Rail Interior Solutions

Rogers’ BISCO® product family offers a wide range of silicone based cellular foams and solids for use in various rail interior applications including seals, gaskets, floor isolation pads, sound barrier, anti-vibration/rattle and seating cushions. The materials are offered in continuous rolled sheet form, enabling ease of fabrication whether slitting or die-cutting.

**EN45545 Standard**
- EN 45545-1: Fire Protection of railway Vehicles - General Guidelines
- EN 45545-2: Fire Protection of railway Vehicles - Requirements for Fire Behavior of materials and components
- The application material requirement is dependent on the train car classification: Hazard Level Classification > Product Classification > Material Requirement Set

**BISCO Silicone Advantages**

**Long-Term Durability:**
- Excellent dimensional stability
- Low stress relaxation
- Low compression set
- High/low temperature resistance

**Design Reliability:**
BISCO Silicones excellent durability and resistance to environment induced degradation (EN/Door/Chemical resistance) ensure components and systems perform as expected for the life of the car.

**Passenger Safety:**
BISCO Silicones are manufactured to comply with EN45545 requirements without the use of restricted toxic substances. The fire-resistant properties are inherent to the homogeneous cell structure, eliminating the need for fire-block layers.

**Reducing Maintenance Costs:**
- By utilizing the BISCO MF1® silicone seat foam, transit authorities can have significant savings in maintenance costs and revenue lost to downtime as MF1 foams enable a longer lasting cushion life compared to commonly used urethane cushions.

**Applications:**

**Interior/Exterior Gasket and Seals**
- HVAC: Access panel seals, enclosure seals, roof mount seals, fan gaskets, anti-rattle seals and gap fillers.
- Lighting & Electronics: Light panel seals, LCD & display gasket, dust & moisture seal, electrical panel gasket, camera housing / lens seal
- BF-2000
- BF-1000
- HT-800

**Sound Barrier (R11)**
- Flexible acoustic barrier for ceiling and sideward panels
- HT-200

**Vibration Isolation Pad/Strips - Floor (R10)**
- Vibration isolation pads/straps for floating floor systems
- HT-870
- HT-800
- L3-XX40
- HT-840

**Seat Cushion (R18 / R19 / R21)**
- Open-cell cushion
- MF1-35
- MF1-55
- MF1-75
- Offering longer cushion life and lasting passenger comfort

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### EN 45545 Requirement Set

<table>
<thead>
<tr>
<th>Requirement Set</th>
<th>BF-2000</th>
<th>BF-1000</th>
<th>HT-870</th>
<th>HT-800</th>
<th>L3-XX40</th>
<th>HT-840</th>
<th>HT-200 FG</th>
<th>MF1-55</th>
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</thead>
<tbody>
<tr>
<td>R1 - Interiors Primary</td>
<td>ULTRA SOFT</td>
<td>EXTRA SOFT</td>
<td>SOFT</td>
<td>MED SOFT</td>
<td>HARD</td>
<td>FIRM</td>
<td>SOFT</td>
<td>MEDIUM</td>
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<tr>
<td>R2 - Interiors Limited Use</td>
<td>---</td>
<td>25.4mm [HL3]</td>
<td>---</td>
<td>0.79mm [HL2]</td>
<td>4mm - 25mm [HL3]</td>
<td>1.6mm - 6.35mm [HL3]</td>
<td>0.7mm - 4mm [HL2]</td>
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<tr>
<td>R3 - External Features</td>
<td>---</td>
<td>25.4mm [HL3]</td>
<td>---</td>
<td>0.79mm [HL2]</td>
<td>4mm - 25mm [HL3]</td>
<td>1.6mm - 6.35mm [HL3]</td>
<td>0.7mm - 4mm [HL2]</td>
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<tr>
<td>R4 - External Features</td>
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<td>0.79mm [HL2]</td>
<td>4mm [HL2]</td>
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<td>0.7mm - 4mm [HL2]</td>
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<tr>
<td>R5 - External Roof Features</td>
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<td>R6 - Rogers Rubber Elements</td>
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<td>---</td>
<td>---</td>
<td>2mm - 19mm [HL3]</td>
<td>2mm - 12.7mm [HL3]</td>
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<tr>
<td>R7 - Flooring Components</td>
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<td>2mm - 19mm [HL3]</td>
<td>2mm - 12.7mm [HL3]</td>
<td>4mm - 25mm [HL3]</td>
<td>1.6mm - 6.35mm [HL3]</td>
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<tr>
<td>R8 - Full Seal</td>
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<td>---</td>
<td>HL3 (Foam Only)</td>
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<tr>
<td>R9 - Staff Seals</td>
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<td>HL3</td>
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<tr>
<td>R10 - Seal Components</td>
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<td>HL3</td>
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<tr>
<td>R11 - Interior Seals</td>
<td>3.18mm - 12.7mm [HL3]</td>
<td>1.6mm - 25.4mm [HL3]</td>
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<td>4mm - 25mm [HL3]</td>
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<tr>
<td>R12 - Exterior Seals</td>
<td>3.18mm - 12.7mm [HL3]</td>
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<td>4mm - 25mm [HL3]</td>
<td>1.6mm - 6.35mm [HL3]</td>
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</tbody>
</table>

