

## Glass Epoxy Multi-layer Materials for PCB

Test item	Method	Condition	Unit	ELC-4765 / EI-6765	ELC-4768 / EI-6768
				Core / Prepreg	Core / Prepreg
Coefficient of thermal expansion	X( $\alpha$ 1)	10°C/min	ppm/°C	14	14
	Y( $\alpha$ 1)			16	16
	Z( $\alpha$ 1)			65	45
	Z( $\alpha$ 2)			270	250
Glass transition temperature	TMA	10°C/min	°C	135	125
	DMA	5°C/min		150	150
	DSC	20°C/min		145	135
Solder heat resistance		D-2/100+260°Cdip20"	-	No delamination	No delamination
		PCT-2/121+260°CFloat20"		No delamination	No delamination
Peel strength	18umCF	A	kN/m	1.4	1.0
		S-20"/260		1.3	1.0
Flexural strength	MD	A	MPa	620	640
	TD			460	480
Flexural modulus	MD	A	GPa	16	18
	TD			15	16
Tnsile strength	MD	A	MPa	260	330
	TD			250	250
Tesile modulus	MD	A	Gpa	16	16
	TD			15	15
Dielectric constant	1MHz	A	-	4.7	5.5
	1GHz	A		4.5	4.8
Dissipation factor	1MHz	A	-	0.018	0.014
	1GHz	A		0.014	0.015
Volume resistivity		A	$\Omega \cdot \text{cm}$	5E+15	5E+15
		C-96/40/90		1E+15	1E+15
Surface resistivity		A	$\Omega$	1E+15	1E+15
		C-96/40/90		2E+14	2E+14
Water absorption		E-24/50+D-24/23	%	0.10	0.10
Flame resistance	UL-94V	-	-	94V-0	94V-0
Thermal conductivity	Laser flash	-	W/mK	0.40	0.68

\*The data mentioned above is not guaranteed value but representative.

## Umclad glass epoxy lamnetes for polishing & lapping carrier

Test item	Condition	Unit	EL-3700 Test data : 1.0mmt	EL-3700M Test data : 1.0mmt
Color	A	-	Natural	Natural
Thickness	A	-	0.4 - 2.0	0.2 - 1.0
Insulation resistance	A	$\Omega$	2E+11	4E+10
	D-2/100	$\Omega$	9E+10	3E+10
Flexural strength	Lengthwise	MPa	650	740
	Widthwise	MPa	540	580
Hardness	Rockwell	HRM	110	110
Water absorption	E-24/50+D-24/23		0.08	0.08
Flame retardancy (UL method)	A	-	V-0 equivalent	V-0 equivalent
	F-168/70			
Size	A	mm	1020*1020 1200*1200 1220*1220	

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