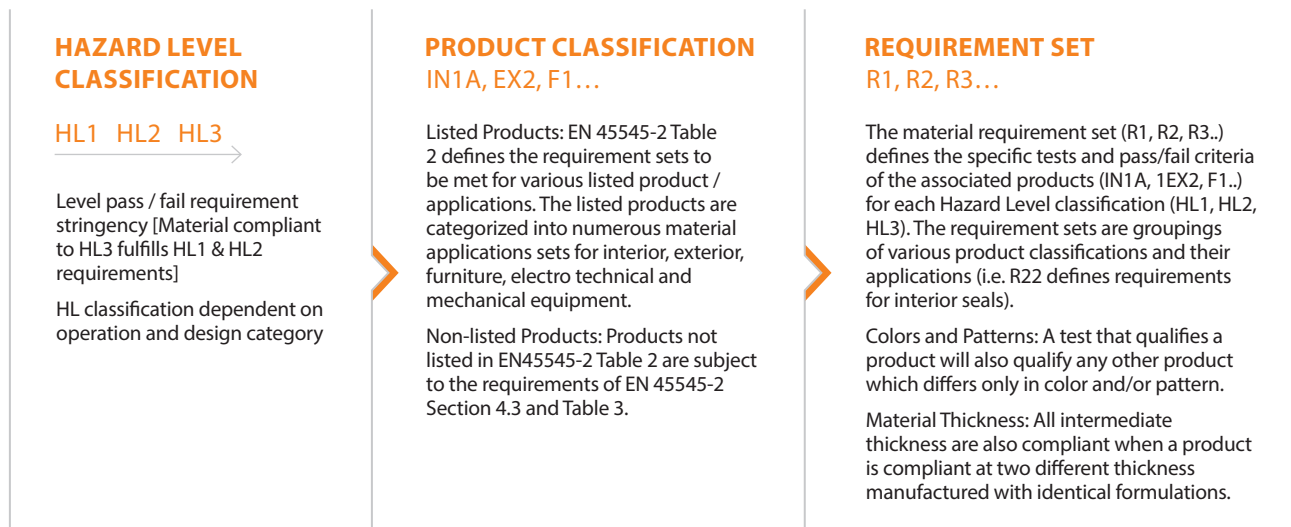
49 CFR Part 238

Federal Railroad Administration (FRA) regulation applicable to passenger equipment safety for intercity and commuter railroads. It includes fire safety requirements and references flammability and smoke emission performance criteria for materials used in passenger cars and locomotive cabs.

EN45545 is the European standard for flame, smoke and toxicity in railway applications. The standard assigns a hazard level depending on the intended use of the railcar and further classifies applications and requirements.

EN45545 explained

The material requirement set (R1, R2..) is dependent on the train car type (HL rating) and product classification (IN1A, EX2..):



	Seals / Gaskets / Insulation / Gap-Filling							Acoustic Barrier	Seat Cushion Foam		
			Vibration Isolation Pads (Floating Floor)								
Requirement Set	BF-2000	BF-1000	HT-870	HT-800	L3-XX40 *	HT-840	FPC	HT-200	MF1-35	MF1-55	MF1-75
Product Grade	Ultra Soft	Extra Soft	Soft	Medium	Medium Firm	Firm	Flame Resistant Foam on Fiberglass	Solid on Fiberglass	Soft	Medium	Firm
Product Thickness Range	3.18-12.7mm	1.6-25.4mm	1.6-12.7mm	0.79-12.7mm	4-12mm	1.0-6.35mm	1.6-3.2mm	0.7-4mm	Foam Bun 6.4-203.2mm		
R1 - Interiors Primary						HL1, HL2, HL3	HL1, HL2	HL1, HL2			
R2 - Interiors Limited Use		HL1, HL2, HL3				HL1, HL2, HL3	HL1, HL2	HL1, HL2, HL3			
R3 - Interiors Strips		HL1, HL2, HL3				HL1, HL2, HL3	HL1, HL2, HL3	HL1, HL2, HL3			
R7 - External Features								HL1, HL2			
R8 - External Roof Features				HL1, HL2, HL3							
R9 - Bogie Rubber Elements			HL1, HL2, HL3	HL1, HL2, HL3			HL1, HL2, HL3	HL1, HL2, HL3			
R10 - Flooring Components			HL1, HL2, HL3	HL1, HL2, HL3	HL1, HL2	HL1, HL2, HL3	HL1, HL2, HL3				
R18 - Full Seat											
R19 - Staff Seats									HL1, HL2, HL3	HL1, HL2, HL3	HL1, HL2, HL3
R21 - Seat Components									HL1, HL2, HL3	HL1, HL2, HL3	HL1, HL2, HL3
R22 - Interior Seals	HL1, HL2, HL3	HL1, HL2	HL1, HL2, HL3	HL1, HL2, HL3	HL1, HL2	HL1, HL2, HL3	HL1, HL2, HL3				
R23 - Exterior Seals	HL1, HL2, HL3	HL1, HL2	HL1, HL2, HL3	HL1, HL2, HL3	HL1, HL2	HL1, HL2, HL3	HL1, HL2, HL3				

