

EMI Shielding Laminates

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Mechanical, electrical and processing properties, plus economy for commercial applications.

Chomerics produces a growing family of specialty laminated materials for EMI shielding. These laminates are available in bulk rolls for customizing into EMI shields, ground planes, ground straps, shadow shields, ESD shields and a host of other electronics applications. EMI shielding performance exceeds that of conductive coatings when properly designed.

Laminates provide an environmentally friendly solution that eliminates solvents, conductive paints, or plating processes. With their thin cross sections and light weight, EMI shielding laminates are also a space-saving solution.

Construction

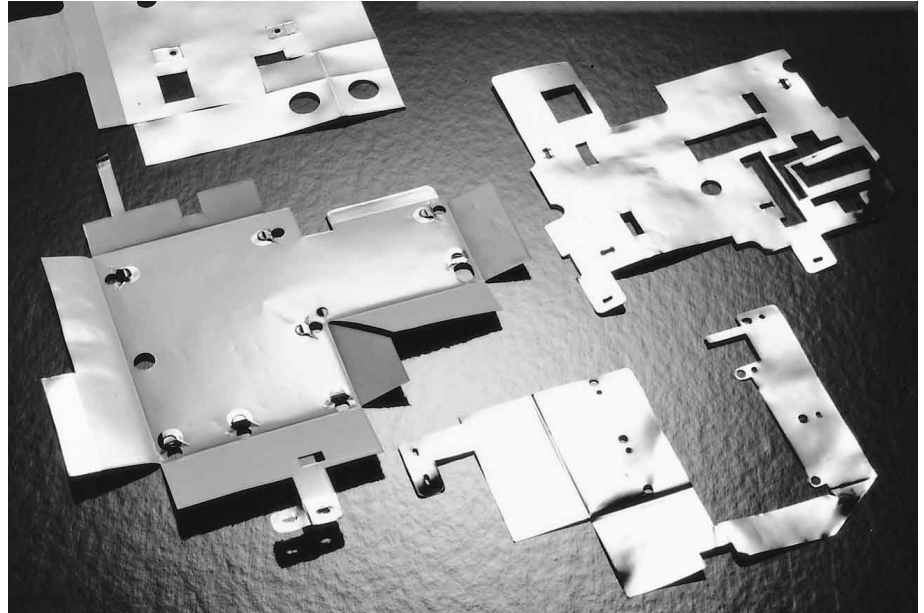
Shielding laminates are made from a variety of raw materials, including copper and aluminum foils, conductive and non-conductive acrylic pressure-sensitive adhesives (PSAs) and dielectric films such as PVC and polyester. Flame retardant materials are available, meeting the requirements of UL 94V-0 (UL File No. E140244).

The metal foil layer supplies the necessary EMI shielding (generally 20-60 dB depending on frequency, size, configuration and installation*) and grounding properties. The dielectric layer provides isolation and flexibility.

Electrically Conductive Attachment Adhesive

A conductive, metal particle-filled acrylic pressure-sensitive adhesive can be provided as a simple and cost effective method for shield termination to ground. The acrylic PSA contains a uniform dispersion of unique, oxidation-resistant conductive particles that create a very low electrical resistance through the shield. Peel strength of the conductive PSA typically exceeds 40 oz./inch (446 g/cm); non-conductives typically exceed 64 oz./inch (714 g/cm).

* To determine the shielding effectiveness of specific laminate parts, it is recommended that prototype shields be inserted and properly terminated in the product under test.



Releasable Dielectric Layer with Electrically Conductive Adhesive Simplifies Grounding and Bonding

Chomerics has developed a unique EMI shielding laminate consisting of an aluminum foil and a dielectric film layer. Sections of the dielectric layer are kiss-cut so they can be selectively removed to expose the electrically conductive PSA and foil (Figure 1). This feature provides choices for grounding/bonding sites, and eliminates the need for selective lamination, in which parts are fabricated with exposed metal foil sites.

Complete Customization Capabilities

To enhance installation of these EMI shielding laminates, scores, slits, self-adhesive mounting strips, creases and other features are easily designed into the part.

Chomerics routinely produces laminates with complex die-cuts as well as punched and stamped features.

Contact Chomerics' Applications Engineering Department to evaluate your needs and develop a cost-effective shielding solution.

