

TACONIC

High-Performance Laminates Material Guide



An ISO 9001:2000 registered company

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Taconic High-Performance Material Properties

Part #	Composition	DK	DF	Volume Resistivity Mohm/cm	Surface Resistivity Mohm	Flexural Strength lbs/in ²		Moisture Absorption %	Thermal Conductivity W/m/K	Coefficient of Thermal Expansion ppm/°C			Peel Strength lbs/in 1 oz Cu	UL Rating
						Lengthwise	Crosswise			x	y	z		
TLY-5A	PTFE Woven Glass	2.17 ^(a)	0.0009 ^(a)	10 ⁷	10 ⁷	>12,000	>10,000	<0.02	0.22	20	20	280	12.0	94-V0
TLY-5	PTFE Woven Glass	2.20 ^(a)	0.0009 ^(a)	10 ⁷	10 ⁷	>12,000	>10,000	<0.02	0.22	20	20	280	12.0	94-V0
TLY-3	PTFE Woven Glass	2.33 ^(a)	0.0012 ^(a)	10 ⁷	10 ⁷	>12,000	>10,000	<0.02	0.22	20	20	280	12.0	94-V0
HT 1.5	Bonding Film	2.35	0.0025					0.005						
TLX-0	PTFE Woven Glass	2.45 ^(a)	0.0019 ^(a)	10 ⁷	10 ⁷	>23,000	>19,000	<0.02	0.14	9	12	140	12.0	94-V0
TLX-9	PTFE Woven Glass	2.50 ^(a)	0.0019 ^(a)	10 ⁷	10 ⁷	>23,000	>19,000	<0.02	0.14	9	12	140	12.0	94-V0
TLX-8	PTFE Woven Glass	2.55 ^(a)	0.0019 ^(a)	10 ⁷	10 ⁷	>23,000	>19,000	<0.02	0.14	9	12	140	12.0	94-V0
TLX-7	PTFE Woven Glass	2.60 ^(a)	0.0019 ^(a)	10 ⁷	10 ⁷	>23,000	>19,000	<0.02	0.14	9	12	140	12.0	94-V0
TLX-6	PTFE Woven Glass	2.65 ^(a)	0.0019 ^(a)	10 ⁷	10 ⁷	>23,000	>19,000	<0.02	0.14	9	12	140	12.0	94-V0
TLC-27	PTFE Woven Glass	2.75 ^(a)	0.0030 ^(a)	10 ⁷	10 ⁷	>40,000	>35,000	<0.02	0.24	9	12	70	12.0	94-V0
TLE-95	PTFE Woven Glass	2.95 ^(a)	0.0019 ^(a)	10 ⁷	10 ⁷	>35,000	>30,000	<0.02	0.20	9	12	70	12.0	94-V0
TLC-30	PTFE Woven Glass	3.00 ^(a)	0.0030 ^(a)	10 ⁷	10 ⁷	>40,000	>35,000	<0.02	0.24	9	12	70	12.0	94-V0
RF-30	PTFE Ceramic Woven Glass	3.00 ^(b)	0.0014 ^(b)	1.26x10 ⁹	1.46x10 ⁸	>13,000	>9,000	<0.02	0.20	11	21	125	>10.0	94-V0
TSM-30	PTFE Ceramic Woven Glass	3.00 ^(c)	0.0015 ^(c)	2.5x10 ⁸	5.6x10 ⁷	>6,900	>6,000	0.03	0.27	23	28	78	8	94-V0
TLC-32	PTFE Woven Glass	3.20 ^(a)	0.0030 ^(a)	10 ⁷	10 ⁷	>40,000	>35,000	<0.02	0.24	9	12	70	12.0	94-V0
TacPreg TP-32	Prepreg	3.19 ^(c)	0.0046 ^(c)					0.10						
TacLam TL-32-0040	PTFE Ceramic BT Woven Glass	3.19 ^(c)	0.0046 ^(c)	7.1 x 10 ¹⁴	10 ⁷	19,000	16,000	0.10	0.29	20	14	120	7.0	94-V0
TacLam TLG-32	PTFE Ceramic BT Woven Glass	3.20 ^(c)	0.0030 ^(c)	8.2 x 10 ⁷	1.5 x 10 ⁶	20,000	22,100	0.16	0.27	8	12	61	13	94-V0
TacLam TLG-34	PTFE Ceramic BT Woven Glass	3.38 ^(c)	0.0031 ^(c)	8.2 x 10 ⁷	1.5 x 10 ⁶	20,000	22,100	0.16	0.27	8	12	61	13	94-V0
TacLam TLG-35	PTFE Ceramic BT Woven Glass	3.50 ^(c)	0.0030 ^(c)	8.2 x 10 ⁷	1.5 x 10 ⁶	20,000	22,100	0.16	0.27	8	12	61	13	94-V0
RF-35	PTFE Ceramic Woven Glass	3.50 ^(b)	0.0018 ^(b)	1.26x10 ⁹	1.46x10 ⁸	>22,000	>18,000	0.02	0.24	19	24	64	>10.0	94-V0
RF-35A	PTFE Ceramic Woven Glass	3.50 ^(b)	0.0025 ^(b)	1.77 x 10 ⁸	2.3 x 10 ⁷	>7,600	>12,300	0.04	0.35	8	10	29	12	94-V0
RF-35P	PTFE Ceramic Woven Glass	3.50 ^(b)	0.0025 ^(b)	5x10 ⁸	3.5x10 ⁷	>28,000	>16,000	0.03	0.27	15	15	110	>10.0	94-V0
RF-60	PTFE Ceramic Woven Glass	6.15 ^(d)	0.0028 ^(a)	2.1x10 ⁸	1.1x10 ⁸	>25,000	>22,000	<0.02	0.43	11	13	75	>8.0	94-V0
CER-10 (0.0620)	PTFE Ceramic Woven Glass	10.0 ^(d)	0.0035 ^(a)	2.1x10 ⁸	1.1x10 ⁸	>16,500	>15,500	0.02	0.63	13	15	46	>5.0	94-V0