* XX is the thickness in mm. For example, L3-1240 is 12mm thickness.

NFPA 130 is the North American standard for flame, smoke and toxicity (FST). The standard specifies fire protection and life safety requirements for underground, surface, and elevated fixed guideway transit and passenger rail systems.

Rogers Corporation regularly tests our interior rail materials against global rail flame, smoke and toxicity standards. Doing so allows us to offer a high-quality solution no matter where your project is located.

ASTM E162 - Surface Flammability *

This test method measures and compares the surface flammability of materials when exposed to a prescribed level of radiant heat energy. It is intended for use in measurements of the surface flammability of materials exposed to fire.

ASTM E662 - Smoke Density *

This test method provides a means for determining the specific optical density of the smoke generated by specimens of materials and assemblies under the specified exposure conditions.

SMP 800-C - Toxic Gas Generation

The Bombardier SMP 800-C measures the toxic gas generation from the combustion of materials used in the vehicles construction.

ASTM C1166 - Flame Spread *

This test method is designed to differentiate the flame propagation characteristics of dense or cellular elastomeric compounds used in gaskets, setting blocks, shims, or spacers.

ASTM E1354 - Heat Release

This test method is used primarily to determine the heat evolved in, or contributed to, a fire involving products of the test material. Also included is a determination of the effective heat of combustion, mass loss rate, the time to sustained flaming, and smoke production.

ASTM D3675 - Surface Flammability *

This test method is intended for use when measuring surface flammability of flexible cellular materials exposed to fire.

Application	BF-2000	BF-1000	HT-870	HT-800	HT-820	HT-840	L3-XX40	FPC	HT-200	MF1-35	MF1-55	MF1-75	MRF-400
Cushioning	●	●	●	●	●	●	●	●	●	●	●	●	●
Vehicle Components	●	●	●	●	●	●	●	●	●	●	●	●	●
Thermal & Acoustic Insulation	●	●	●	●	●	●	●	●	●	●	●	●	●
HVAC Ducting	●	●	●	●	●	●	●	●	●	●	●	●	●
Floor Covering	●	●	●	●	●	●	●	●	●	●	●	●	●
Adhesives & Sealants	●	●	●	●	●	●	●	●	●	●	●	●	●
Elastomer Components	●	●	●	●	●	●	●	●	●	●	●	●	●

● Qualified
● Not Qualified
● Not Applicable

* These test methods are used to determine compliance with NFPA 130.

APPLICATION AND MATERIAL GUIDE

The BISCO Silicones Advantage – Peace of Mind

Multi-Functional Solutions

- Multiple benefits in a single material
- Engineered for long-term thermal, environmental, and mechanical performance

Long-Term Durability

- Excellent dimensional stability
- Resists fatigue, compression set, creep, and stress relaxation
- Performs across a wide temperature range

Design Reliability

- Proven long-term performance
- Resistant to UV, ozone, chemicals, and temperature extremes
- Reliable sealing and cushioning throughout service life

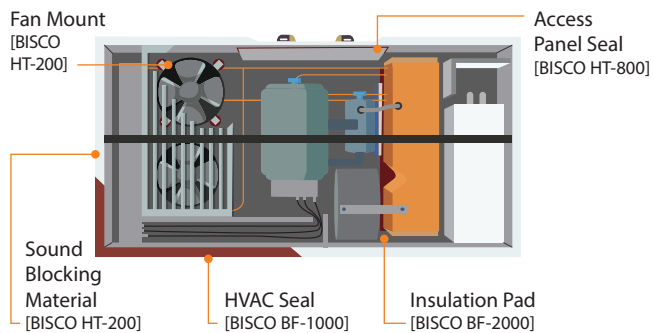
Passenger Safety

- In compliance with global FST requirements
- Inherently flame resistant without fire-blocking layers
- Maintains fire performance for the life of the component

