

TLE-95

Thin dielectric base material for couplers

Benefits

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

Applications

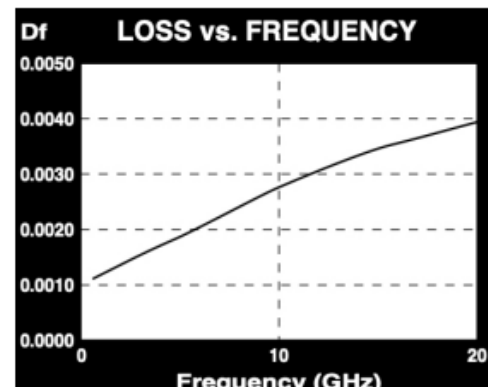
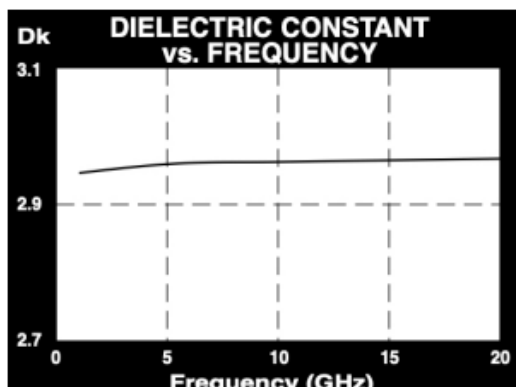
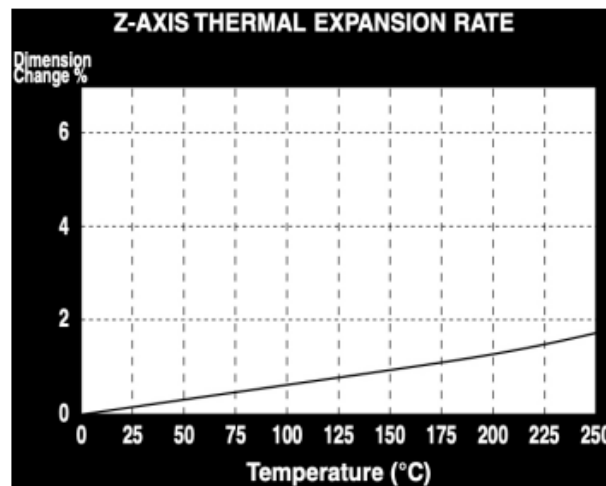
- Microwave Radios
- Satellite Antenna Systems
- Passive Components



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 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	@ 10 GHz	2.95		IPC-650 2.5.5.5
Dissipation Factor	@ 10 GHz	0.0026		IPC-650 2.5.5.5
Volume Resistivity		10 ⁷	Mohms/cm	IPC-650 2.5.17.1
Surface Resistivity		10 ⁷	Mohms	IPC-650 2.5.17.1
Thermal Properties				
Thermal Conductivity		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	ASTM D 149	16,800 (427)	V/mm (V/mil)	IPC-650 2.4.8
Peel Strength	1 oz. copper	>2.1 (12)	N/mm (lbs/in)	IPC-650 2.4.8
Flexural Strength	MD	>241 (35,000)	N/mm ² (lbs/in)	IPC-650 2.4.4
	CD	>207 (30,000)	N/mm ² (lbs/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 Thicknesses¹

Inches	mm
0.0052	0.13
0.0100 – 0.0190	0.25 – 0.48
0.0200 – 0.0300	0.50 – 0.76
≥ 0.0310	≥ 0.80

Available Sheet Sizes²

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.

* TLE-95 can be manufactured in increments of 0.010"(0.250mm).

* Standard panel size is 18" x 24" (457 mm x 610 mm).

* Please contact AGC for availability of additional thicknesses, other sizes & any other type of cladding.

