

**/// Datasheet**

# COOLSPAN® TECA Film

## Thermally and Electrically Conductive Adhesive

COOLSPAN® Thermally & Electrically Conductive Adhesive (TECA) film is a thermosetting, epoxy based, silver filled adhesive film used to bond circuit boards to heavy clad metal backplanes, heat sink coins and RF module housings. The adhesive can be used as an alternative to fusion bonding, sweat soldering, mechanical, or press fit metal attachment. COOLSPAN TECA provides both a thermal and electrical conductive bond interface.

COOLSPAN TECA film is supplied in sheet form on a PET carrier and is easy to handle when converting into preforms and when peeling from the carrier. Common converting processes include laser, steel rule die (SRD), router, and water jet cutting.

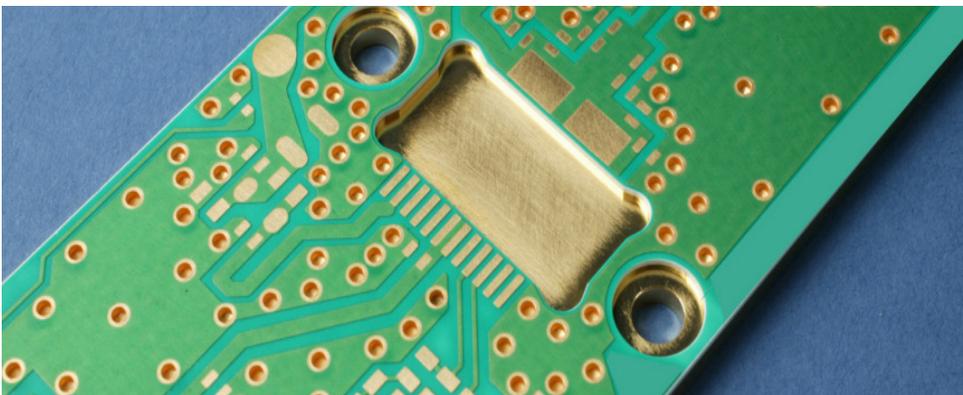
COOLSPAN TECA film has outstanding chemical resistance, and high temperature performance and will survive lead-free solder processing.

**/// Features and Benefits:**

- Thermally and Electrically Conductive
- Bond Interface
- Supplied on PET carrier
- Easily converted to pre-forms and easily handled
- Low flow during pressure cure
- High bond strength
- Thermally robust
- Chemically resistant
- Lead-free solder compatible

**/// Typical Applications:**

- Alternative to heavy clad laminates
- Post fabrication metal backplane attachment
- Power amplifier heat sink coin attachment
- RF circuit board module assembly



### Standard Properties Table

Properties		Typical Value <sup>1</sup>	Units	Conditions/Test Method
<b>Uncured Material Properties</b>				
<b>Material Type</b>		Silver Filled Epoxy Film	-	-
<b>Thickness</b>		0.002± 0.0005 0.004± 0.0005	inch	Micrometer
<b>Shelf Life<sup>2</sup></b>		3 minimum	Months from DOS	IPC 4101C, 3.17, Condition 2
<b>Work Life</b>		3	Months	<23C & <50% RH
<b>Storage Life</b>		12	Months from DOM	5C (41F)
<b>DSC Peak Exotherm</b>		198	°C	DSC
<b>Tensile Strength</b>		705	PSI	IPC-TM-650 2.4.19
<b>Mendral Test</b>		<0.125	Inch	ASTM D4338
<b>Cured Material Properties</b>				
<b>CTE below Tg</b>		45	ppm/°C	IPC-TM-650, 2.4.24.5 (modified)
<b>CTE above Tg</b>		70	ppm/°C	IPC-TM-650, 2.4.24.5 (modified)
<b>Tg</b>		79	°C	DMA ASTM D5026
<b>Td</b>		415	°C	ASTM D3850, TGA
Storage Modulus @		-40 °C 0 °C 25 °C 100 °C 150 °C	11,417 7,446 5,387 751 445	MPa DMA ASTM D5026
<b>Lab Sheer Strength. ENIG to ENIG</b>		2,000	psi	ASTM D1002-05
<b>pH</b>		6.2	-	25C
<b>Ionics</b>	Chloride Sodium Potassium	5.9 <4 <35	ppm	MIL STD 883 Method 5011
<b>Ash Percent</b>		85	%	TGA
<b>Volume Resistivity</b>		0.00038	Ω-cm	Four Point Probe, Laminated Plies
<b>Thermal Conductivity</b>		6.0	W/m°C	Laser Flash, Free Film, Z-Axis
<b>Solder Float</b>		Pass	-	IPC-TM-650, 2.4.13 method B
NASA Outgassing	Total Mass Lost	0.23	Exceeds typical screening requirements <sup>2</sup>	%
	Collected Volatiles	0.02		
	Water Vapor Recovered	0.06		

<sup>1</sup> Typical values are a representation of an average value for the population of the property. For specification values contact Rogers Corp.

<sup>2</sup> The criteria used for the acceptance and rejection of materials shall be determined by the user and based upon specific component and system requirements. Historically, a total mass loss (TML) of 1.00% and collected volatile condensable material (CVCM) of 0.10% have been used as screening levels for rejection of spacecraft materials.

## Processing Recommendations

The following processing guidelines provide a framework for working to identify the best set of parameters for a given application. Processing conditions may vary based on application and curing processes.

**Adhesive and Surface Preparation:** Allow adhesive to reach room temperature while strictly avoiding moisture condensation. Clean metal surfaces free of oils or other contaminants will provide for the best adhesion results. Cleaning with a solvent such as a reagent grade isopropyl alcohol is recommended.

**Pre Tack:** Pre Tack can help facilitate handling and processing. If choosing to pre tack, the recommended conditions are 125C for 5 minutes at 50 psi.

**Cure Temperature and Time:** 175C for 45 minutes, or 150C for 60 minutes. Temperature measured at adhesive.

**Cure Pressure:** Cure pressure will be dependent upon factors such as part size, planarity of surfaces being bonded together, surface roughness, and adhesive layer thickness. Through designed experimentation and application experience, a pressure range from **80** to **140** PSI has typically generated robust levels of adhesion. However, bond values approaching 2000 PSI (per lap shear testing) have been realized using applied pressures as low as **25** PSI. It should be noted that as applied pressures are reduced, the significance of surface planarity, adhesive layer thickness, and uniformity of pressure distribution become more significant. The use of conformal padding to evenly distribute pressure is suggested for bonding at all pressures, but especially when bonding at pressures below **80** PSI. Re-useable silicone press pad materials are available through Rogers Corporation (Arlon® UltraPad Press pads and Bisco® HT-1500 reinforced silicone sheets) and also through Bonding Source (A Krayden Company). Verification testing is advised when evaluating reduced pressures.

\*Lower temperatures and pressures may be applicable for certain applications. Contact Rogers Technical Service (rogers.tse@rogerscorp.com) if your application needs modified processing parameters.

\\ Standard Offerings

Standard Thicknesses	Standard Panel Sizes
0.002" (0.051mm) +/- 0.0005" 0.004" (0.102mm) +/- 0.0005"	10" X 12" (254 X 305 mm)

\*Contact Customer Service or Sales Engineering to inquire about additional available product configurations including panel size.

\\ 100 S. Roosevelt Avenue \\ Chandler, AZ 85226 \\ Tel: 480-961-1382 \\ Fax: 480-961-4533 \\ www.rogerscorp.com  
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