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Bulletin No. 111-1800

Material: TC1800

**MATERIAL CHARACTERISTICS**

Frequency	1 – 18 GHz
Color	Gray
Service Temperature, °F (°C)	<356 (<180)
Density, g/cc	1.6 – 4.9
Durometer, Shore D	85
Tensile Strength, psi (kg/cm <sup>2</sup> )	>8000 (560)
Thermal Expansion per °C	~30 X 10 <sup>-6</sup>
Water Absorption, % 24 hours	<0.3
Thermal Conductivity (cal)(cm)/(sec)(cm <sup>2</sup> )(°C)	~0.003
(BTU)(in)/(hr)(ft <sup>2</sup> )(°F)	~10.0

**Typical Electrical Properties**

Material	GHz	10 <sup>-7</sup>	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>	10 <sup>-2</sup>	10 <sup>-1</sup>	1.0	3.0	8.6	10.0	18.0
TC1800	K'	20	18	16	14	12	10	8	6	5.2	5	4.8	4.6
	tan δ <sub>d</sub>	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.04	0.03
	K''	0.4	0.36	0.48	0.42	0.36	0.4	0.32	0.24	0.25	0.25	0.19	0.14
	M'	2	1.9	1.8	1.7	1.6	1.5	1.5	1.4	1.4	1.1	1.1	1
	tan δ <sub>m</sub>	0	0	0	0	0	0	0.01	0.02	0.03	0.22	0.23	0.26
	M''	0	0	0	0	0	0	0.02	0.03	0.04	0.24	0.25	0.26
	dB/cm	0	0	0	0	0	0	0.02	0.16	0.59	4.9	5.6	10.1
	dB/in	0	0	0	0	0	0	0.05	0.41	1.5	12.4	14.2	25.7
	Z /Z <sub>0</sub>	0.32	0.32	0.34	0.35	0.37	0.39	0.43	0.48	0.52	0.47	0.48	0.47

**Typical Electrical Properties Legend**

K'	Real part of permittivity (dielectric constant)
tan δ <sub>d</sub>	Dielectric loss tangent
K''	Imaginary part of permittivity (loss)
M'	Real part of magnetic permeability
M''	Imaginary part of magnetic permeability (loss)
dB/cm	Attenuation per unit distance
dB/in	Attenuation per unit distance
Z /Z <sub>0</sub>	Normalized impedance magnitude ratio

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