



Metallized Fabric-Over-Foam Shielding Gaskets

Laird Technologies is a fully integrated manufacturer of profile and Input/Output (I/O) EMI shielding gaskets. The metallized Fabric-Over-Foam product line has been expanded greatly due to our committed efforts in new product development.

This catalog has been developed to provide helpful information to design engineers on our expanded offering. In this section you can find out about the benefits of Fabric-Over-Foam Gaskets, material options and review an extensive list of standard profile and I/O sizes and configurations.

Laird Technologies specializes in the quick turnaround of custom shapes and sizes of EMI shielding gaskets.

If you don't find exactly what you need, our engineers will help you design the right solution to your shielding problem.

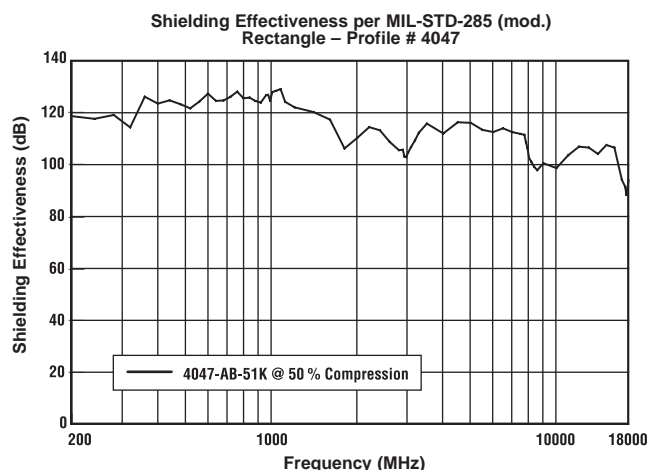
A sampling of standard profiles are shown; custom configurations and sizes can be designed to meet your specific requirements. Profiles are shown in ascending order by height (starting on page 9).



Benefits of Fabric-Over-Foam Gaskets

- Shielding effectiveness of >100dB (MIL-STD 285 mod.) (see figure 1).
- Extremely low compression forces, ranging from 5-10 lbs./ft., allows use of lighter materials and less fastening and hinge hardware (see figure 2).
- Low Surface Resistivity of <0.07 ohms/square provides improved conductivity (ASTM F390).
- Wide range of flame retardant gaskets available (UL recognized per UL94 V0 or UL94 HB).
- Abrasion resistant metallized fabrics show virtually no degradation in shielding performance after 1,000,000 cycles (ASTM 3880).
- Urethane & Thermoplastic Elastomer (TPE) cores provide low compression set of 5-20 % (ASTM D3574) ensuring long-term reliability of gasket performance.
- Service temperatures from -40 °F to 158 °F (-40°C to 70°C) (ASTM D746).
- Available in Nickel/Copper (Ni/Cu) and Tin/Copper (Sn/Cu) to ensure galvanic compatibility with a wide variety of host materials. Both versions display no significant performance degradation after environmental exposure per the Accelerated Aging Test (ASTM 845).
- Prototype samples can be provided within 24 hours utilizing laser technology, CAD/CAM equipment, and customer supplied drawings in DWG®, DXF®, IGS, PDF®, and BMP file formats.
- Profile and I/O gaskets are available with a variety of PSA tapes, including Easy Peel® with extra wide release liner, which facilitates quick assembly.
- Profile gaskets can be cut to specified lengths, kiss-cut on release liner, or mitered to form frame configurations.

