TECHFILM®

Adhesive Films and Preforms

T2521F
THERMALLY CONDUCTIVE FILM

Description:

T2521 features good chemical, heat, and moisture resistance. T2521F will cure at temperatures above 130°C.

Shelf Life: (Stored in dry conditions)

One month @ 20°C Three months @ 10°C Six months @ -20°C One year @ -40°C

Uncured Properties

Property	Method	Value Obtained
Weight Loss at 150°C, TGA, 20°C/min, N_2, %	ASTM D3850	0.05
at 200°C	and MIL-STD-883	0.15

Cure Schedules:

Cure Schedule: 60 minutes at 150°C

Alternate Cure Schedules: 90 minutes at 140°C, 15 minutes at 150°C plus 15 minutes at 180°C, 120 minutes at 130°C, or 30 minutes at 165°C

Cured Properties:

Property	Method	Value Obtained
Color	Visual	Cream
Specific Gravity	ASTM D790	2.1
Volume Resistivity at 25°C, Ohm-cm	ASTM D257	$>2.0 \times 10^{14}$
Tensile Shear Strength to Aluminum at 25°C, psi	ASTM D1002	2100
Tensile Shear to Nickel at 25°C, psi	ASTM D1002	2140
Tensile Shear to 316 SS at 25°C, psi	ASTM D1002[1]	3600
Tensile Shear to 101 copper at 25°C, psi	ASTM D1002[1]	4200
Tensile Shear to 260 Brass at 25°C, psi	ASTM D1002[1]	5300
Tensile Shear to FR4 at 25°C, psi	ASTM D1002[1]	2840
Tensile Shear to Ultem® 1000 at 25°C, psi	ASTM D1002[1]	650
Tensile Shear to PEEK[1,2]	ASTM D3163	710[2]
Thermal Conductivity, W/m-°K	ASTM E1461	0.9
Thermal diffusivity, thickness = 1.0 mm, cm^2/s-°K	ASTM E1461	0.0041
Specific Heat Capacity, J/g-°K	ASTM E1461	1.14
Glass Transition , loss modulus peak, °C	DMA	130
Linear Coefficient of Thermal Expansion, x 10^{-6}/°C		
Alpha 1 (below Tg)	ASTM E831	48
Alpha 2 (above Tg)	ASTM E831	267
Weight Loss at 150°C, TGA, 20°C/min, N_2, %	ASTM D3850	0.01
at 200°C	and MIL-STD-883	0.10
at 300°C	Section 3.8.5.1	0.32

1 – Substrate tested using 0.125" thick substrates.

2 - PEEK etched using nanoflame®, Substrate Failure.

