

TLE-95



Your Dreams, Our Challenge

Thin dielectric base material for couplers

Benefits

- Low CTE Value
- Controlled Dimensional Stability
- Low Dissipation Factor
- Low and Stable Dielectric Constant
- High Flexural Strength
- UL 94 V-0 Rating

Applications

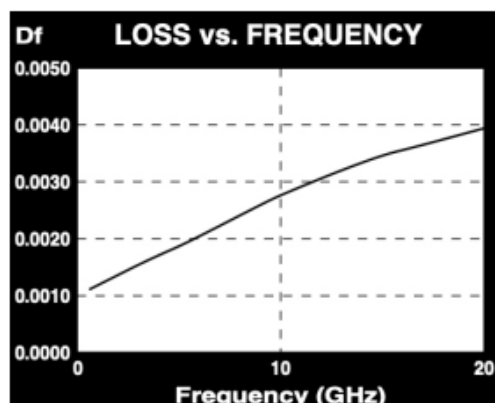
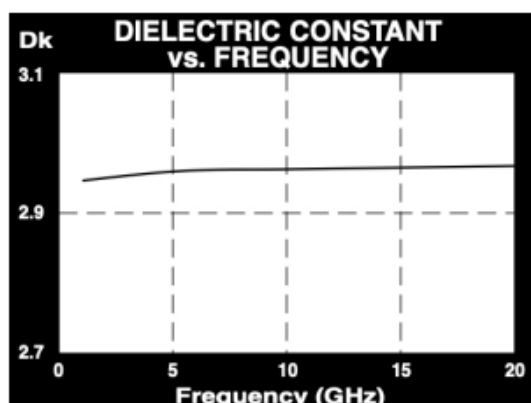
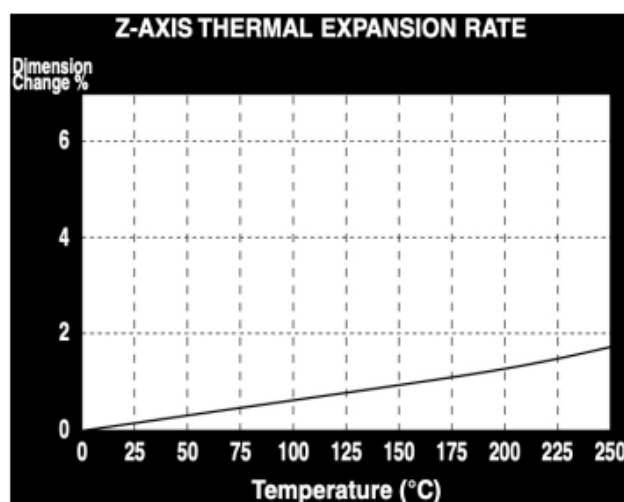
- Microwave Radios
- Satellite Antenna Systems
- Passive Components



TLE-95 laminates are engineered to provide electrical and mechanical properties to meet the requirements of complex microwave and high-speed digital applications. The low Z-axis CTE provides excellent plated through hole reliability while the low thermal expansion properties in the X and Y plane ensure high reliability in surface mount applications. The Dk exhibits minimal change over temperature. TLE-95 is typically offered with a $2.95 \text{ DK} \pm 0.05$.

TLE-95 laminates are dimensionally stable, exhibit virtually no moisture absorption during processing and are generally ordered clad on one or both sides with .5, 1 and 2 oz. electrodeposited copper.

TLE-95 laminates exhibit flammability of V-0 and are tested in accordance with IPC-TM 650. A certificate of compliance containing test data accompanies each shipment.



Properties	Conditions	Typical Value	Unit	Test Method
Electrical Properties				
Dielectric Constant	@ 1MHz	2.95 ± 0.05		IPC-650 2.5.5.3
Dissipation Factor	@ 10 GHz	0.0026		IPC-650 2.5.5.5.1(Modified)
Volume Resistivity		10 ⁷	Mohm-cm	IPC-650 2.5.17.1
Surface Resistivity		10 ⁷	Mohm	IPC-650 2.5.17.1
Thermal Properties				
Thermal Conductivity	unclad	0.20	W/M*K	ASTM F 433
CTE (50-150°C)	X	9	ppm/°C	ASTM D 3386 (TMA)
	Y	12		ASTM D 3386 (TMA)
	Z	70		IPC-650 2.4.41 / ASTM D 3386
Mechanical Properties				
Dielectric Strength		16,800 (427)	V/mm (V/mil)	ASTM D 149
Peel Strength	1 oz. copper	2.1 (12)	N/mm (lb/in)	IPC-650 2.4.8
Flexural Strength	MD	241 (35,000)	N/mm ² (lb/in)	IPC-650 2.4.4
	CD	207 (30,000)	N/mm ² (lb/in)	
Chemical / Physical Properties				
Moisture Absorption		0.02	%	IPC-650 2.6.2.1
Dielectric Breakdown		60	kV	IPC-650 2.5.6
Arc Resistance		180	Seconds	IPC-650 2.5.1
Flammability		V-0		UL-94

Typical Thicknesses			
Inches		mm	
0.0052		0.13	
0.0200		0.51	
0.0300		0.76	
0.0620		1.57	
Available Sheet Sizes			
Inches		mm	
12 x 18		305 x 457	
16 x 18		406 x 457	
18 x 24		457 x 610	
Inches		mm	
12 x 18		305 x 457	
16 x 18		406 x 457	
18 x 24		457 x 610	
16 x 36		406 x 914	
24 x 36		610 x 914	
18 x 48		457 x 1,220	

- * All test data provided are typical values and not intended to be specification values. For review of critical specification tolerances, please contact a company representative directly.
- * Standard panel size is 18" x 24" (457 mm x 610 mm).
- * Minimum available thickness is from 0.001" (0.025 mm).
- * Please contact AGC for availability of additional thicknesses, other sizes & any other type of cladding.

