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MATERIAL SELECTION GUIDE INDUSTRIAL APPLICATIONS



For product designers and engineers, Rogers Corporation is the elastomeric materials solutions partner of choice when quality, innovation, and collaborative support are critical to design optimization and product functionality.

Rogers' materials are designed into products and applications in segments where high reliability and mission-critical performance are essential: automobiles, aerospace, mass transit, electronics, protective gear, footwear, medical products, and much more.

With unrivaled technical support, we foster successful customer relationships through a dedication to technical know-how, application expertise, and global support.



For further information on Rogers' portfolio of elastomeric material solutions, please contact the Rogers' facility closest to you or visit rogerscorp.com.



BISCO® Silicone Materials are the unrivaled long-lasting solution for product designers and engineers addressing mission-critical sealing, shock and vibration challenges across many applications and industries.

PRODUCT OVERVIEW

The BISCO portfolio offers a wide range of silicone buns, cellular foams, sponges, solids, and specialty materials in roll stock as well as a variety of firmness, thickness, and color options.

These specially engineered materials maintain high performance in extreme conditions and meet stringent safety requirements.

All materials come with the support of our experienced Technical Service Team.

- 1 BUN**
Block form of silicone foam with key properties of low density, softness, and excellent acoustic absorption and vibration isolation properties.
- 2 CELLULAR FOAMS**
Open-cell silicone foams with key properties of superior compression set, durability, conformability, and excellent sealing for long-term protection.
- 3 SPONGES**
Closed-cell silicone sponges with key properties of good tensile strength and elongation, durability, and good sealing with relatively low compression.
- 4 SOLIDS**
Solid form of silicones available in industrial and performance grades with various key properties including tight thickness tolerances, high tear strength, superior FST performance, and select flame-resistant offerings.
- 5 SPECIALTY**
Variety of specialty materials addressing unique challenges including heat management, sound blocking, electrical conductivity, and more.

KEY BENEFITS

- ✔ **Superior Resistance to Compression Set**
At ambient and elevated temperatures.
- ✔ **Superior Flame Ratings**
Cellular foams meet the highest UL, railway and aerospace standards.
- ✔ **Low Flame, Smoke, and Toxicity**
During combustion.
- ✔ **Extreme Temperature Resistance**
Excellent performance at extreme high and low temperatures.
- ✔ **Environmental Protection**
Natural resistance to UV and Ozone.
- ✔ **Excellent Sealing**
Excellent sealing under compression for long periods of time.
- ✔ **Product Consistency**
Quality manufacturing resulting in reliable and consistent material properties.
- ✔ **Broad Product Offering**
Wide range of firmness, density, thickness and color options available.
- ✔ **Quality Service**
All products are supported by knowledgeable Rogers Sales and Applications Engineers, Technical Service and Customer Service Representatives.

MATERIAL SAMPLES

BISCO® SILICONES

Cellular Foam



BF-2000



BF-1000



HT-870



HT-800



HT-820



HT-840

Specialty with Substrate



FPC



IF-200



RF-120



MF1®-55



RS-800

Bun

Sponge

Solid

1200 series



HT-1240



HT-1250



HT-1260



HT-1270



MS-1600

1600 series

6000 series



HT-6220



HT-6210



HT-6135



HT-6240



HT-6360

Specialty



HT-200



EC-2130



EC-2265

PRODUCT DATA

Typical values shown unless otherwise noted. Refer to datasheet for specification values.



For more BISCO® product information visit the BISCO® Product Properties Guide or www.rogerscorp.com.

