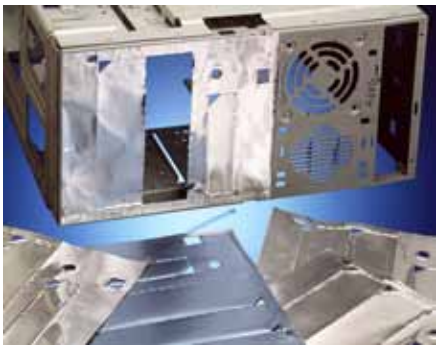
Parker Chomerics Engineered Laminates

Laminated Product Capabilities



Customer Value Proposition:

Parker Chomerics custom laminates are a compilation of electrically conductive materials integrated with dielectric insulators to provide EMI/ESD shielding, ground paths and electrical isolation. These products are used in numerous applications in a variety of market places (medical, automotive, commercial electronics, etc). Expert engineering and innovative solutions support our ability to manufacture custom laminates that are cost effective and user friendly.

Parker Chomerics offers numerous conductive layer options which include aluminum, plated fabrics and tinned copper. Dielectric layers range from high temperature Kapton and Mylar to Formex-GK. Integrated conductors with insulators may be attached using pressure sensitive adhesives (PSA) or mechanical fasteners to achieve application needs.

Take the engineered laminate solution one step further and add a thermal pad for thermal management or use conductive foam to take up a tolerance gap. Additional materials available upon request. Contact Parker Chomerics Applications Engineering for additional information.

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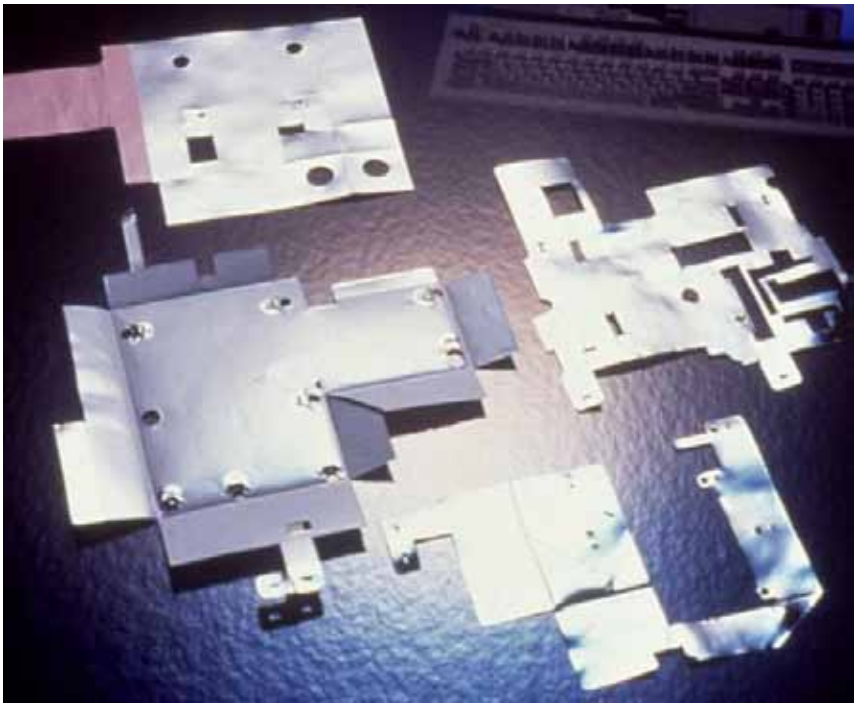

Product Features:

- Economical
- Lightweight and thin
- Fully customizable
- Vibration dampening
- Bleach resistant
- UL 94V-0 available
- RoHS compliant
- Green versions available
- Easy and quick to implement for production
- Silk screening
- High temperature resistance

Typical Applications:

- EMI shielding
- Electrical isolation in thin areas
- Grounding
- Electrically insulating for power supplies
- Isolation/insulation
- Shadow Shielding
- Vibration reduction
- Thermal Isolation

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Engineered Laminates - Product Infomation

Table 1 - Conductors - Typical Properties

Material	Thickness inches	Thickness mm	Cost Driver*	Continuous Use Temp °F (°C)	Flame Resistance (UL 94V-0)	Electrical Resistance	Notes
Nickel-Plated-Copper Polyester Tafetta	.005	0.127	$	275 (135)	No	< 0.080 ohm/sq	Very good grounding and shielding, fabric-like characteristics
Aluminum	.002,.003 .005,.010	.051, .076, .127, .254	$	500 (260)	Yes	< .010 ohms/sq	Very Good grounding and shielding High temperature
Copper	0.0014, .0028, .007, .0196	.036, .071, .178, .498	$$	500 (260)	Yes	< .005 ohms/sq	Excellent grounding and shielding.
Nickel-Plated-Silver Nylon Tafetta	.005	0.127	$$	275 (135)	No	< 0.100 ohm/sq	Very good grounding and shielding, fabric-like characteristics More durable than polyester
Nickel-Plated-Silver Nylon Rip-Stop	.004	0.157	$$	275 (135)	No	< 0.100 ohm/sq	Very good grounding and shielding, fabric-like characteristics, more du-rable than polyester
Tin-Plated Copper	.0016, .003, .0072	.041, .076, .183	$$$	500 (260)	Yes	< .005 ohms/sq	Excellent grounding and shielding, enhanced corrosion resistance

