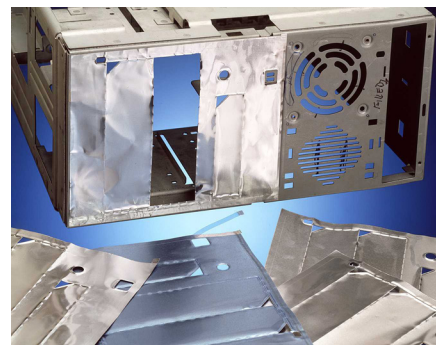


Parker Chomerics

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.

Contact Information:

Parker Hannifin Corporation

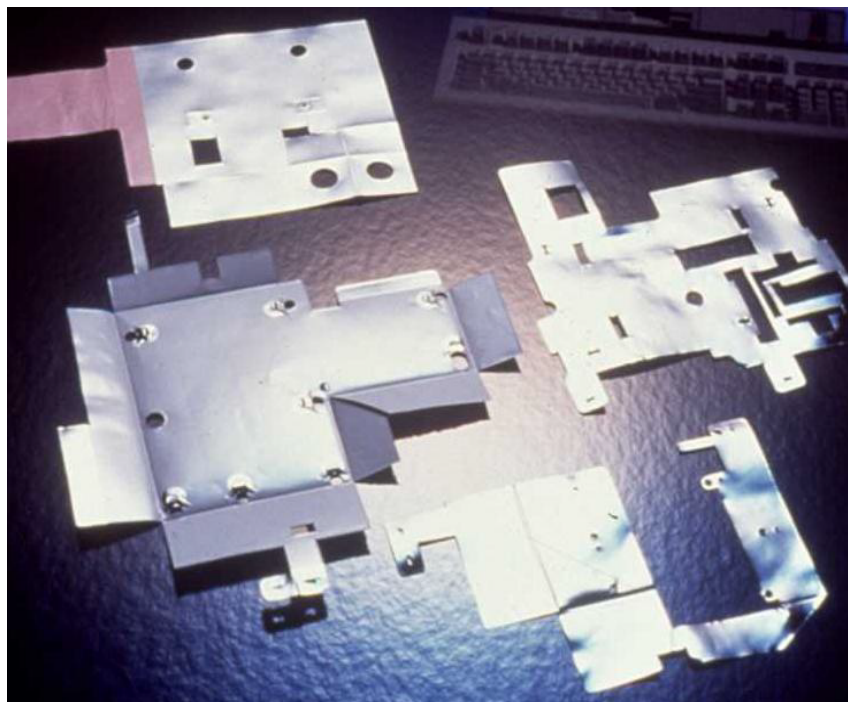
Chomerics Division

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Woburn, MA 01801

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Product Features:

- Economical
- Lightweight and thin
- Fully customizable
- Vibration dampening
- Bleach resistant
- 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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ENGINEERING YOUR SUCCESS.

Engineered Laminates - Product Information

Table 1 - Conductors - Typical Properties

Material	Thickness inches	Thickness mm	Cost Driver*	Continuous Use Temp °F (°C)	Electrical Resistance	Notes
Nickel-Plated-Copper Polyester Tafetta	.005	0.127	\$	275 (135)	< 0.080 ohm/sq	Very good grounding and shielding, fabric-like characteristics
Aluminum	.002,.003 .005,.010	.051, .076, .127, .254	\$	500 (260)	< .010 ohms/sq	Very Good grounding and shielding High temperature
Copper	0.0014, .0028, .007, .0196	.036, .071, .178, .498	\$\$	500 (260)	< .005 ohms/sq	Excellent grounding and shielding.
Nickel-Plated-Silver Nylon Tafetta	.005	0.127	\$\$	275 (135)	< 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)	< 0.100 ohm/sq	Very good grounding and shielding, fabric-like characteristics, more du-rable than polyester
Tinned-Copper	.0016, .003, .0072	.041, .076, .183	\$\$\$	500 (260)	< .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)	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)	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)	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)	Electrical Resistance	Adhesive Strength	Notes
Acrylic	.001-.005	.0254-.127	\$	300 (149)	-	High	Economical Excellent adhesion to plastics, durable
Silicone	.005	0.127	\$\$	500 (260)	-	Low	
Conductive Acrylic	.0015	0.038	\$\$	250 (121)	< .010 ohms/sq	Med	
FR Conductive Acrylic	.002	0.051	\$\$\$\$	250 (121)	< .020 ohms/sq	Low	

* \$ being less, \$\$\$\$ being more

Engineered Laminates - Product Infomation

Table 4 - Value Added - Typical Properties

Material	Thickness inches	Thickness mm	Cost Driver*	Continuous Use Temp °F (°C)	Electrical Resistance	Notes
SOFT-SHIELD® 4850	.039,.059,.078, .118,.157,.197	1, 1.5, 2, 3, 4, 5mm	\$	158 (70)	< .010 ohms/sq	Z-axis electrically conductive, EMI shielding foam
SOFT-SHIELD® 3500, 5000 & 4000	See** Data Sheets		\$	158 (70)	< .010 ohms/sq	EMI shielding fabric-over foam gaskets
Neoprene Sponge	.062 - .125	1.575 - 3.175	\$	158 (70)	-	Non-conductive foam
Poron Foam	.020 - .276	0.5mm - 7.0mm	\$	158 (70)	-	Non-conductive foam
Silicone Sponge	.062 - .125	1.575 - 3.175	\$\$	400 (204)	-	Non-conductive foam, high tem-perature performance
CHO-SEAL® Elastomers	See ** Data Sheet	--	\$\$\$	Material Specific	Material Specific	Electrically conductive, EMI shielding elastomers
Thermal Interface Materials	See Thermal ** Selector Guide	--	\$\$\$	Material Specific	Material Specific	Various products to choose from

* \$ being less, \$\$\$\$ being more
** Visit www.chomerics.com

Ordering Procedure

<div>CXL</div>	—	<div>XX</div>	—	<div>XXXXX</div>	—	<div>WWW</div>	
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		6201	6 mil PVC/2 mil aluminum	1200 - 12" wide 2400 - 24" wide
		5002	5mil formex/PSA		6101	6 mil PVC/1 oz. copper	
		5101	5mil formex/1oz copper		6001	6 mil PVC/acrylic PSA	
		5103	5mil formex/1oz copper/conductive PSA		6161	6 mil PVC/1 oz. copper/6 mil PVC	
		5201	5mil formex/2mill aluminum		3202	3 mil PVC/2 mil aluminum	
		5203	5mil formex/2mill aluminum/cond. PSA		3102	3 mil PVC/1 oz. copper	
		10001	10mil formex		3002	3 mil PVC/acrylic PSA	
		10002	10mil formex/PSA		2503**	5 mil al/cond. acrylic	
		10101	10mil formex/1oz copper			PSA/2 mil release polyester	
		10103	10mil formex/1oz copper/conductive PSA		6261	6 mil PVC/2 mil aluminum/6 mil PVC	
		10201	10mil formex/2mil aluminum				
		10203	10mil formex/2mill aluminum/cond. PSA				

** Releasable dielectric for easy customization

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