**Seals / Gaskets / Insulation / Gap-Filling**

**Vibration Isolation Pads (Floors)**
- BF-2000
- BF-1000
- HT-800
- L3-XX40
- HT-840
- HT-200 FG
- MF1-55

**Acoustic Barrier**
- Seat Cushion Foam

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**Physical Properties (Typical Values)**

<table>
<thead>
<tr>
<th>Property</th>
<th>BF-2000</th>
<th>BF-1000</th>
<th>HT-870</th>
<th>HT-800</th>
<th>L3-XX40</th>
<th>HT-840</th>
<th>HT-200 FG</th>
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</thead>
<tbody>
<tr>
<td>Density, kg/m³</td>
<td>150 (2)</td>
<td>150 (2)</td>
<td>240 (3)</td>
<td>352 (2)</td>
<td>352 (2)</td>
<td>449 (2)</td>
<td>See Data Sheet</td>
</tr>
<tr>
<td>Compression Force Deflection, kPa</td>
<td>10.3 (1.5)</td>
<td>20.7 (3)</td>
<td>27.6 (4)</td>
<td>62.0 (9)</td>
<td>89.5 (13)</td>
<td>151.7 (22)</td>
<td>6.2 (0.9) ASTM D1056 (25% compression)</td>
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<tr>
<td>Tensile Strength, kPa</td>
<td>172 (25)</td>
<td>241 (35)</td>
<td>287 (45)</td>
<td>301 (45)</td>
<td>172 (25)</td>
<td>414 (60)</td>
<td>46 (1.3) ASTM D412</td>
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<tr>
<td>Shore A, %</td>
<td>85</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>80</td>
<td>60 (9) ASTM D412</td>
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<tr>
<td>Thermal Conductivity, W/mK</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
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<td>0.06 ASTM D518</td>
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<tr>
<td>Compression Set, %</td>
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<tr>
<td>Water Absorption, %</td>
<td>5</td>
<td>Rogers (24 hrs @ 23°C)</td>
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<tr>
<td>Temperature Range, °C</td>
<td>-55 to 200</td>
<td>Rogers Internal / ASTM D1656</td>
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</table>
World Class Performance
Rogers Corporation (NYSE:ROG) is a global leader in engineered materials to power, protect, and connect our world. With more than 180 years of materials science experience, Rogers delivers high-performance solutions that enable clean energy, internet connectivity, and safety and protection applications, as well as other technologies where reliability is critical. Rogers delivers Power Electronics Solutions for energy-efficient motor drives, vehicle electrification and alternative energy; Elastomeric Material Solutions for sealing, vibration management and impact protection in mobile devices, transportation interiors, industrial equipment and performance apparel; and Advanced Connectivity Solutions for wireless infrastructure, automotive safety and radar systems. Headquartered in Arizona (USA), Rogers operates manufacturing facilities in the United States, China, Germany, Belgium, Hungary, and South Korea, with joint ventures and sales offices worldwide.

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