



EPOXY/POLYPHENYLENE OXIDE RESIN

PRODUCT DATA

GETEK® Product Data Sheet

TYPE: IPC-4101/25

UL FILE NO.: E35132

NOMINAL THICKNESS (INCHES)	THICKNESS TOLERANCE (INCHES)	DOUBLE-SIDED			SINGLE-SIDED		
		GE GRADE	E GLASS CONSTRUCTION	Dk @ 1 MHz	GE GRADE	E GLASS CONSTRUCTION	Dk @ 1 MHz
.0027	+/- .0005	ML200D	1080	3.8	-	-	-
.004	+/- .0005	ML200D	2313	3.9	-	-	-
.005	+/- .0007	ML200M	2313/106	3.8	-	-	-
.006	+/- .0007	ML200D	2313/1080	3.9	-	-	-
.007	+/- .0010	ML200M	(2) 2313	3.8	-	-	-
.008	+/- .0010	ML200D	2313/2116	3.9	-	-	-
.010	+/- .0010	ML200D	(2) 2116	3.9	-	-	-
.012	+/- .0010	ML200D	1080/7628/1080	3.9	-	-	-
.014	+/- .0015	ML200D	(2) 7628	4.2	-	-	-
.018	+/- .0015	ML200D	7628/2313/7628	4.1	-	-	-
.021	+/- .0020	ML200D	(3) 7628	4.2	-	-	-
.024	+/- .0020	ML200C	2116/(2) 7628/2116	4.1	-	-	-
.028	+/- .0020	ML200D	(4) 7628	4.2	-	-	-
.028, Alt	+/- .0020	ML200C	1080/2313/(3) 2116/2313/1080	3.8	-	-	-
.031	+/- .0030	ML200C	2116/(3) 7628/2116	4.1	-	-	-
.031 ③	+/- .0040	RG200D	(4) 7628	4.2	-	-	-
.044 ③	+/- .0050	RG200D	(6) 7628	4.2	-	-	-
.059 ③	+/- .0050	RG200D	(8) 7628	4.2	RG200D	(8) 7628	4.2

TYPICAL LAMINATE PROPERTIES

PROPERTY	TEST METHOD	CONDITION	VALUE
THERMAL			
Glass Transition Temp (° C)	DMA	A	175-185
Z-Expansion (%)	IPC-TM-650 2.4.41 (TMA)	A	3.8 ①
ELECTRICAL			
Electrical Strength (Volts/Mil)	IPC-TM-650 2.5.6.2	D-48/50	1000-1200
Volume Resistivity (Megohm-CM)	IPC-TM-650 2.5.17.1	C-96/35/90	> 10 ⁶
Surface Resistivity (Megohm)	IPC-TM-650 2.5.17.1	C-96/35/90	> 10 ⁴
ARC Resistance (Sec.)	IPC-TM-650 2.5.1	D-48/50	> 60
Dielectric Constant @ 1 MHz	IPC-TM-650 2.5.5.3	C-24/23/50	3.6-4.2
Dissipation Factor @ 1 MHz	IPC-TM-650 2.5.5.3	C-24/23/50	.010-.015
PHYSICAL			
Moisture Absorption (%)	IPC-TM-650 2.6.2.1	D-24/23	.12 ①
Peel Strength 1 oz./Ft. ² Cu.(Lb/In)	IPC-TM-650 2.4.8	A	8-9
After Thermal Stress		10 Sec @ 550° F	8-9
Dimensional Stability (Mils/Inch)	IPC-TM-650 2.4.39		< .5
Flammability ②	UL 94		VO

① Typical value listed is for an .028 (4 ply 7628) core.

② This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

③ Nominal thickness includes copper cladding for RG200, Core only for ML200.

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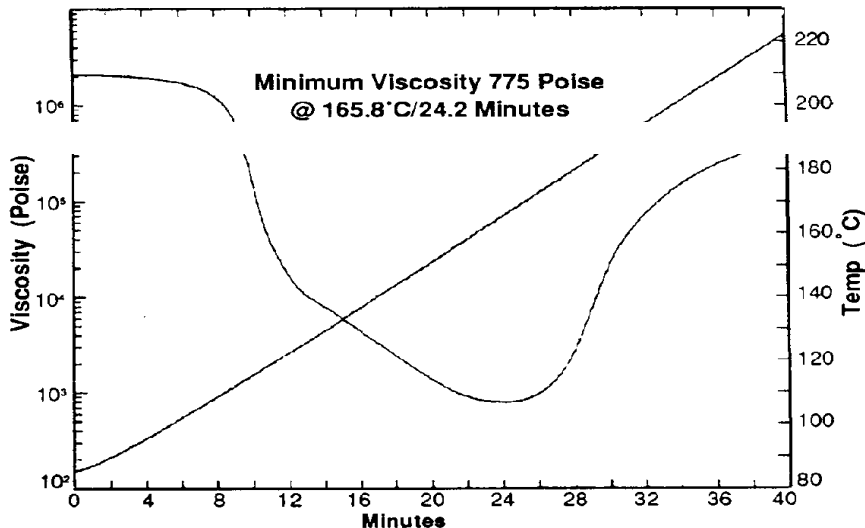
GETEK® LAMINATES EPOXY/POLYPHENYLENE OXIDE RESIN

GRADE: GETEK® Prepreg (Bonding Sheet)

TYPE: IPC-4101/25

UL File No.: E35132

GE Grade	Glass Style	Resin Content (%)	Minimum Melt Viscosity (Poise) ⁽²⁾	Scales Flow Pressed Thickness ⁽¹⁾ (Inches)	Volatile Content (%)
T017550X	106	75 +/- 3	500 - 2500	.0022 +/- .0003	.5 Max.
T416340X	1080	63 +/- 3	500 - 2500	.0027 +/- .0003	.5 Max.
T315530X	2313	55 +/- 3	500 - 2500	.0036 +/- .0003	.5 Max.
T615430X	2116	54 +/- 3	500 - 2500	.0046 +/- .0003	.5 Max.
T814225X	7628	42 +/- 3	500 - 2500	.0067 +/- .0004	.5 Max.



All GE Prepregs are rheology tested and controlled to minimum melt viscosity. This has proven to reduce material variation and is a more reliable test method for characterizing Prepreg performance.

TYPICAL LAMINATION CYCLES:

Optional Low Pressure (Kiss) Cycle

(Applies to all Press Types)

High Pressure - Hydraulic
- Vacuum Assist Hyd.
- Autoclave

Rate of Rise (175° F - 275° F)

Minimum Hold Time

Maximum Laminate Temperature

Cool Down Rate

Post Bake (Cure)

Press Cure Cycle

25-75 PSI Kiss, Apply High Pressure Prior to Package Exterior Reaching 220° F

300 - 400 PSI
225 - 350 PSI
150 - 175 PSI
6 - 9° F/Min⁽³⁾
375-385° F for 150 Minutes

395° F (385° F preferred)

< 10° F/Min

Not Required for Cure

Oven Cure Cycle

300 - 400 PSI
225 - 350 PSI
150 - 175 PSI
6 - 9° F/Min⁽³⁾
60 Minutes at 350° F
395° F (385° F preferred)
<10° F/Min
Package at 375-385° F for
150 Minutes Minimum for cure

(These are typical lamination cycles being used for GETEK® materials. Users should perform their own tests to determine the optimum process cycle.)

- (1) Non standard IPC test - contact GE Tech Service for description of test method.
- (2) Minimum melt viscosity is measured using parallel plate method with a 3.5°C/min. rate of heat rise.
- (3) Lower rate of rise acceptable for autoclave presses.

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