		MF1-35	MF1-55	MF1-75	BF-2000	BF-1000	HT-870	HT-800	HT-820	HT-840	RS-870	RS-800	RS-820	RS-840	HT-1240	HT-1250	HT-1260	HT-1270	HT-6210	HT-6220	HT-6135	HT-6240	HT-6360	MS-1640	MS-1650	MS-1660	MS-1670	HT-1500	EC-2130	EC-2265	HT-200	FPC	RF-120	IF-200			
Physical Properties		Standard																																			
Firmness				Soft	Medium	Firm	Ultra Soft	Extra Soft	Soft	Medium	Firm	Extra Firm	Soft	Medium	Firm	Extra Firm	Compliant with A-A-59588				Extra Soft	Soft	Tight Tolerance	Medium	Fire-Safe	Compliant with USP Class VI				Press Pad	EMI Shielding	Electrically Conductive	Sound Block	Flame Barrier	Heat Shield	Abrasion Resistant	
Standard Color				White			Black	White, Gray, Black	Red, Black	Black, Gray, Red	Gray	Gray	Gray				Red, Black, Gray, White				Gray	Black	Cream	Transparent	Black	Translucent				Red	Dark Gray	Black	Black	White	White	White	
Thickness mm (in)				6.35 - 203.20 (0.250 - 8.00)	6.35 - 203.20 (0.250 - 8.00)	6.35 - 152.4 (0.250 - 6.00)	3.18-12.70 (0.125-0.500)	1.59-25.40 (0.063-1.000)	1.59-12.70 (0.063-0.500)	0.79-12.70 (0.031-0.500)	0.79-12.70 (0.031-0.500)	1.59-6.35 (0.063-0.250)	2.4-12.7 (0.094-0.500)	1.6-12.7 (0.063-0.500)		0.79-3.18 (0.031-0.125)				0.250-3.18 (0.010-0.125)	0.250-3.18 (0.013-0.125)	0.250-1.59 (0.010-0.063)	0.250-3.18 (0.010-0.125)	0.50-3.18 (0.020-0.125)	0.254-12.7 (0.010-0.500)				0.0787-3.175 (0.031-0.125)	1.60-3.20 (0.063-0.125)	0.5-6.35 (0.020-0.250)	HT-200 defined by areal density	1.59-6.35 (0.063-0.250)	2.50, 5.00 (0.098, 0.197)	5.00 (0.197)		
Density																																					
Density, kg/m³ (lb./ft³)				80 (5.0)	96 (6.0)	112 (7.0)	175 (11)	192 (12)	240 (15)	352 (22)	384 (22)	448 (28)	256 (16)	400 (25)	481 (30)																				513 (32)		
Areal Density, kg/m² (lb./ft²)																																	1.22-7.32 (0.25-1.5)	0.83 (0.17) 1.17 (0.24)	1.42 (0.29) <1.71 (<0.35)		
Specific Gravity Internal Method (g/cc)																																					
Firmness																																					
Compression Force Deflection, kPa (psi) typical values specification values		ASTM D1056 @ 25% Deflection		4.85 (0.7) 1.4-8.3 (0.2-1.2)	5.5 (0.80) 2.8-10.3 (0.4-1.5)	8.25 (1.2) 4.1-12.4 (0.6-1.8)	10 (1.5) 0-17 (0-2.5)	16.5 (2.4) 7-35 (1-5)	26 (3.8) 7-48 (1-7)	67 (9.7) 41-97 (6-14)	106 (15.3) 82-138 (12-20)	142 (20.6) 110-179 (16-26)	34 (5) 13.8 - 48 (2-7)	79 (11.5) 41 - 97 (6-14)	155 (22.5) 110 - 193 (16-28)																						
Durometer, Shore A, except HT-6210 Shore OO		ASTM D2240															40 ± 5	50 ± 5	60 ± 5	70 ± 5	62 ±4	22 ±5	35±5	40±5	65±5	40 +/- 5	50+/-5	60+/-5	70+/-5	70 ± 10	30 ± 5	65 +/- 5					
Compression Set (%) typical values specification values		ASTM D1056 @ 100°C (212°F)		1.5 < 5			6.9 <12	1.7 <5	1.6 <5	2.4 <5	2.6 <5	1.8 <5	3.5 <5			4 <5											6	9.5	12.2	12.3							
		ASTM D395 @ 150°C (302°F)																	≤25				<25				<35						<10%		26		
		ASTM D395 @ 175°C (347°F)																																			
Tensile Strength, kPa (psi)		ASTM D412					140 (20)	262 (38)	240 (35)							7650 (1110)	7110 (1030)	6095 (1010)	7200 (1050)	3300 (480)	4400 (640)	5520 (800)	7170 (1040)	1720 (250)	6890 (1000)	8270 (1200)				414 (60)	5200 (754)						
HT-1500 Tensile Fill/Tensile Warp, kN/m (ppi)		ASTM D751		86 (12.5)		93 (13.5)	172 (20)	140 (20)	207 (30)							≥240	≥ 200	≥150	≥125	565	580	580	325	>125	700	600		50		260							
Tensile Elongation (%)		ASTM D412		45		35	60	86	20	45																											
Water Absorption (%)							1.4 <15%	1.4 <10%	0.5 <10%	0.5 <5%			1.0 <5																								
Tear Resistance (ppi)		ASTM D624		>2.0																					140	150				46							
Flammability																																					
Flame Resistance		UL 94 (File E83967) V-0																																			
Flame Spread Index (1s)		ASTM E162, Flaming Mode <35																											3.2mm V-1								
Smoke Density (Ds)		ASTM E662 Flaming Mode @ 1.5 min, <100 Flaming Mode @ 4.0 min, <200		Meets			Meets		Meets			Meets																			Meets		For flame specifications please refer to the Technical Data Sheets				
Burn Length		FMVSS 302, <100mm/min																																			
Outgassing																																					
Toxic Gas Emissions Rating		SMP-800-C @ 1.5/4.0 min		Meets			Meets		Meets																												
Total Mass Loss (%)		ASTM E595 @ (4x10⁴ Torr)					3.81	3.46	1.19	0.98	2.11	2.08																									
Collected Volatile Condensible Materials (CVCM) (%)		ASTM E595 @ (4x10⁴ Torr)					1.14	1.12	0.34	0.25	0.63	0.57																									
Water Vapor Regain (%)		ASTM E595 @ (4x10⁴ Torr)					0.07	0.04	0.02	0.03	0.02	0.01																									
Temperature Resistance																																					
Recommended Constant Use				-55 to +200°C (-67 to +392°F)			-55 to +200°C (-67 to +392°F)		-55 to +200°C (-67 to +392°F)			-55 to +200°C (-67 to +392°F)			-62 to +218°C (-80 to +425°F)			-55 to +200°C (-67 to +392 °F)			-62 to +232°C (-80 to +450°F)			-55 to +200°C (-67 to +392°F)		-62 to +200°C (-80 to +392°F)	-62 to +225°C (-80 to +437°F)	-55 to +200°C (-67 to +392°F)									
Thermal Conductivity (W/m *K)		ASTM C518		0.043	0.037	0.036	0.048	0.076	0.09		0.037									0.19	0.22	0.31	0.21	0.1							3.33	0.08	0.067	0.06			
Low Temperature Flex		ASTM D1056 @ -55°C (-67°F)		Meets			Meets		Meets			Meets																									
Low Temperature Brittleness		ASTM D746 @ -55°C (-67°F)																																			
		ASTM D2137 @ -62°C (-80°F)													Meets		Meets							Meets													
Electric																																					
Dielectric Strength (Volts/mil)		ASTM D149		45			48	72	65	75	66	57					372	374	381	386													284	9	55	64	
Dielectric Constant (1 kHz)		ASTM D150					1.4	1.5	1.5	1.7		1.8					2.8	3	3	2.8											4.56	1.46	1.6	1.42			
Dissipation Factor (1 kHz)		ASTM D150					0.003	0.004	0.005		0.006						0.003														0.04	0.05	0.0251	0.025			
Dry Arc Resistance (Seconds)		ASTM D495					86	123	125		174	149					122	123	145	124											190	141	99	185			
Volume Resistivity (Ohm-cm)		ASTM D257		7.0 x 10^13			10^14		10^14							10^14														<1.00		10^14					
EMI Shielding (dB) & Electrical Conductivity (Ohm-cm)		MIL G83528, ASTM D991																									Refer to Technical Data Sheets										