* $ being less, $$$$ being more

Table 2 - Insulators - Typical Properties

Material	Thickness inches	Thickness mm	Cost Driver*	Continuous Use Temp °F (°C)	Flame Resistance (UL 94V-0)	Electrical Resistance	Notes
Mylar	.002, .005	.051, .127	$	300 (149)		7.7, 13.5 kV	Typically used as release-liner
PVC	.003, .006	.076, .152	$$	194 (90)	Med	TBD	Good dielectric properties
Polypropylene (Formex)	.005, .010, .017"	.127, .254, .432	$$$	239 (115)		TBD	Good dielectric properties, good temperature resistance
Kapton	.001, .003	.0254, .076	$$$$	400 (204)	High	TBD	Excellent dielectric properties, excel-lent temperature resistance

* $ being less, $$$$ being more

Table 3 - Adhesives - Typical Properties

Material	Thickness inches	Thickness mm	Cost Driver*	Continuous Use Temp °F (°C)	Flame Resistance (UL 94V-0)	Electrical Resistance	Adhesive Strength	Notes
Acrylic	.001-.005	.0254-.127	$	300 (149)	TBD	-	High	Economical Excellent adhesion to plastics, durable
Silicone	.005	0.127	$$	500 (260)	TBD	-	Low	
Conductive Acrylic	.0015	0.038	$$	250 (121)	TBD	< .010 ohms/sq	Med	
FR Conductive Acrylic	.002	0.051	$$$$	250 (121)	TBD	< .020 ohms/sq	Low	

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Engineered Laminates - Product Infomation

Table 4 - Value Added - Typical Properties

Material	Thickness inches	Thickness mm	Cost Driver*	Continuous Use Temp °F (°C)	Flame Resistance (UL 94V-0)	Electrical Resistance	Notes
SOFT-SHIELD® 4850	.039,.059,.078, .118,.157,.197	1, 1.5, 2, 3, 4, 5mm	$	158 (70)	Yes	< .010 ohms/sq	Z-axis electrically conductive, EMI shielding foam
SOFT-SHIELD® 3500, 5000 & 4000	See** Data Sheets		$	158 (70)	Yes	< .010 ohms/sq	EMI shielding fabric-over foam gaskets
Neoprene Sponge	.062 - .125	1.575 - 3.175	$	158 (70)	No	-	Non-conductive foam
Poron Foam	.020 -.276	0.5mm - 7.0mm	$	158 (70)	No	-	Non-conductive foam
Silicone Sponge	.062 - .125	1.575 - 3.175	$$	400 (204)	Yes	-	Non-conductive foam, high tem-perature performance
CHO-SEAL® Elastomers	See ** Data Sheet	--	$$$	Material Specific	Material Specific	Material Specific	Electrically conductive, EMI shielding elastomers
Thermal Interface Materials	See Thermal ** Selector Guide	--	$$$	Material Specific	Material Specific	Material Specific	Various products to choose from

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** Visit www.chomerics.com

Ordering Procedure

CXL — XX — XXXXX — WWWW

CUSTOM LAMINATE	ROLL LENGTH	CEL MATERIAL PART NUMBER	CBL MATERIAL PART NUMBER	STANDARD WIDTH
E = Engineered **B = Bulk**	05 - 50 feet 10 - 100 feet	5001 5mil formex 5002 5mil formex/PSA 5101 5mil formex/1oz copper 5103 5mil formex/1oz copper/conductive PSA 5201 5mil formex/2mill aluminum 5203 5mil formex/2mill aluminum/cond. PSA 10001 10mil formex 10002 10mil formex/PSA 10101 10mil formex/1oz copper 10103 10mil formex/1oz copper/condutive PSA 10201 10mil formex/2mil aluminum 10203 10mil formex/2mill aluminum/cond. PSA	6201* 6 mil PVC/2 mil aluminum 6101* 6 mil PVC/1 oz. copper 6001 6 mil PVC/acrylic PSA 6161 6 mil PVC/1 oz. copper/6 mil PVC 3202 3 mil PVC/2 mil aluminum 3102 3 mil PVC/1 oz. copper 3002 3 mil PVC/acrylic PSA 2503** 5 mil al/cond. acrylic PSA/2 mil release polyester 6261 6 mil PVC/2 mil aluminum/6 mil PVC	1200 - 12" wide 2400 - 24" wide

*UL Listed (94V-1)
** Releasable dielectric for easy customization

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