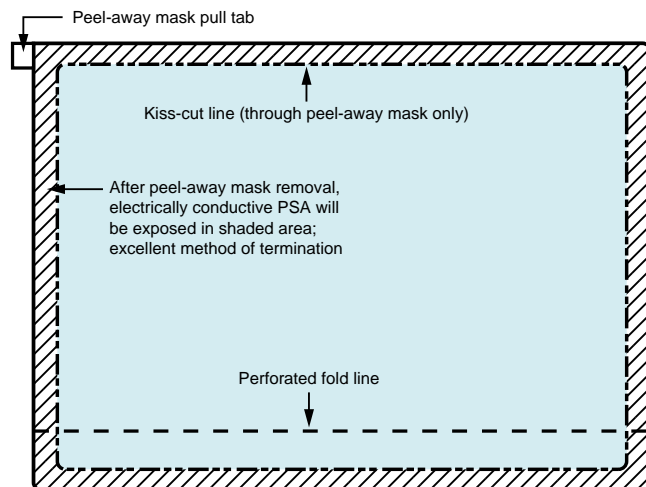


Figure 1 Releasable Dielectric Layer Exposes PSA and Foil

Table 1

SPECIFICATIONS								
Property	Test Method	Typical Values						
Foil Type	—	Copper			Aluminum			Aluminum
Foil Thickness, inch (mm)	—	0.0014 (0.036)			0.002 (0.051)			0.005 (0.127)
Adhesive Thickness, inch (mm)	—	0.001 (0.025)			0.001 (0.025)			0.0015 (0.038)
Film Type	—	PVC			PVC			Polyester
Film Thickness, inch (mm)	—	0.003 (0.076)	0.006 (0.152)	0.010 (0.254)	0.003 (0.076)	0.006 (0.152)	0.010 (0.254)	0.002 (0.051)
Weight, oz/ft ² (g/cm ²)	—	1.15 (0.0355)	1.3 (0.040)	1.6 (0.049)	1.15 (0.0355)	1.3 (0.040)	1.6 (0.049)	—
Dielectric Strength, kVAC	ASTM D149	5	11.5	13	5	11.5	13	3
Continuous Use Temperature, °F (°C)	—	194 (90)	194 (90)	194 (90)	194 (90)	194 (90)	194 (90)	194 (90)
Adhesive Strength (foil to PVC), lb/inch (kN/m)	ASTM D1000	4.0 (0.70)	4.0 (0.70)	4.0 (0.70)	4.0 (0.70)	4.0 (0.70)	4.0 (0.70)	N/A
Flame Resistance, UL Rating*	UL 94	V-0	V-1	V-0	V-0	V-1	V-0	NR
Punchable/Stampable		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Crease Formable		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Chemical Resistance**	ASTM D896-84	Pass						
Humidity Cycling***	ASTM D1000	Pass						
Conductive Pressure-Sensitive Adhesive	—	Conductive metal particle-filled acrylic pressure-sensitive adhesive (CBL-10-2503-2400 only)						
Adhesion Value to Aluminum lbs/inch (N/m)	ASTM D1000	3.0 (525)						
Electrical Resistance ohms/in ² (ohms/cm ²)	MIL-STD-202C	<0.010 (<0.065)						

* Underwriters Laboratories File # E140244.

** Withstands acids, cleaning solvents and alkaline solutions without degradation. Complete list is available from Chomerics' Applications Department.

*** Tested at 60°C, 96 hours, 95% RH.

Ordering Procedure

Part Number: CBL - 10 - XXXX - 2400

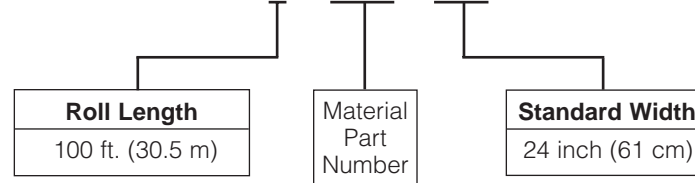


Table 2

PART NUMBER	DESCRIPTION	COMMENTS
CBL-10-1201-2400	10 mil PVC/2 mil aluminum	UL Listed (94V-0)
CBL-10-1101-2400	10 mil PVC/1 oz. copper	UL Listed (94V-0)
CBL-10-6201-2400	6 mil PVC/2 mil aluminum	UL Listed (94V-1)
CBL-10-6101-2400	6 mil PVC/1 oz. copper	UL Listed (94V-1)
CBL-10-1111-2400	10 mil PVC/1 oz. copper/10 mil PVC	UL Listed (94V-1)
CBL-10-1211-2400	10 mil PVC/2 mil aluminum/10 mil PVC	UL Listed (94V-1)
CBL-10-6001-2400	6 mil PVC/acrylic PSA	Used for custom lamination
CBL-10-1001-2400	10 mil PVC/acrylic PSA	Used for custom lamination
CBL-10-6161-2400	6 mil PVC/1 oz. copper/6 mil PVC	Used for custom lamination
CBL-10-3202-2400	3 mil PVC/2 mil aluminum	Used for custom lamination
CBL-10-3102-2400	3 mil PVC/1 oz. copper	Used for custom lamination
CBL-10-3002-2400	3 mil PVC/acrylic PSA	Used for custom lamination
CBL-10-2503-2400	5 mil aluminum/conductive acrylic adhesive/2 mil release polyester	Releasable dielectric for easy customization
CBL-10-6261-2400	6 mil PVC/2 mil aluminum/6 mil PVC	Used for custom lamination