

## T2521F

### THERMALLY CONDUCTIVE FILM

#### TECHNICAL DATA

June, 2010

#### Product Description

TechFilm T2521F features good chemical, heat, and moisture resistance. T2521F will cure at temperatures above 130C.

APPLICATIONS	FEATURES	RECOMMENDED SUBSTRATES
<ul style="list-style-type: none"> <li>Lid Sealing</li> <li>Automotive</li> </ul>	<ul style="list-style-type: none"> <li>High thermal conductivity</li> <li>Chemical, heat, moisture resistant</li> <li>All purpose adhesive</li> </ul>	<ul style="list-style-type: none"> <li>Various</li> <li>Copper</li> </ul>

UNCURED PROPERTIES*		
Property	Value	Test Method
Weight Loss, TGA, 20C/min, N <sub>2</sub> , %	@ 150C: 0.05	ASTM D3850 and MIL-STD-883
	@ 200C: 0.15	

CURED PROPERTIES*		
Property	Value	Test Method
Color	Cream	Visual
Specific Gravity	2.1	ASTM D790
Specific Heat Capacity, J/g-K	1.14	ASTM E1461
Glass Transition Temperature, C	130	DMA
Thermal Diffusivity, (cm <sup>2</sup> )/s-K	0.0041	ASTM E1461
Thermal Conductivity, W/M-K	0.9	ASTM E1461
Volume Resistivity @25C, Ohm-cm	>2.0 x 10 <sup>14</sup>	ASTM D257
Linear Coefficient of Thermal Expansion, x 10 <sup>-6</sup> /C	Alpha 1 (below Tg): 48	ASTM E831
	Alpha 2 (above Tg): 267	ASTM E831
Weight Loss, TGA, 20C/min, N <sub>2</sub> , %	@ 150C: 0.01	ASTM D3850 and MIL-STD-883 Section 3.8.5.1
	@ 200C: 0.10	
	@ 300C: 0.32	

TENSILE SHEAR STRENGTH*		
Property	Value	Test Method
to Aluminum @ 25C, psi	1750	ASTM D1002
to Nickel @ 25C, psi	1632	ASTM D1002
to Gold @ 25C, psi	1200	ASTM D1002
to 316 SS @ 25C, psi	1880	ASTM D1002*
to 101 Copper @ 25C, psi	2680	ASTM D1002*
to 260 Brass @ 25C, psi	1940	ASTM D1002*

\* Tested using 0.188" thick substrates

CURE SCHEDULE*		
Property	Value	Test Method
Cure Time @ 150C, min	60	Typical Cure Schedule
Cure Time @ 140C, min	90	Alternate Cure Schedule
Cure Time @ 150C plus 180C, min	15 plus 15	Alternate Cure Schedule
Cure Time @ 130C, min	120	Alternate Cure Schedule
Cure Time @ 165C, min	30	Alternate Cure Schedule

**Storage:** Store in dry conditions, out of sunlight and in tightly sealed containers.

**Shelf Life:** One month @ 20C Three months @ 10C Six months @ -20C One year @ -40C

Revision Number: 1-New Date: 02 June, 2010

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**TECHNICAL DATA**

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<b>CHEMICAL RESISTANCE TABLE *</b>		
<b>Solvent</b>	<b>Weight Gain (+) Loss (-) after 24hrs @ 25C, (%)</b>	<b>Weight Gain (+) Loss (-) after 48hrs @ 50C, (%)</b>
Water/antifreeze	0.6	1.5
Transmission fluid	0.6	0.6
Antifreeze	0.6	0.4
Salt Water, 1.4M	0.6	0.7
Tap Water	0.7	0.8
Deionized Water	0.7	0.9
Ferric Nitrate/Water, pH2	0.8	1
Sodium Hydroxide / Water, pH12	0.7	0.9
Solution of 1 M Methanol, 1M Sulfuric Acid in Water	0.7	3
N-Methyl-2-pyrrolidone	0.5	19
Acetone	1	5.8
Isopropyl Alcohol	0.1	0.3
Alconox Water, Saturated solution	0.8	0.9
10 to 15 psi Steam, @ >100C	1.4	_____

\*All samples were 0.005 to 0.007 inches thick, 1 inch wide and 3 inches long. A modified ASTM D570 testing procedure was used. Due to the thin samples, used adsorption numbers may be artificially inflated when compared to industrial standards for measuring chemical resistance.

<b>MODULUS DATA *</b>				
<b>Property</b>	<b>Temperature</b>			
	<b>-80C</b>	<b>-40C</b>	<b>25C</b>	<b>100C</b>
Storage Modulus, Mpa	13500	11,000	8,920	6080
Loss Modulus, Mpa	890	660	340	290
Tan $\delta$	0.065	0.061	0.039	0.047

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