Figure 1



LT_KA_2003_01_MCP_E_15M · ©2003 Laird Technologies



Profile & I/O Construction Options

Fabric*

Fabric Types	Metal Coating	Conductivity (ASTM F390)	Application	Benefits
Ripstop	Ni/Cu, Sn/Cu	< 0.07 ohms/square	I/O or Profile Gaskets	Complex Shapes, Flame Retardant, Shear Resistance
Taffeta	Ni/Cu	< 0.07 ohms/square	Profile Gaskets	Complex Shapes, Flame Retardant
Knit Mesh	Ni/Cu	< 0.07 ohms/square	I/O Gaskets	Low Cost, Flame Retardant

Pressure Sensitive Adhesive*

Pressure Sensitive Adhesive	180° Peel Strength on Stainless Steel (ASTM 3330)	Temperature Resistance (3M™ Internal Test)	Application	Benefits
3M™ 9485 or equivalent	75 oz/in (82 N/100 mm)	Short Term: 450 °F (232 °C) Long Term: 300 °F (149 °C)	High Tack, Shear Resistant	High Peel Strength and Temperature Resistant
Nitto D5052 or equivalent	87 oz / in (95 N/100 mm)	Short Term: 311 °F (155 °C) Long Term: 240 °F (160 °C)	High Tack, Shear Resistant	High Cohesive Strength, High Peel Strength and Temperature Resistant
3M™ 950 or equivalent	75 oz/in (82 N/100 mm)	Short Term: 250 °F (121 °C) Long Term: 180 °F (82 °C)	High Tack	High Peel Strength

Other Pressure Sensitive Adhesives can be provided. Contact Engineering to discuss requirements.

Foam*

Foam Types	Compression Set (ASTM D 3574)	Color	Application	Benefits
Urethane	5 to 10 %	Black or Grey	I/O or Profile Gaskets	Flame Retardant, Low Compression Gasket, Complex Shapes
Thermoplastic Elastomer (TPE)	< 20 %	Yellow or White	Profile Gaskets	Complex Shapes, Flame Retardant

The recommended operating compression for Fabric-Over-Foam EMI Gaskets will vary depending on the shape and size of the particular gasket.

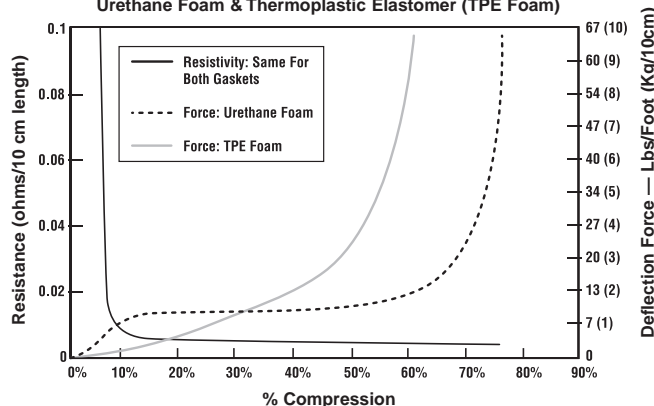
Typically, D-Shaped, Rectangular Shaped, and Square Shaped Fabric-Over-Foam EMI Gaskets should be compressed between 30 % and 50 % of the foam height.

Similarly, C-Shaped Fabric-Over-Foam EMI Gaskets should typically be compressed between 50 % and 75 % of the gasket height.

* Certain combinations of materials may not be available for all Profiles or I/Os. Please consult the Engineering Department at Laird Technologies when unsure.

Figure 2

Force Displacement Resistance Comparing Different Foams
Urethane Foam & Thermoplastic Elastomer (TPE Foam)



