

TSM-30

Excellent Thermal Stability

High Peel Strength

Exceptional Loss

TACONIC

An ISO 9001:2000 Registered Company

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APPLICATIONS

- Printed circuit filters
- Front end down convertors
- Modulators
- Low-loss antennas
- Radar Systems

TSM-30

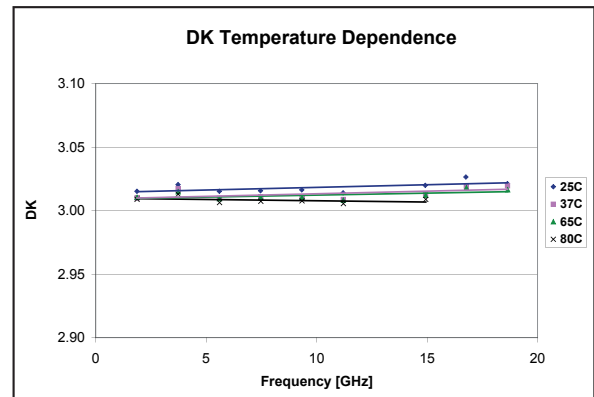
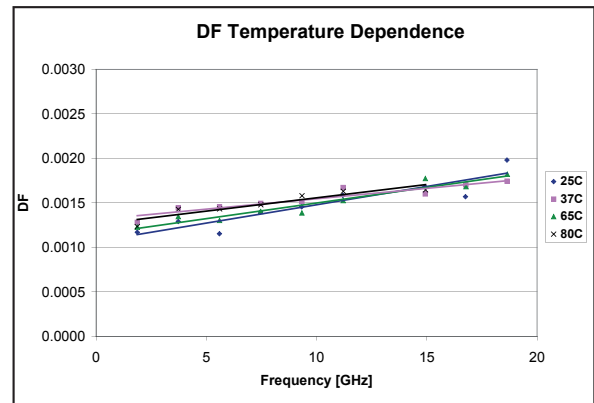
Thermally Stable Material

TSM-30 was specifically engineered by Taconic to offer customers the most thermally stable material possible, while also providing a high performance, high frequency material exhibiting low loss and dimensional stability.

TSM-30 is currently available in sizes up to 36" x 48", with cut panel sizes available: 12" x 18", 18" x 24", and 24" x 36".

Material can be purchased in increments of 0.0050", with all standard copper thicknesses.

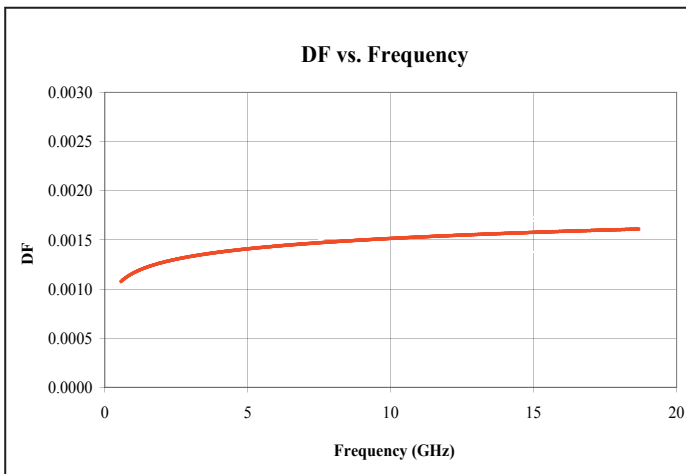
The following charts summarize preliminary test data.