^(a) Measured by IPC-TM-650 method 2.5.5.5 (stripline resonator) at 10 GHz

^(b) Measured by IPC-TM-650 method 2.5.5.5.1 (modified stripline) at 1.9 GHz

^(c) Measured by IPC-TM-650 method 2.5.5.5.1 (modified stripline) at 10 GHz

^(d) Measured by IPC-TM-650 method 2.5.5.6 (full sheet resonant)

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.

Copper Cladding

Copper Designation	Surface Roughness R _{MS} Treated side		Surface Roughness R _{MS} Untreated side		Description	Thickness	
	Microinches	Microns	Microinches	Microns		Mils	Micrometers
RH	16	0.4	7	0.2	Rolled-Annealed 1/2 oz	0.7	17.5
R1	11	0.3	7	0.2	Rolled-Annealed 1 oz	1.4	35.0
CLH	13	0.3	20	0.5	Reverse treated Electrodeposited 1/2 oz	0.7	17.5
CL1	13	0.3	25	0.6	Reverse treated Electrodeposited 1 oz	1.4	35.0
CVH (CH)	27	0.7	11	0.3	Very Low Profile Electrodeposited 1/2 oz	0.7	17.5
CV1 (C1)	25	0.6	11	0.3	Very Low Profile Electrodeposited 1 oz	1.4	35.0
C2	77	2.0	8	0.2	Electrodeposited 2 oz	2.8	70.0

Omega Ply® and Gould Resistive foils available upon request. Please call for availability of other foils.

Heavy Metal Cladding

The following heavy metal claddings are also available upon request. Please call for availability and specification information.*

- Aluminum
- Copper
- Brass

*Taconic's heavy metals are supplied in metric measurements only.

Typical Sizes*

Typical Size		Long Laminates		Cut Sizes	
36" x 48"	914mm x 1220mm	36" x 60"	914mm x 1524mm	12" x 18"	304mm x 457mm
		36" x 76"	914mm x 1930mm	16" x 18"	406mm x 457mm
		36" x 102"	914mm x 2590mm	18" x 24"	457mm x 610mm
				16" x 36"	406mm x 914mm
				24" x 36"	610mm x 914mm

