Gore-Shield®

EMI GASKETS

Summary

Today's engineers face increasing challenges when attempting to eliminate or reduce electromagnetic interference (EMI). As electronic devices become more complex, the ability to eliminate EMI becomes more difficult, yet the need to do so is even more important. In addition, engineers face the pressure of quickly integrating EMI solutions into high-speed assembly operations. Gore understands these challenges and has developed the GORE-SHIELD® EMI Gasket Material product line as a result.

Providing up to 90 dB of shielding effectiveness, GORE-SHIELD® EMI Gasket Materials are suitable for the most demanding applications including defense and aerospace. These materials offer distinct advantages over substitute products as well. For example, they do not require cure time, making them more suitable than form-in-place gaskets in high-speed assembly operations. GORE-SHIELD® EMI Gasket Materials offer more consistent DC resistance after aging than its metal clip and spring gasket counterparts. Because GORE-SHIELD® EMI Gasket Materials are customizable, they allow for more design flexibility than traditional soldered metal cans. Using available automated placement equipment, GORE-SHIELD® EMI Gasket Materials can be installed at high rates with up to six sigma quality.

GORE-SHIELD® EMI Gasket Materials are available in four different forms: GS8000, GS5200, GS500, and GS2100, a defense/aerospace grade. These materials offer EMI shielding effectiveness from low frequency to multiple GHz and work in solutions ranging from snap-together plated plastic shields to plated metallic housings. All GORE-SHIELD® EMI Gasket Materials are provided with an integral pressure-sensitive conductive adhesive and can be supplied in strips, or die-cut custom shapes to meet your requirements.

Table 1. Summary of Features and Benefits of GORE-SHIELD® EMI Gasket Products

GS8000	GS5200	GS500	GS2100
• High-level EMI shielding • Softest, most conformable material • Ideal where flexible shields are used (such as metal-coated plastic shields) • Ideal applications include mobile phones and PDAs	• Highest level of EMI shielding • Most reliable over time • Best if used where high compressive force is available (such as metal enclosures) • Flame retardant UL-94 V-0 • Ideal applications include test equipment, power amplifiers, wireless infrastructure equipment, defense and aerospace	• Basic EMI shielding • Softer than GS5200 making it ideal for less rigid housings • Flame retardant UL-94 V-0 • Most economical gasket solution • Ideal applications include waveguides and high frequency cable connectors	• Defense and Aerospace Qualified • Basic EMI Shielding • Softer than GS5200 making it ideal for less rigid housings • Minimal compression set vs. alternatives • Flame retardant UL-94 V-0

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GORE-SHIELD® EMI Gasket Material Properties

Construction	Units	GS8000	GS5200	GS500	GS2100
Composition	—	Nickel-plated polymer	Nickel-based ePTFE	Carbon-based ePTFE	
Thickness	mm	1.6 and 3.2	0.38, 0.61, 0.71, 1.40, 1.52, 1.98	0.25, 0.51, 1.02, 1.52, 2.03, 2.54	
Thickness Tolerance	—	± 0.4 mm	± .08 mm	± 10%	
Liner material	—	.051 mm Polyester	.051 mm Polyester	.051 mm Polyester	
Mechanical	**Units**	**GS8000**	**GS5200**	**GS500**	**GS2100**
Recommended Compression Stop (RCS)	—	0.3 to 0.5 mm for 1.6 mm 0.8 to 1.2 mm for 3.2 mm	80% of nominal thickness	70% of nominal thickness	
Pressure to compress to RCS	psi [kPa]	50 [345] for 1.6 mm 12 [83] for 3.2 mm	400 [2760]	200 [1380]	
Shore A Hardness	—	N/A	60	45	
Density	g/cm^3	0.21	1.95	0.34	
Dust and Water Protection	—	N/A	IP65*	IP65*	
Shelf life	months	6	12	12	
Outgassing	N/A	N/A	N/A	N/A	Pass (ASTM-E-595 or ESA PSS-01-702)
Electrical	**Units**	**GS8000**	**GS5200**	**GS500**	**GS2100**
Volume Resistivity at RCS	ohm-cm	0.03	0.04 (at 250 psi)	1.5 (at 500 psi)	
Shielding Effectiveness (DC to 3 GHz)	dB	>80	>90	>45	
Shielding Effectiveness (3 to 18 GHz)			>70	>45	
Shielding Effectiveness (18 to 40 GHz)			>65	>45	
EMI Seal	N/A	N/A	N/A	N/A	Reusability for EMI Seal dB >80
Thermal	**Units**	**GS8000**	**GS5200**	**GS500**	**GS2100**
Operating Temperature Range (with adhesive)	°C	–45 to 85	–55 to 125**	–45 to 120**	
Thermal Conductivity at RCS	W/m-K	0.2 (at 50 psi)	1.6 (at 100 psi)	0.1 (at 140 psi)	
Flammability, UL94	—	HB	V0	V0	

*Tested at 25% compression **Without adhesive, –200 to 200 °C

RoHS Status

RoHS Status RoHS Material*	Pass/Fail
Lead (Pb) Content	Pass
Cadmium (Cd) Content	Pass
Hexavalent Chromium (Cr6) Content	Pass
Mercury (Hg) Content	Pass
Bromine Compounds	Pass

*W. L. Gore & Associates declares that we do not intentionally add substances listed in Directive 2002/95/EU to GORE-SHIELD® EMI Gasket Material. Independent lab tests have been performed and results are available upon request.

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