Diverse Assembly Options

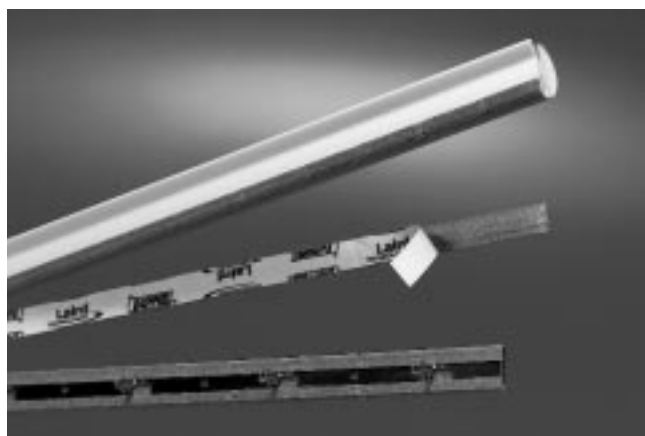
Multiple attachment options provide a variety of ways to install critical EMI products. Pressure Sensitive Adhesive (PSA) has been complemented with the Easy Peel® release liner, rigid clip, and pop rivet configurations. These mechanical attachment options enable you to take advantage of existing tooling on doors and enclosures as well as offer alternate attachment methods to better meet design requirements.

Profile Gasket Tolerances

Profile	Tolerance Inches (Millimeters)
Height & Width	± .020 (0.5)
Length Inches (Millimeters)	Tolerance Inches (Millimeters)
1 to 6 (25.4 – 152.4)	± .030 (0.8)
6 to 11 (152.4 – 279.4)	± .050 (1.3)
11 to 48 (279.4 – 1219.2)	± .100 (2.5)
48 to 70 (1219.2 – 1778.0)	± .187 (4.7)
70 to 96 (1778.0 – 2438.4)	± .250 (6.4)

For parts shorter than 1 inch (25.4mm), or longer than 96" (2438.4mm), please consult Engineering for tolerances. See back cover for contact information.

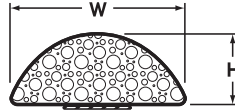
All dimensions shown are in inches (millimeters) unless otherwise specified.





Fabric-Over-Foam Profile Selection Guide

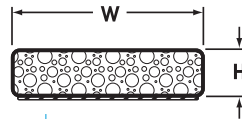
D-Shaped



Profile Number	inches (mm) H	inches (mm) W
4584	0.040 (1.0)	0.150 (3.8)
4320	0.050 (1.3)	0.140 (3.6)
4541	0.050 (1.3)	0.250 (6.4)
4358	0.060 (1.5)	0.100 (2.5)
4184	0.060 (1.5)	0.150 (3.8)
4548	0.060 (1.5)	0.250 (6.4)
4356	0.070 (1.8)	0.180 (4.6)
4052	0.080 (2.0)	0.080 (2.0)
4283	0.080 (2.0)	0.160 (4.1)
4181	0.080 (2.0)	0.394 (10.0)
4053	0.090 (2.3)	0.090 (2.3)
4912	0.090 (2.3)	0.150 (3.8)
4375	0.094 (2.4)	0.200 (5.1)
4240	0.100 (2.5)	0.300 (7.6)
4742	0.120 (3.0)	0.150 (3.8)
4202	0.120 (3.0)	0.250 (6.4)
4078	0.120 (3.0)	0.360 (9.1)

Profile Number	inches (mm) H	inches (mm) W
4090	0.125 (3.2)	0.090 (2.3)
4906	0.130 (3.3)	0.188 (4.8)
4692	0.140 (3.6)	0.250 (6.4)
4228	0.150 (3.8)	0.150 (3.8)
4123	0.150 (3.8)	0.354 (9.0)
4112	0.158 (4.0)	0.433 (11.0)
4120	0.160 (4.1)	0.240 (6.1)
4295	0.170 (4.3)	0.250 (6.4)
4609	0.180 (4.6)	0.400 (10.2)
4787	0.200 (5.1)	0.250 (6.4)
4134	0.200 (5.1)	0.390 (9.9)
4607	0.200 (5.1)	0.480 (12.2)
4242	0.250 (6.4)	0.250 (6.4)
4542	0.250 (6.4)	0.290 (7.4)
4789	0.250 (6.4)	0.375 (9.5)
4368	0.299 (7.6)	0.272 (6.9)
4105	0.375 (9.5)	0.500 (12.7)
4060	0.500 (12.7)	0.500 (12.7)
4269	0.562 (14.3)	0.709 (18.0)
4743	0.787 (20.0)	0.580 (14.7)
4581	0.984 (25.0)	0.745 (18.9)