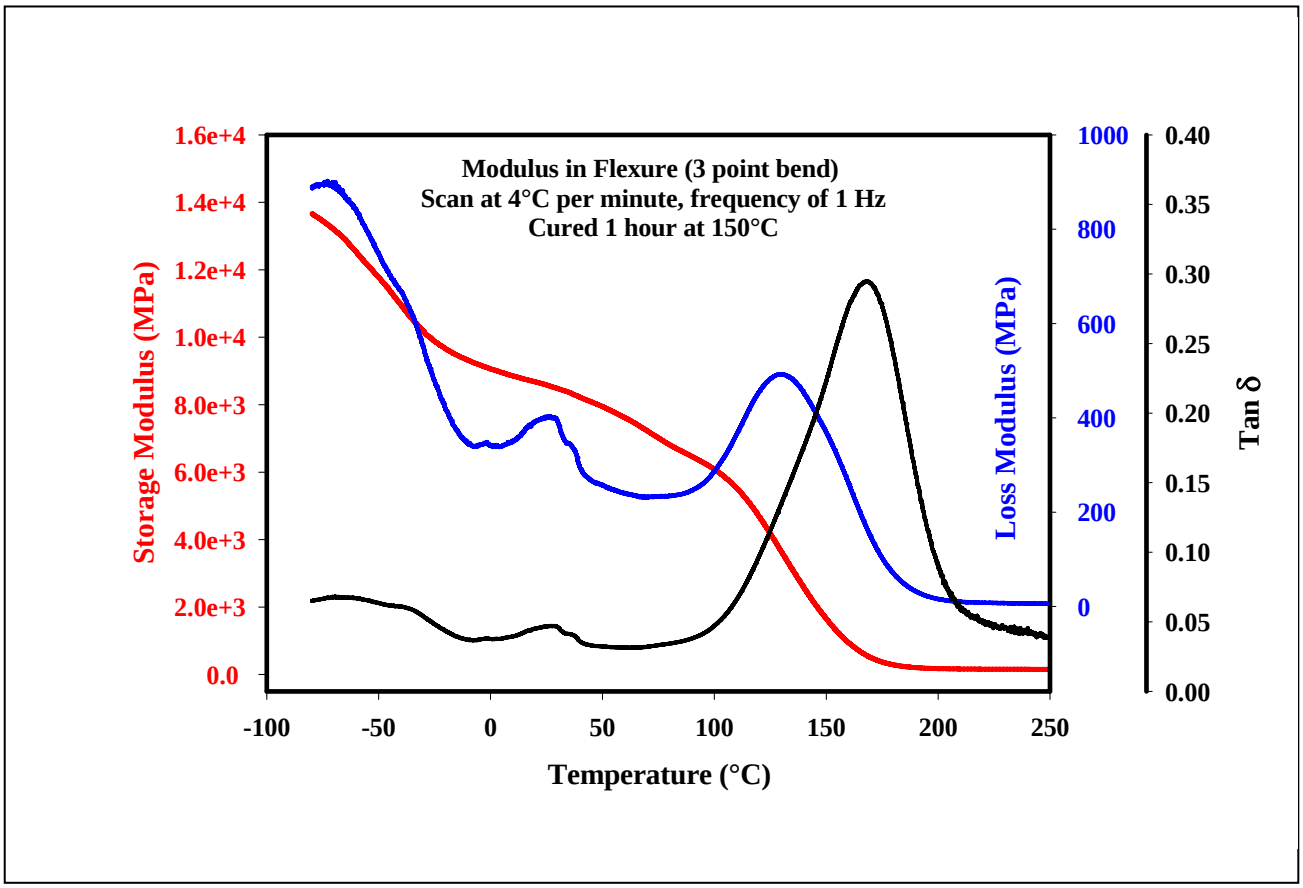
Chemical Resistance Chart

Solvent	Weight Gain (+) Loss (-) after 24 hours at 25°C (%)	Weight Gain (+) Loss (-) after 48 hours at 50°C (%)
Water/antifreeze, 50/50	**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**	**1.0**
Sodium Hydroxide/Water, pH12	**0.7**	**0.9**
Solution of 1 M Methanol, 1M sulfuric Acid, in water	**0.7**	**3.0**
***N*-Methyl-2-pyrrolidone**	**0.5**	**19.0**
Acetone	**1.0**	**5.8**
Isopropyl Alcohol	**0.1**	**0.3**
Alconox® Water, Saturated solution	**0.8**	**0.9**
10 to 15 psi Steam, 24 hours	**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.

(Continued on the next page)

DMA Scans



Modulus Data

Property	Temperature			
	-80°C	-40°C	25°C	100°C
Storage Modulus, MPa	13500	11000	8920	6080
Loss Modulus, MPa	890	660	340	290
Tan δ	0.065	0.061	0.039	0.047

Zur Beachtung:

Vorstehende Angaben können nur allgemeine Hinweise sein. Bei den aufgeführten Eigenschaften und Leistungsmerkmalen handelt es sich um circa-Werte, diese sind nicht Teil der Produktspezifikation. Wegen der außerhalb unseres Einflusses liegenden Verarbeitungs- und Anwendungsbedingungen und der Vielzahl unterschiedlicher Materialien empfehlen wir, in jedem Fall zunächst ausreichende Eigenversuche durchzuführen. Eine Haftung für konkrete Anwendungsergebnisse kann daher aus den Angaben und Hinweisen in diesem Merkblatt nicht abgeleitet werden.

Mit Erscheinen dieser Ausgabe verlieren alle vorhergehenden technischen Merkblätter Ihre Gültigkeit. Sicherheitsrelevante Daten können dem Sicherheitsdatenblatt entnommen werden.

Änderungen vorbehalten / Stand: 08/2009

Polytec PT GmbH Polymere Technologien
Polytec-Platz 1-7 · 76337 Waldbronn
Tel. 07243 604-400 · Fax 07243 604-420
E-Mail info@polytec-pt.de