

## TLC Low Cost RF Substrate

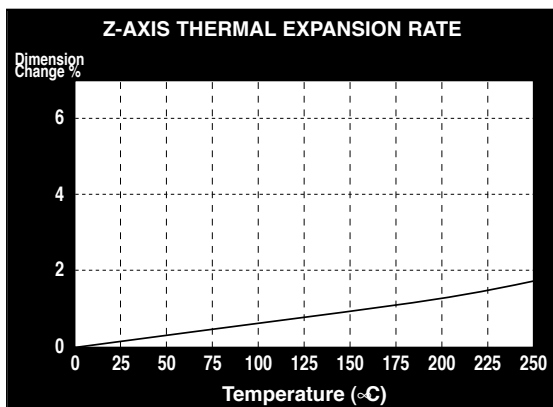
**TLC** laminates are engineered to provide a cost effective substrate suitable for a wide range of microwave applications. TLC laminates offer superior electrical performance compared to thermoset laminates (e.g. FR-4, PPO, BT, polyimide and cyanate ester). TLC's construction also provides exceptional mechanical stability.

TLC laminates can be sheared, drilled, milled and plated using standard methods for PTFE/woven fiberglass materials. The laminates are dimensionally stable and exhibit virtually no moisture absorption during fabrication.

Taconic is a world leader in RF laminates and high speed digital materials, offering a wide range of high frequency laminates and prepregs. These advanced materials are used in the fabrication of antennas, multilayer RF and high speed digital boards, interconnections and devices.

### Benefits & Applications:

- Low cost
  - Tightly controlled Dk
  - Low Df
  - Excellent dimensional stability
  - High flexural strength
  - UL 94 V-0 rating
- 
- LNBS
  - Power amplifiers
  - PCS/PCN large format antennas
  - Passive components



**Asia / Australia**  
 Korea Taconic Company  
 Republic of Korea  
 Tel: +82-31-704-1858  
 sales@taconic.co.kr

**China**  
 Taconic Advanced Material  
 (Suzhou) Co., Ltd.  
 Suzhou City, China  
 Tel: +86-512-286-7170  
 tssales@taconic.co.kr

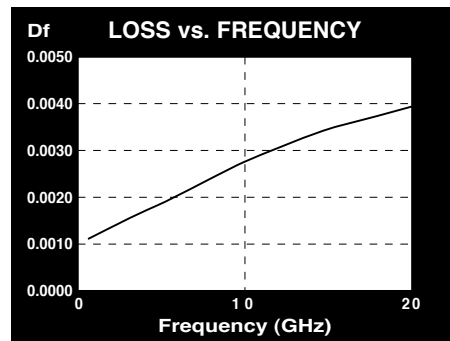
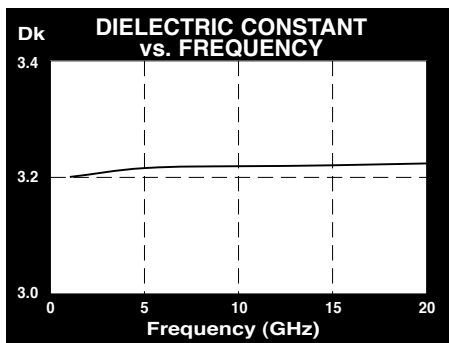
**North & South America**  
 AGC Nelco America Inc.  
 Tempe, AZ 85281  
 Tel: (480) 967-5600  
 TaconicPO@agc-nelco.com

**Europe / Middle East**  
 Neltec SA  
 Lannemezan, France  
 Tel: +33(0)5 62 98 52 90  
 neltecsales@agc-nelco.com

## TLC-32 Typical Values

Property	Test Method	Unit	Value	Unit	Value
Dk @ 10 GHz	IPC-650 2.5.5.5		3.20		3.20
Df @ 10 GHz	IPC-650 2.5.5.5		0.0030		0.0030
Moisture Absorption	IPC-650 2.6.2.1	%	<0.02	%	<0.02
Dielectric Breakdown	IPC-650 2.5.6	Kv	>60	Kv	>60
Volume Resistivity	IPC-650 2.5.17.1	Mohms/cm	10 <sup>7</sup>	Mohms/cm	10 <sup>7</sup>
Surface Resistivity	IPC-650 2.5.17.1	Mohms	10 <sup>7</sup>	Mohms	10 <sup>7</sup>
Arc Resistance	IPC-650 2.5.1	seconds	>180	seconds	>180
Flexural Strength (MD)	IPC-650 2.4.4	lbs./inch	>40,000	N/mm <sup>2</sup>	>276
Flexural Strength (CD)	IPC-650 2.4.4	lbs./inch	>35,000	N/mm <sup>2</sup>	>241
Peel Strength (1 oz. copper)	IPC-650 2.4.8	lbs./linear inch	12.0	N/mm	2.1
Thermal Conductivity	ASTM F 433	W/m/K	0.24	W/m/K	0.24
CTE (x-y axis)	ASTM D 3386/TMA	ppm/°C	9 - 12	ppm/°C	9 - 12
CTE (z axis)	ASTM D 3386/TMA	ppm/°C	70	ppm/°C	70
UL-94 Flammability Rating	UL-94		V-0		V-0

All reported values are typical and should not be used for specification purposes. In all instances, the user shall determine suitability in any given application.



Designation	Dk	Dielectric Thickness inches	Dielectric Thickness mm
TLC-27	2.75 +/-0.05	0.0145	0.37
TLC-30	3.00 +/- 0.05	0.0200 0.0300 - 0.0620	0.50 0.78 - 1.5
TLC-32	3.20 +/- 0.05	≥0.0300	≥0.78

Available Copper Cladding				
Designation	Weight	Copper Thickness		Description
		inches	µm	
CH	1/2 oz / ft <sup>2</sup>	~0.0007	~18	Electrodeposited
C1	1 oz / ft <sup>2</sup>	~0.0014	~35	Electrodeposited
C2	2 oz / ft <sup>2</sup>	~0.0028	~70	Electrodeposited

Heavy metal claddings (aluminum, brass & copper) may also be available upon request. Standard sheet size is 36" x 48" (914 mm x 1220 mm). Please contact our Customer Service Department for the availability of other sizes and claddings.

Available Sheet Sizes	
Inches	mm
12 x 18	304 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 1220

An example of our part number is: **TLC-32-0620-CH/CH - 18" x 24" (457 mm x 610 mm)**



Compliant  
rev. 1/09