Rectangle Shaped



Profile Number	inches (mm) H	inches (mm) W
4570	0.015 (0.4)	0.200 (5.1)
4577	0.015 (0.4)	0.276 (7.0)
4572	0.015 (0.4)	0.394 (10.0)
4300	0.017 (0.4)	0.826 (21.0)
4058	0.020 (0.5)	0.157 (4.0)
4569	0.020 (0.5)	0.196 (5.0)
4500	0.020 (0.5)	1.217 (30.9)
4501	0.020 (0.5)	1.970 (50.0)
4850	0.030 (0.8)	0.900 (22.9)
4245	0.040 (1.0)	0.120 (3.0)
4223	0.040 (1.0)	0.157 (4.0)
4220	0.040 (1.0)	0.200 (5.1)
4404	0.040 (1.0)	0.240 (6.1)
4215	0.040 (1.0)	0.275 (7.0)
4208	0.040 (1.0)	0.395 (10.0)
4219	0.040 (1.0)	0.510 (13.0)
4259	0.040 (1.0)	0.600 (15.2)
4677	0.040 (1.0)	0.709 (18.0)
4532	0.040 (1.0)	0.750 (19.1)
4597	0.040 (1.0)	0.900 (22.9)
4297	0.040 (1.0)	1.000 (25.4)
4363	0.040 (1.0)	1.126 (28.6)
4179	0.040 (1.0)	1.431 (36.3)
4512	0.040 (1.0)	1.640 (41.7)
4270	0.040 (1.0)	1.770 (45.0)
4573	0.040 (1.0)	1.840 (46.7)
4394	0.040 (1.0)	3.300 (83.8)
4246	0.050 (1.3)	0.090 (2.3)
4088	0.050 (1.3)	0.220 (5.6)
4086	0.055 (1.4)	0.850 (21.6)
4273	0.060 (1.5)	0.130 (3.3)
4056	0.060 (1.5)	0.200 (5.1)
4157	0.060 (1.5)	0.280 (7.1)
4629	0.060 (1.5)	0.390 (9.9)
4051	0.060 (1.5)	0.500 (12.7)

Profile Number	inches (mm) H	inches (mm) W
4455	0.060 (1.5)	0.551 (14.0)
4430	0.060 (1.5)	0.591 (15.0)
4626	0.060 (1.5)	0.610 (15.5)
4606	0.060 (1.5)	0.620 (15.7)
4579	0.060 (1.5)	0.650 (16.5)
4164	0.060 (1.5)	0.750 (19.1)
4170	0.060 (1.5)	0.866 (22.0)
4225	0.060 (1.5)	0.900 (22.9)
4080	0.060 (1.5)	1.000 (25.4)
4599	0.060 (1.8)	1.063 (27.0)
4518	0.060 (1.5)	1.235 (31.4)
4079	0.060 (1.5)	1.330 (33.8)
4161	0.060 (1.5)	1.370 (34.8)
4163	0.060 (1.5)	1.400 (35.6)
4591	0.060 (1.5)	1.455 (37.0)
4091	0.060 (1.5)	1.525 (38.7)
4628	0.060 (1.5)	1.580 (40.1)
4231	0.060 (1.5)	1.615 (41.0)
4679	0.060 (1.5)	1.690 (42.9)
4408	0.060 (1.5)	1.740 (44.2)
4148	0.060 (1.5)	1.870 (47.6)
4169	0.060 (1.5)	1.900 (48.3)
4160	0.060 (1.5)	2.310 (58.7)
4235	0.060 (1.5)	2.520 (64.0)
4596	0.060 (1.5)	3.091 (78.5)
4907	0.060 (1.5)	3.780 (96.0)
4071	0.062 (1.6)	0.300 (7.6)
4171	0.062 (1.6)	0.870 (22.1)
4143	0.062 (1.6)	2.000 (50.8)
4268	0.070 (1.8)	0.160 (4.1)
4302	0.070 (1.8)	0.550 (13.9)
4199	0.070 (1.8)	0.650 (16.5)
4410	0.070 (1.8)	1.063 (27.0)
4688	0.079 (2.0)	0.118 (3.0)
4094	0.080 (2.0)	0.160 (4.1)
4186	0.080 (2.0)	0.200 (5.1)
4602	0.080 (2.0)	0.236 (6.0)
4096	0.080 (2.0)	0.275 (7.0)