DESIGN TOOLS

Product Properties Guide

The Product Properties Guide filters BISCO® product information by various criteria, providing several material options based on your application requirements.

Example - Filters
// Groups: Flammability and Outgassing
// Product Category: Silicone Materials

Product	Results					
	BF-2000	BF-1000	HT-870	HT-800	HT-820	HT-840
Flamability and Outgassing						
UL94 V-0 (Pass/Fail)	Pass	Pass	Pass	Pass	Pass	Pass
Burn Rate FMVSS302 (Pass/Fail)	Pass	Pass	Pass	Pass	Pass	Pass
Flame Resistance @ 12 Sec FAR 25.853 (Pass/Fail)	Pass	Pass	Pass	Pass	Pass	Pass
Flame Resistance @ 60 Sec FAR 25.853 (Pass/Fail)	Pass	Pass	Pass	Pass	Pass	Pass
Smoke Density (D _s) @ 1.5 min ASTM E 662	<100	<100	<100	<100	<100	<100
Smoke Density (D _s) @ 4.0 min ASTM E 662	<200	<200	<200	<200	<200	<200
Toxic Gas Emissions Rating SMP-800C (Pass/Fail @1.5/4.0 min)	Pass	Pass	Pass	Pass	Pass	Pass
Total Mass Loss ASTM E 595 (%)	3.81	3.46	1.19	0.98	2.11	2.08
Collected Volatile Condensable Materials ASTM E 595 (%)	1.14	1.12	0.34	0.25	0.63	0.57
Water Vapor Regain ASTM E595 (%)	0.07	0.04	0.02	0.03	0.02	0.01