Reducing Maintenance Costs

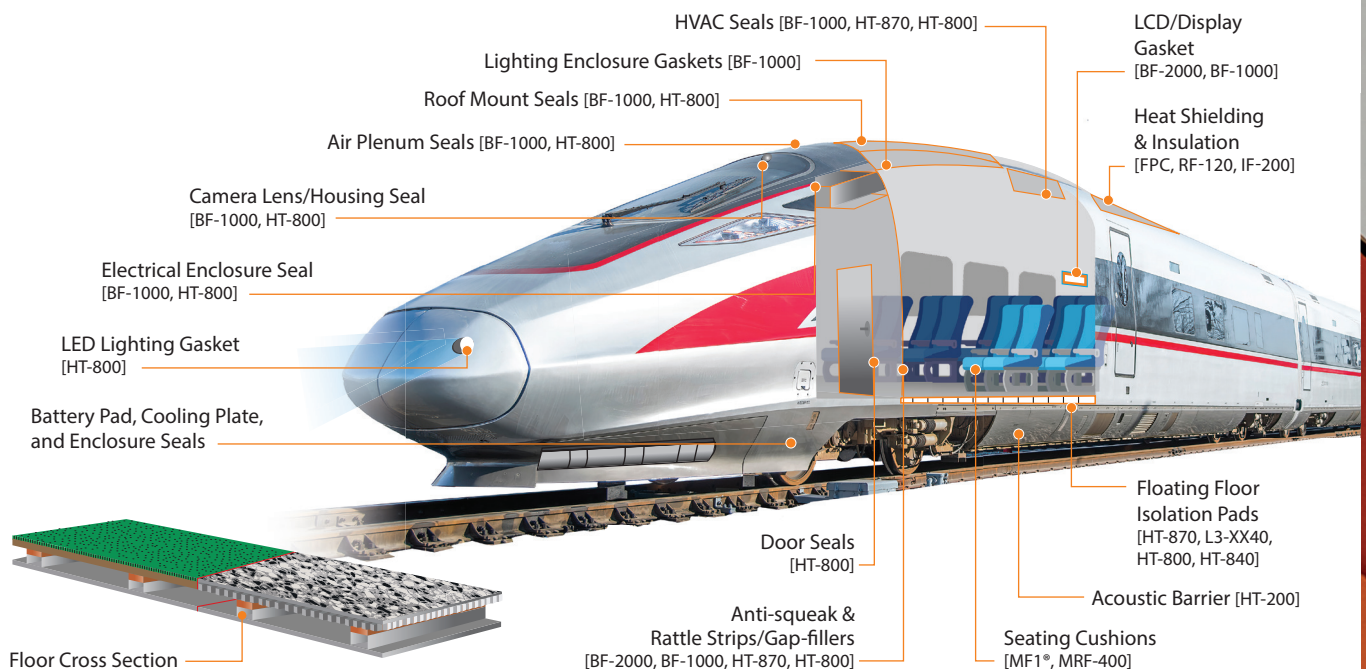
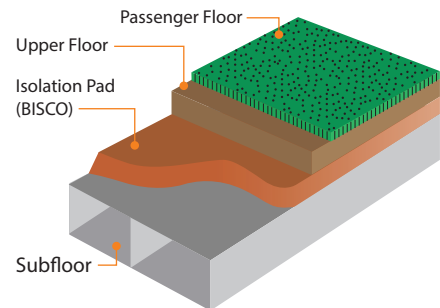
- Longer service life than conventional urethane cushions
- Reduced maintenance and replacement costs
- Minimizes downtime while maintaining passenger comfort

HVAC SYSTEM



FLOATING FLOOR SYSTEM

BISCO Silicone vibration isolation pads enable optimum passenger comfort, floor protection and design flexibility. These pads are designed to benefit all floor construction types including plywood, honeycomb or composite floors.





For more information visit
rogerscorp.com/elastomeric-material-solutions/bisco-silicones

World Class Performance

Rogers Corporation (NYSE:ROG) is a global leader in engineered materials to power, protect and connect our world. Rogers delivers innovative solutions to help our customers solve their toughest material challenges. Rogers' advanced electronic and elastomeric materials are used in applications for EV/HEV, automotive safety and radar systems, mobile devices, renewable energy, wireless infrastructure, energy-efficient motor drives, industrial equipment and more. Headquartered in Chandler, Arizona, Rogers operates manufacturing facilities in the United States (U.S.), Asia and Europe, with sales offices worldwide.

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Rogers is committed to producing quality products in a safe environment manufactured with robust management systems certified to industry standards.