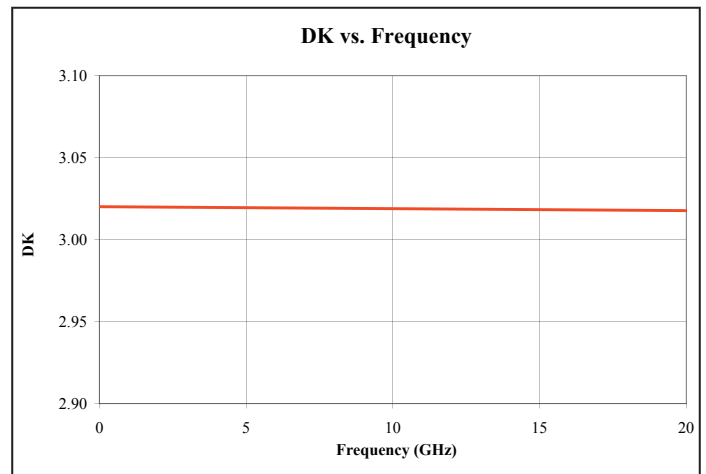
TSM-30 Typical Values

Property	Test Method	Unit	Value	Unit	Value
Dielectric Constant	IPC-TM-650 2.5.5.5.1 (Stripline)	@ 10 GHz	3.0		3.0
Dissipation Factor	IPC-TM-650 2.5.5.5.1 (Stripline)	@ 10 GHz	0.0015		0.0015
Moisture Absorption	IPC-TM-650 2.6.2.1	%	0.03	%	0.03
Dielectric Breakdown	ASTM D 149	kV	36	kV	36
Dielectric Strength	ASTM D 149	V/mil	610	V/mm	24016
Volume Resistivity	IPC-TM-650 2.5.17.1 (Elevated Temperature)	Mohm/Cm	2.5×10^8	Mohm/cm	2.5×10^8
Volume Resistivity	IPC-TM-650 2.5.17.1 (Humidity Conditioning)	Mohm/Cm	1.7×10^8	Mohm/cm	1.7×10^8
Surface Resistivity	IPC-TM-650 2.5.17.1 (Elevated Temperature)	Mohm	5.6×10^7	Mohm	5.6×10^7
Surface Resistivity	IPC-TM-650 2.5.17.1 (Humidity Conditioning)	Mohm	2.3×10^7	Mohm	2.3×10^7
Arc Resistance	IPC-TM-650 2.5.1	Seconds	247	Seconds	247
Flexural Strength (MD)	ASTM D 790	psi	6900	bar	475
Flexural Strength (CD)	ASTM D 790	psi	6000	bar	414
Tensile Strength (MD)	ASTM D 3039	psi	5100	bar	352
Tensile Strength (CD)	ASTM D 3039	psi	3800	bar	262
Young's Modulus (MD)	ASTM D 3039	psi	4.64×10^5	bar	31992
Young's Modulus (CD)	ASTM D 3039	psi	4.86×10^5	bar	33509
Poisson's Ratio (MD)	ASTM D 3039		0.24		0.24
Poisson's Ratio (CD)	ASTM D 3039		0.23		0.23
Compressive Modulus	ASTM D 695 (23°C)	kpsi	465	bar	32061
Peel Strength (1 oz VLP)	IPC-TM-650 2.4.8.3 (Elevated Temp. 150°C)	lbs/in	32	N/mm	5.6
Peel Strength (1 oz VLP)	IPC-TM-650 2.4.8 Sec 5.2.3 (Processing Chemicals)	lbs/in	16	N/mm	2.8
Peel Strength (1 oz VLP)	IPC-TM-650 2.4.8 Sec 5.2.2 (Thermal Stress)	lbs/in	17	N/mm	3.0
Dimensional Stability (MD)	IPC-TM-650 2.4.39 Sec 5.4 (After bake)	mils/in	-0.25	mm/M	-0.25
Dimensional Stability (CD)	IPC-TM-650 2.4.39 Sec 5.4 (After bake)	mils/in	-0.22	mm/M	-0.22
Density		gm/cm ³	2.30	gm/cm ³	2.30
Specific Heat	ASTM E 1269 (DSC)	J/g/K	0.627	J/g/K	0.627
Thermal Conductivity	ASTM F 433	W/m/K	0.27	W/m/K	0.27
CTE (X Axis)	IPC-TM-650 2.4.41 / ASTM D 3386 (>RT - 125°C)	ppm/°C	23	ppm/°C	23
CTE (Y Axis)	IPC-TM-650 2.4.41 / ASTM D 3386 (>RT - 125°C)	ppm/°C	28	ppm/°C	28
CTE (Z Axis)	IPC-TM-650 2.4.41 / ASTM D 3386 (>RT - 125°C)	ppm/°C	78	ppm/°C	78
Outgassing (% TML)	ASTM E 595 (24H 257 +/- 2°F @ 5×10^{-5} Torr)	%	0.108	%	0.108
Outgassing (% CVCM)	ASTM E 595 (24H 257 +/- 2°F @ 5×10^{-5} Torr)	%	0.004	%	0.004
Outgassing (% WVR)	ASTM E 595 (24H 257 +/- 2°F @ 5×10^{-5} Torr)	%	0.008	%	0.008
Flammability Rating	UL-94		V-0		V-0

TSM-30 typical values: DF vs. Frequency



TSM-30 typical values: DK vs. Frequency



How To Order

Designation	Dielectric Constant	Typical Thicknesses ¹	Available Sheet Sizes ²	
TSM-30	3.00 +/- 0.05	0.0050	12" x 18"	304mm x 457mm
		0.0100	16" x 18"	406mm x 457mm
		0.0150	18" x 24"	457mm x 610mm
		0.0200	16" x 36"	406mm x 914mm
		0.0300		
		0.0600	24" x 36"	610mm x 914mm

¹TSM-30 can be manufactured in increments of 0.0050. Please call for availability.

²Our standard sheet size is 36" x 48" (914mm x 1220mm). Please contact our customer service department for availability of other sizes.

Available Copper Cladding				
Designation	Weight	Copper Thickness	Copper Thickness	Description
CH	1/2 oz / ft ²	~0.0007"	~18 µm	Electrodeposited
C1 ³	1 oz / ft ²	~0.0014"	~35 µm	Electrodeposited
C2	2 oz / ft ²	~0.0028	~70 µm	Electrodeposited
RH	1/2 oz / ft ²	~0.0007	~18 µm	Rolled annealed
R1	1 oz / ft ²	~0.0014	~35 µm	Rolled annealed
R2	2 oz / ft ²	~0.0028	~70 µm	Rolled annealed

³Low profile electrodeposited copper available upon request

Heavy metal claddings (aluminum, brass & copper) may also be available upon request. Please call for information.

An example of our part number is: **TSM-30-0300-C1/C1 - 18" x 24" (457mm x 610mm)**

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