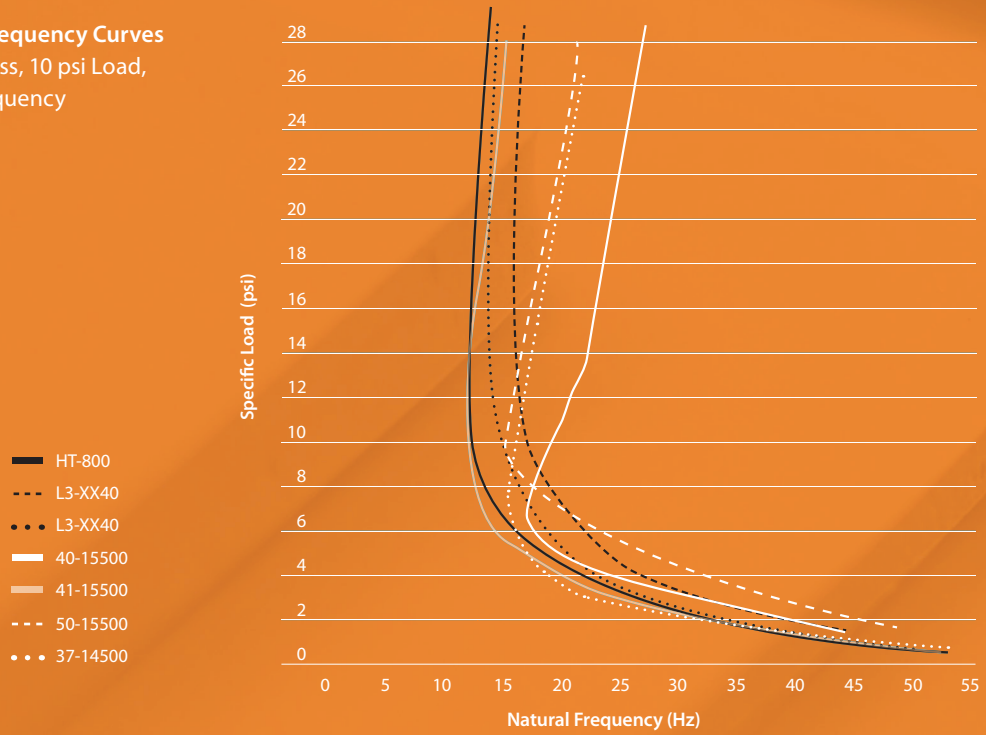


http://tools.rogerscorp.com/ems/products/bisco-properties/index.aspx

Vibration Isolation Tool

The Vibration Isolation Tool recommends the proper PORON® Polyurethane and BISCO® Silicone materials for your vibration mitigation applications. This tool uses your specifications to calculate the isolation efficiency of our materials, and provides the most effective material option.

Example - Natural Frequency Curves
// 0.50 in Pad Thickness, 10 psi Load,
// 100 Hz Forcing Frequency



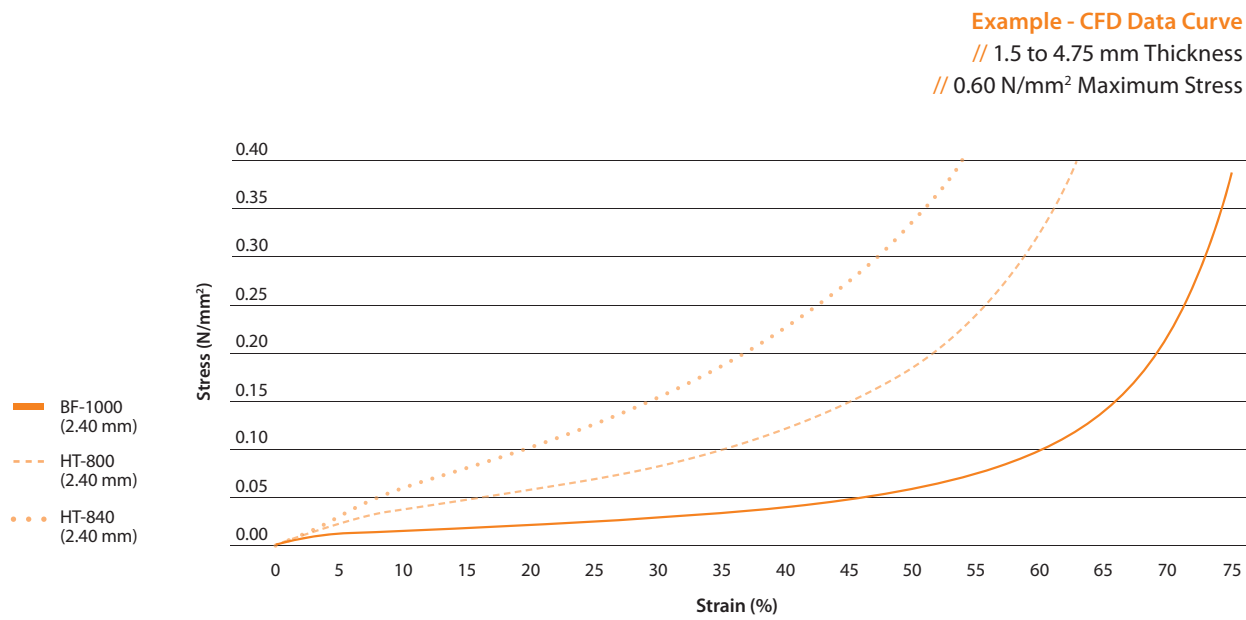
Product	BISCO® Silicones		PORON® Polyurethanes			
	HT-800	L3-XX40	40-15500	41-15500	50-15500	37-14500
Thickness mm (in)	12.70 (0.500)	12 (0.472)	12.70 (0.500)	12.70 (0.500)	12.70 (0.500)	12.70 (0.500)
Isolation Efficiency (%)	> 97.00	> 94.00	> 97.00	> 96.00	> 95.00	> 94.00
Natural Frequency (Hz)	12	17	19	12	16	16



