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Taconic High Performance Material Properties													
Part #	Composition	Dk	Df	Volume Resistivity Mohm/cm	Surface Resistivity Mohm	Flex Strength K psi		Moisture Absorption %	k _r W/m/K	CTE ppm/°C			Peel Strength lbs/in 1 oz Cu
						MD	CD			x	y	z	
TLY-5A	PTFE - Glass	2.17 ^(a)	0.0009 ^(a)	10 ⁷	10 ⁷	>12	>10	<0.02	0.22	20	20	280	12
TLY-5	PTFE - Glass	2.20 ^(a)	0.0009 ^(a)	10 ⁷	10 ⁷	>12	>10	<0.02	0.22	20	20	280	12
TLY-3	PTFE - Glass	2.33 ^(a)	0.0012 ^(a)	10 ⁷	10 ⁷	>12	>10	<0.02	0.22	20	20	280	12
HT 1.5	Bonding Film	2.35	0.0025					0.005					
TLX-0	PTFE - Glass	2.45 ^(a)	0.0019 ^(a)	10 ⁷	10 ⁷	>23	>19	<0.02	0.14	9	12	140	12
TLX-9	PTFE - Glass	2.50 ^(a)	0.0019 ^(a)	10 ⁷	10 ⁷	>23	>19	<0.02	0.14	9	12	140	12
TLX-8	PTFE - Glass	2.55 ^(a)	0.0019 ^(a)	10 ⁷	10 ⁷	>23	>19	<0.02	0.14	9	12	140	12
TLX-7	PTFE - Glass	2.60 ^(a)	0.0019 ^(a)	10 ⁷	10 ⁷	>23	>19	<0.02	0.14	9	12	140	12
TLX-6	PTFE - Glass	2.65 ^(a)	0.0019 ^(a)	10 ⁷	10 ⁷	>23	>19	<0.02	0.14	9	12	140	12
TLC-27	PTFE - Glass	2.75 ^(a)	0.0030 ^(a)	10 ⁷	10 ⁷	>40	>35	<0.02	0.24	9	12	70	12
TLE-95	PTFE - Glass	2.95 ^(a)	0.0026 ^(a)	10 ⁷	10 ⁷	>35	>30	<0.02	0.28 ^(e)	9	12	70	12
TLC-30	PTFE - Glass	3.00 ^(a)	0.0030 ^(a)	10 ⁷	10 ⁷	>40	>35	<0.02	0.24	9	12	70	12
TPG-30	Prepreg	3.00	0.0038	10 ⁸	10 ⁹	19.9	14.9	0.13	0.25	21	23	28	13
TLG-30	PTFE Ceramic - Glass	3.00	0.0026	10 ⁷	10 ⁶	20	22.1	0.16	0.27	8	12	61	13
RF-30	PTFE Ceramic - Glass	3.00 ^(b)	0.0014 ^(b)	10 ⁹	10 ⁸	>13	>9	<0.02	0.20	11	21	125	10
TSM-30	PTFE Ceramic - Glass	3.00 ^(c)	0.0015 ^(c)	10 ⁸	10 ⁷	>6.9	>6	0.03	0.27	23	28	78	8
TLC-32	PTFE - Glass	3.20 ^(a)	0.0030 ^(a)	10 ⁷	10 ⁷	>40	>35	<0.02	0.24	9	12	70	12
TPG-35	Prepreg	3.50	0.0050	10 ⁸	10 ⁹	19.9	14.9	0.13	0.25	21	23	28	13
TLG-35	PTFE Ceramic - Glass	3.50 ^(c)	0.0030 ^(c)	10 ⁷	10 ⁶	20	22.1	0.16	0.27	8	12	61	13
RF-35	PTFE Ceramic - Glass	3.50 ^(b)	0.0018 ^(b)	10 ⁹	10 ⁸	>22	>18	0.02	0.24	19	24	64	10
RF-35A	PTFE Ceramic - Glass	3.50 ^(b)	0.0016 ^(b)	10 ⁹	10 ⁸	24	14	0.03	0.28	10	13	106	12
RF-35P	PTFE Ceramic - Glass	3.50 ^(b)	0.0025 ^(b)	10 ⁸	10 ⁷	>28	>16	0.03	0.27	15	15	110	10
RF-41	PTFE Ceramic - Glass	4.10 ^(d)	0.0038 ^(c)	10 ⁸	10 ⁷	20.7	18.5	<0.02	0.29	9	12	93	8
RF-43	PTFE Ceramic - Glass	4.30 ^(d)	0.0033 ^(c)	10 ⁷	10 ⁵	20.1	18.8	≤0.02	0.30	9	11	96	7
RF-45	PTFE Ceramic - Glass	4.50 ^(d)	0.0037 ^(c)	10 ⁸	10 ⁶	20.7	19.3	≤0.04	0.33	9	13	96	9
RF-60A	PTFE Ceramic - Glass	6.15 ^(d)	0.0028 ^(a)	10 ⁸	10 ⁸	>18.3	>14.6	0.02	0.54	9	8	69	8
CER-10 (0.0620)	PTFE Ceramic - Glass	10.0 ^(d)	0.0035 ^(a)	10 ⁸	10 ⁸	>16.5	>15.5	0.02	0.63	13	15	46	5

^(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)

^(e) Measured by ASTM E1461

TacPreg® prepregs are available in grades TPG-30 and 35
 TacLam® laminates are available in grades TLG-30 and 35
 UL Rating for all products: 94 V-0

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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

Ohmega Ply®, Ticer® and other resistive films available upon request. Please contact Taconic for availability.