*Other sizes available upon request

Available Thicknesses*

Product	Available Thickness		Thickness Tolerance	
	(")	(mm)	(")	(mm)
TLX-3, 5, 5A	0.0050 (TLX-3,5)	0.13	+/- 0.0005	+/- 0.01
	0.0100	0.25	+/- 0.0007	+/- 0.02
	0.0150	0.38	+/- 0.0010	+/- 0.03
	0.0200	0.51	+/- 0.0015	+/- 0.04
	0.0250	0.64	+/- 0.0015	+/- 0.04
	0.0300	0.76	+/- 0.0020	+/- 0.05
	0.0310	0.79	+/- 0.0020	+/- 0.05
	0.0600	1.52	+/- 0.0020	+/- 0.05
	0.0620	1.58	+/- 0.0020	+/- 0.05
	0.0900	2.29	+/- 0.0030	+/- 0.08
	0.0930	2.36	+/- 0.0030	+/- 0.08
TacBond HT 1.5	0.0015	0.04		
	0.0015	0.04		
TLX-6, 7, 8, 9, 0	0.0035	0.09	+/- 0.00025	+/- 0.01
	0.0050	0.13	+/- 0.0005	+/- 0.01
	0.0100	0.25	+/- 0.0007	+/- 0.02
	0.0150	0.38	+/- 0.0010	+/- 0.03
	0.0200	0.51	+/- 0.0015	+/- 0.04
	0.0250	0.64	+/- 0.0015	+/- 0.04
	0.0300	0.76	+/- 0.0020	+/- 0.05
	0.0310	0.79	+/- 0.0020	+/- 0.05
	0.0450	1.14	+/- 0.0020	+/- 0.05
	0.0600	1.52	+/- 0.0020	+/- 0.05
	0.0620	1.58	+/- 0.0020	+/- 0.05
	0.0900	2.29	+/- 0.0030	+/- 0.08
	0.0930	2.36	+/- 0.0030	+/- 0.08
	0.1200	3.05	+/- 0.0030	+/- 0.08
0.1250	3.18	+/- 0.0035	+/- 0.09	
TLC-27	0.0145	0.37	+/- 0.0010	+/- 0.03
TLE-95	0.0015	0.04	+/- 0.00025	+/- 0.01
	0.0035	0.09	+/- 0.00025	+/- 0.01
	0.0052	0.13	+/- 0.0005	+/- 0.01
	0.0100	0.25	+/- 0.0007	+/- 0.02
	0.0150	0.38	+/- 0.0010	+/- 0.03
	0.0200	0.51	+/- 0.0015	+/- 0.04
	0.0310	0.79	+/- 0.0020	+/- 0.05
	0.0620	1.58	+/- 0.0020	+/- 0.05
TLC-30, 32	0.0200	0.51	+/- 0.0015	+/- 0.04
	0.0300	0.76	+/- 0.0020	+/- 0.05
	0.0310	0.79	+/- 0.0020	+/- 0.05
	0.0450	1.14	+/- 0.0020	+/- 0.05
	0.0600	1.52	+/- 0.0020	+/- 0.05
	0.0620	1.58	+/- 0.0020	+/- 0.05
	0.0930	2.36	+/- 0.0030	+/- 0.08
	0.1250	3.18	+/- 0.0035	+/- 0.09
	0.1870	4.75	+/- 0.0050	+/- 0.13
RF-30	0.0100	0.25	+/- 0.0007	+/- 0.02
	0.0110	0.28	+/- 0.0007	+/- 0.02
	0.0200	0.51	+/- 0.0015	+/- 0.04
	0.0300	0.76	+/- 0.0020	+/- 0.05
	0.0600	1.52	+/- 0.0020	+/- 0.05
	0.1000	2.54	+/- 0.0040	+/- 0.10
TSM-30	0.0050	0.13	+/- 0.0007	+/- 0.02
	0.0100	0.25	+/- 0.0010	+/- 0.03
	0.0150	0.38	+/- 0.0015	+/- 0.04
	0.0200	0.51	+/- 0.0015	+/- 0.04
	0.0300	0.76	+/- 0.0020	+/- 0.05
	0.0600	1.52	+/- 0.0020	+/- 0.05

Product	Available Thickness		Thickness Tolerance	
	(")	(mm)	(")	(mm)
TacPreg TP-32	0.0045	0.11		
	0.0050	0.13		
TacLam TLG-32	Please call for available thicknesses.			
TacLam TLG-34				
TacLam TLG-35				
RF-35	0.0100	0.25	+/- 0.0007	+/- 0.02
	0.0200	0.51	+/- 0.0015	+/- 0.04
	0.0300	0.76	+/- 0.0020	+/- 0.05
	0.0600	1.52	+/- 0.0030	+/- 0.08
	0.1250	3.18	+/- 0.0050	+/- 0.13
	RF-35A	0.0100	0.25	+/- 0.0007
0.0200		0.51	+/- 0.0015	+/- 0.04
RF-35P	0.0300	0.76	+/- 0.0020	+/- 0.05
	0.0600	1.52	+/- 0.0020	+/- 0.05
	0.1250	3.18	+/- 0.0035	+/- 0.09
	0.0020	0.05	+/- 0.0005	+/- 0.01
RF-60	0.0040	0.10	+/- 0.0005	+/- 0.01
	0.0080	0.20	+/- 0.0007	+/- 0.02
	0.0110	0.28	+/- 0.0010	+/- 0.03
	0.0150	0.38	+/- 0.0015	+/- 0.04
	0.0250	0.64	+/- 0.0020	+/- 0.05
	0.0310	0.79	+/- 0.0020	+/- 0.05
	0.0500	1.27	+/- 0.0030	+/- 0.08
	0.0600	1.52	+/- 0.0030	+/- 0.08
	0.1250	3.18	+/- 0.0040	+/- 0.10
	CER-10	0.0040	0.10	+/- 0.0005
0.0080		0.20	+/- 0.0007	+/- 0.02
0.0110		0.28	+/- 0.0010	+/- 0.03
0.0150		0.38	+/- 0.0015	+/- 0.04
0.0250		0.64	+/- 0.0020	+/- 0.05
0.0300		0.76	+/- 0.0020	+/- 0.05
0.0470		1.19	+/- 0.0030	+/- 0.08
0.0500		1.27	+/- 0.0030	+/- 0.08
0.0620		1.58	+/- 0.0030	+/- 0.08
0.1000		2.54	+/- 0.0040	+/- 0.10
0.1250	3.18	+/- 0.0040	+/- 0.10	

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