

TRF-41,-43,-45

Low-loss ceramic-filled PTFE

The TRF range of laminated materials represent a new generation of low-loss, thermally-stable laminated material from Taconic Advanced Dielectric Division

TRF is woven-glass reinforced for enhanced dimensional-stability and coupled with Taconic's expertise in ceramic technology, TRF exhibits low and consistent Z-axis expansion across a wide range of temperature including and up to soldering conditions.

Benefits

- Low-loss ceramic-filled PTFE
- High thermal conductivity
- Stable DK over temperature
- Stable DK over frequency
- Very low z-axis CTE

Applications

- Satellite radio antennas
- RFID antennas
- GPS antennas



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TRF-41, -43, -45 Typical Values

Property	Test Method	Unit	TRF-41 Value	TRF-43 Value	TRF-45 Value
Dielectric Constant	IPC-TM-650 2.5.5.6	-	4.1±0.15	4.3±0.15	4.5±0.15
Dissipation Factor	IPC-TM-650 2.5.5.1(m)	10GHz	0.0035	0.0035	0.0035
Moisture Absorption	IPC-TM-650 2.6.2.1	%	0.06	0.06	0.06
Surface Resistivity	IPC-TM-650 2.5.17.1	Mohm	3.0 x 10 ⁷	3.0 x 10 ⁷	3.0 x 10 ⁷
Volume Resistivity	IPC-TM-650 2.5.17.1	Mohm · cm	8.0 x 10 ⁷	8.0 x 10 ⁷	8.0 x 10 ⁷
Flexural Strength (Lengthwise)	IPC-TM-650 2.4.4	lbs / in N/mm ²	17,000 177	17,000 177	17,000 177
Flexural Strength (Crosswise)	IPC-TM-650 2.4.4	lbs / in N/mm ²	15,000 103	15,000 103	15,000 103
Peel Strength	IPC-TM-650 2,4,8	lbs / in N/mm	8 1.4	8 1.4	8 1.4
Thermal Conductivity	ASTM F433	W/m-k	0.43	0.43	0.43
C.T.E (X axis)	ASTM D 3386 (TMA)	ppm/ °C (50-150 °C)	9	9	9
C.T.E (Y axis)	ASTM D 3386 (TMA)	ppm/ °C (50-150 °C)	9	9	9
C. T.E (Z axis)	ASTM D 3386 (TMA)	ppm/ °C (50-150 °C)	40	40	40
Flammability	UL-94		V-0	V-0	V-0

Remarks : 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.

How to Order

Designation	Dk
TRF-41	4.1
TRF-43	4.3
TRF-45	4.5

Typical Thicknesses

Inches	mm
0.0080	0.20
0.0160	0.41
0.0240	0.61
0.0320	0.81
0.0400	1.02
0.0640	1.63*
0.1200	3.05*

Remarks : Dielectric thickness specification of IPC-4103/Class B apply on TRF-series not less than 64mil products.

Available Copper Cladding

Designation	Weight	Copper Thickness		RMS Treated Side		Description
		~0.0007"	~18µm	13µm	0.3µm	
CLH	1/2 oz / tt ²	~0.0007"	~18µm	13µm	0.3µm	Reverse treated / Electrodeposited
CL1	1 oz / ft ²	~0.0014"	~35µm	13µm	0.3µm	Reverse treated / Electrodeposited
CVH (CH)	1/2 oz / ft ²	~0.0007"	~18µm	27µm	0.7µm	Very low profile / Electrodeposited
CV1 (C1)	1 oz / ft ²	~0.0014"	~35µm	25µm	0.6µm	Very low profile / Electrodeposited
C2	2 oz / ft ²	~0.0028"	~70µm	77µm	2.0µm	Electrodeposited

An example of our part number is: TRF-45-0640-CL1 /CL1 - 18" x 24" (457 mm x 610 mm)

Please see our Product Selector Guide for information on available copper cladding.