http://tools.rogerscorp.com/ems/vibration/index.aspx

Compression Force Deflection (CFD) Tool

Using stress-strain data, the CFD Curve Tool helps in the identification of the BISCO® or PORON® material(s) that meet your engineering requirements.



Elastomeric Material Solutions Application Design Tool

The Elastomeric Material Solutions Application Design Tool assists in the identification of PORON® Polyurethane and BISCO® Silicone materials that best meet your design requirements and provides material options based upon your application requirements.

PORON® Polyurethanes
// PORON® 4701-40
// PORON® Dura-Shape® Foams

BISCO® Silicones
// BISCO® HT-800

Example - Configuration
// Application: EV/HEV Battery Pads & Cushions
// 5.1 - 15.0 mm Thickness
// Medium Compressibility



http://tools.rogerscorp.com/ems/products/msg/index.aspx

STANDARDS

Industry	Standard
Aerospace	ABS 5006
	ABS 5026
	ABS 5708
	ABS 5789
	AIMS04-14-002A
	AMS 3195
	AMS 3196
	BMS 1-23
	BMS 1-60
	BMS 1-68
	CMS-RB-202
	CMS-RB-209
	DMS 1980 GR2 CL2
	DMS 1980 GR1 CL1
	DMS 1980 GR1 CL2
Automotive	DMS 1980 GR3 CL1
	DMS 1980 GR 3 CL2
Automotive	Chrysler MS-AY556
Rogers Internal	GMW16392
Rogers Internal	BISCO Standard
Food	21 CFR 177.2600
Rail	49 CFR 238
	EN 45545-2
UL	NFPA 130
	UL 50
	UL 50E
	UL 157
	UL 508

TIPS FOR MATERIAL SELECTIONS

- // Acrylic one or two sides of material
- // Silicone one side only

- Material Slitting**
- // Ability to slit minimum width of 6.35 mm (0.250")
 - // Width of slit must be greater or equal to thickness
 - // Material can be slit with or without adhesive applied
 - // Maximum roll diameter is 355.6 mm (14")

Applications	Aerospace	Communications	Rail	Automotive	Energy	Lighting
Flame, Smoke & Toxicity	●×	●×	●×	●×	●×	●×
UL Rated Material		●×			●×	●×
Vibration Reduction	●×	●×	●×	●○×	●○×	
Acoustic Performance	●×		●×	●○×		
Softness	●○×	●○×	●○×	●○×	●○×	●○×
Firmness	●○×	●○×	●○×	●○×	●○×	●○×
EMI Shielding		×				
Moisture Resistant	●○×	●○×	●○×	●○×	●○×	●○×
Heat Shielding	×	×	×	×	×	×
Insulating		●	●	●	●	●

LEGEND

● BISCO Cellular Silicones ○ BISCO Solid Silicones × BISCO Specialty Silicones



For more information please visit us at:
www.rogerscorp.com/ems/bisco/index.aspx

For more information visit [rogerscorp.com/ems](https://www.rogerscorp.com/ems)

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.