Heavy Metal Cladding - Available Upon Request

Heavy Metal	Specific Gravity	k_T W/m/K	CTE ppm/°C	Machinability
Brass	8.5	120	20	Very Good
Copper	8.9	390	17	Good
Aluminum	2.7	180	24	Fair

Standard Sizes - Custom Sizes Available

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

Specialty Products - Prepregs & Laminates

HyRelex® is Taconic's family of low loss, high reliability, flexible laminates and bonding materials.

HyRelex® Laminates			
Material	Dk	Thickness	
		inches	mm
TF-260	2.60	0.0017, 0.0030	0.04, 0.08
TF-290	2.90	0.0023, 0.0035	0.06, 0.09

TacLampplus® is a cost-effective, laser-ablatable, non-reinforced microwave substrate that can be used to create very low loss structures. Applications include MMIC packaging and mm-wave sensors.

Material	Dk	Thickness	
		inches	mm
TacLampplus	2.20	Increments of 0.0020	Increments of 0.05

TacLam® & TacPreg® are available in thin-core constructions for high speed digital, RF multilayer and military applications.

TacLam® Laminates			
Material	Dk	Thickness	
		inches	mm
TLG-30	3.00	0.0040, 0.0080, 0.0120	0.10, 0.20, 0.30
TLG-35	3.50	0.0600	1.52

TacPreg® Prepregs			
Material	Dk	Thickness	
		inches	mm
TPG-30	3.00	0.0045, 0.0050	0.11, 0.13
TPG-35	3.50	0.0045	0.11

Standard Sizes & Thicknesses

Product	Available Thickness		Thickness Tolerance	
	(inches)	(mm)	(inches)	(mm)
TLY-3, 5, 5A	0.0050 (TLY-3, 5)	0.13	+/- 0.0005	+/- 0.01
	0.0100	0.25	+/- 0.0007	+/- 0.02
	0.0200	0.51	+/- 0.0015	+/- 0.04
	0.0310	0.79	+/- 0.0020	+/- 0.05
	0.0620	1.58	+/- 0.0020	+/- 0.05
	0.0930	2.36	+/- 0.0030	+/- 0.08
TacBond HT 1.5	0.0015	0.04		
TLX (TLT)-6, 7, 8, 9, 0	0.0050	0.13	+/- 0.0005	+/- 0.01
	0.0100	0.25	+/- 0.0007	+/- 0.02
	0.0200	0.51	+/- 0.0015	+/- 0.04
	0.0310	0.79	+/- 0.0020	+/- 0.05
	0.0620	1.58	+/- 0.0020	+/- 0.05
	0.0930	2.36	+/- 0.0030	+/- 0.08
TLC-27	0.0145	0.37	+/- 0.0010	+/- 0.03
TLE-95	0.0035	0.09	+/- 0.00025	+/- 0.01
	0.0052	0.13	+/- 0.0005	+/- 0.01
	0.0100	0.25	+/- 0.0007	+/- 0.02
	0.0200	0.51	+/- 0.0015	+/- 0.04
TPG-30	0.0045	0.11		
	0.0050	0.13		
TLG-30, 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	as agreed upon between customer and supplier	
	0.1200	3.05	as agreed upon between customer and supplier	
TLC-30, 32	0.0200	0.51	+/- 0.0015	+/- 0.04
	0.0310	0.79	+/- 0.0020	+/- 0.05
	0.0450	1.14	+/- 0.0020	+/- 0.05
	0.0620	1.58	+/- 0.0020	+/- 0.05
	0.0930	2.36	+/- 0.0030	+/- 0.08
RF-30	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	+/- 0.0020	+/- 0.05
TSM-30	0.0050	0.13	+/- 0.0007	+/- 0.02
	0.0100	0.25	+/- 0.0010	+/- 0.03
	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	
	(inches)	(mm)	(inches)	(mm)
TPG-35	0.0045	0.11		
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
RF-35A	0.0100	0.25	+/- 0.0007	+/- 0.02
	0.0200	0.51	+/- 0.0020	+/- 0.05
	0.0300	0.76	+/- 0.0020	+/- 0.05
RF-35P	0.0020	0.05	+/- 0.0005	+/- 0.01
	0.0040	0.10	+/- 0.0005	+/- 0.01
	0.0060	0.15	+/- 0.0005	+/- 0.01
	0.0080	0.20	+/- 0.0007	+/- 0.02
RF-41	0.0600	1.52	+/- 0.0020	+/- 0.05
	0.1250	3.18	+/- 0.0035	+/- 0.09
RF-43	0.0100	0.25	+/- 0.0010	+/- 0.03
	0.0200	0.51	+/- 0.0020	+/- 0.05
	0.0300	0.76	+/- 0.0015	+/- 0.04
	0.0620	1.58	+/- 0.0020	+/- 0.05
	0.1250	3.18	+/- 0.0035	+/- 0.09
RF-45	0.0200	0.51	+/- 0.0015	+/- 0.04
	0.0310	0.79	+/- 0.0020	+/- 0.05
	0.0620	1.58	+/- 0.0020	+/- 0.05
	0.1250	3.18	+/- 0.0035	+/- 0.09
RF-60A	0.0100	0.25	+/- 0.0007	+/- 0.02
	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	0.0110	0.28	+/- 0.0010	+/- 0.03
	0.0250	0.64	+/- 0.0020	+/- 0.05
	0.0300	0.76	+/- 0.0020	+/- 0.05
	0.0470	1.19	+/- 0.0030	+/- 0.08
	0.0620	1.58	+/- 0.0030	+/- 0.08
	0.1250	3.18	+/- 0.0040	+/- 0.10

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