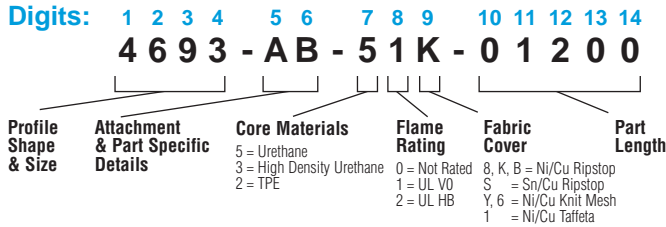
continued

All dimensions shown are in inches (millimeters) unless otherwise specified.



Fabric-Over-Foam Profile and I/O Ordering Information

Part Number Example:



* Certain combinations of materials may not be available for all Profiles or I/Os.
Please consult the Engineering Department at Laird Technologies when unsure.

See back cover for contact information.

Digits 1 through 4

Designate profile number. Select profile or I/O and sizes from pages 9-13 (Profile) or 15-17 (I/O).

Digits 5 through 6

Designate part-specific attributes of the product including cutouts, notches, tape width, tape position and a variety of other customized details. A B is the default and usually designates Pressure Sensitive Adhesive centered on base. These digits will be supplied by Laird Technologies' Engineering personnel.

Digits 7 through 9

Designate the core materials, flame rating and fabric cover combinations. Select these from the recommended list in the table below. Other foam and fabric combinations are available, please consult Laird Technologies' Engineering Department. See page 8 for additional material performance data.

Digits 10 through 14

Designate the part length in inches to two decimal places (i.e., In the above example, the "01200" denotes a 12.00 inch (304.8 mm) long gasket).

Construction Options

Part Number Suffix Digits (Digits 7,8,9)	Foam Core	Gasket UL94 Flame Rating	Metallized Fabric Type	Benefits	Target Gasket
51K	Urethane	UL94 V0	Ni/Cu Ripstop	Flame Retardant, High Shear Resistant, Low Compression Set	I/O or Profile
51Y	Urethane	UL94 V0	Ni/Cu Knit Mesh	Flame Retardant, Low Compression Set	I/O
51S	Urethane	UL94 V0	Sn/Cu Ripstop	Flame Retardant, Shear Resistant, Low Compression Set	I/O or Profile
31K	High Density Urethane	UL94 V0	Ni/Cu Ripstop	Flame Retardant, Shear Resistant, Low Compression Set	Complex Shapes (C-Fold, T-Shaped, etc.)
221	TPE	UL94 HB	Ni/Cu Taffeta	Flame Retardant, Wide Variety of Profile Shapes	Profile
528	Urethane	UL94 HB	Ni/Cu Ripstop	Flame Retardant, Shear Resistant, Low Compression Set	I/O or Profile
50B	Urethane	Not Rated	Ni/Cu Ripstop	Low Cost, Shear Resistant, Low Compression Set	I/O or Profile
501	Urethane	Not Rated	Ni/Cu Taffeta	Low Cost, Low Compression Set	Profile
506	Urethane	Not Rated	Ni/Cu Knit Mesh	Low Cost, Low Compression Set	I/O

To order, contact our Sales Department.

All dimensions shown are in inches (millimeters) unless otherwise specified.