



## IT-180ABS/IT-180ATC

### High Tg, Low CTE, Multifunctional Filled Epoxy Resin and Phenolic-Cured Laminate & Prepreg

IT-180A is an advanced high Tg (175 °C by DSC) multifunctional filled epoxy with low CTE, high thermal reliability and CAF resistance. It's design for high layer PCB and can pass 260 °C Lead free assembly and sequential lamination process.

### Key Features =====

#### Advanced High Tg Resin Technology

Industrial standard material with high Tg (175 °C by DSC) multifunctional filled epoxy resin and excellent thermal reliability.

#### Lead-Free Assembly Compatible

RoHS compliant and suitable for high thermal reliability needs, and Lead free assemblies with a maximum reflow temperature of 260 °C.

#### Friendly Processing and CAF Resistance

Friendly PCB process like high Tg FR4. Users can short the learning curve when using this material.

#### CAF Resistance

Low thermal expansion coefficient (CTE) helps to excellent thermal reliability and CAF resistance providing long-term reliability for industrial boards and automobile application.

#### Available in Variety of Constructions

Available in a various of constructions, copper weights and glass styles, including standard(HTE), RTF and VLP copper foil.

### Applications

**Multilayer and High Layer PCB**

**Automobile**

**Backplanes**

**Servers and Networking**

**Telecommunications**

**Data Storage**

**Heavy Copper Application**

### Industrial Approval

**UL 94 V-0**

**IPC-4101C Spec / 99/ 101/ 126**

**RoHS Compliant**

### Global Availability

Area	Address	Contact e-mail	TEL
Taiwan	22,Kung Yen 1st Rd. Ping Chen Industry Zone. Ping Chen, Taoyuan, Taiwan, R.O.C.	Sales : <a href="mailto:jeff@iteq.com.tw">jeff@iteq.com.tw</a> Technician : <a href="mailto:paul_lee@iteq.com.tw">paul_lee@iteq.com.tw</a>	886-3-4152345 #3168 886-3-4152345 #5300
East China	Chun Hui Rd., Xishan Economic Development Zone, Wuxi City, Jiangsu Province, China	Sales : <a href="mailto:Alan@wxmail.iteq.com.cn">Alan@wxmail.iteq.com.cn</a> Technician : <a href="mailto:jimmypeng@wxmail.iteq.com.cn">jimmypeng@wxmail.iteq.com.cn</a>	86-510-8223-5888 #5168 86-510-8223-5888 #3000
South China	168, Dongfang Road, Nanfang Industrial Park, Beice Village, Humen Town, Dongguan City, Guangdong Province, China	Sales : <a href="mailto:lo@iteq.com.cn">lo@iteq.com.cn</a> Technician : <a href="mailto:tlfang@iteq.com.cn">tlfang@iteq.com.cn</a>	86-769-88623268 #320 86-769-88623268 #550
Japan	No.2, Huafang Rd, Yonghe Economic Zone, Economic and Technological Development Zone, Guangzhou, Guangdong Province, China	Sales : <a href="mailto:Stephen@iteq.com.cn">Stephen@iteq.com.cn</a> Technician : <a href="mailto:anderson@iteq.com.tw">anderson@iteq.com.tw</a>	86-20-6286-8088 #8027 886-3-4152345 #5388
USA	Tapco Circuit Supply 1225 Greenbriar Drive, Suite A Addison, IL 60101, USA	Sales : <a href="mailto:mshields@tapcocircuitsupply.com">mshields@tapcocircuitsupply.com</a> Technician : <a href="mailto:rovelady@tapcocircuitsupply.com">rovelady@tapcocircuitsupply.com</a>	1-614-937-5205 1-310-699-8028
Europe	ITEQ Europe, Via L. Pergher, 16 38121 Trento, Italy	Sales : <a href="mailto:serena@itequeurope.eu">serena@itequeurope.eu</a> Technician : <a href="mailto:service@itequeurope.eu">service@itequeurope.eu</a>	39-0461-820526 39-0461-820526

# ITEQ Laminate/ Prepreg : IT-180ATC / IT-180ABS

IPC-4101C Spec / 99 / 101 / 126

## LAMINATE( IT-180ATC)

Property	Thickness<0.50 mm [0.0197 in]		Thickness≥ 0.50 mm [0.0197 in]		Units	Test Method
	Typical Value	Spec	Typical Value	Spec	Metric (English)	IPC-TM-650 (or as noted)
Peel Strength, minimum A. Low profile copper foil and very low profile copper foil - all copper weights > 17µm [0.669 mil] B. Standard profile copper foil 1. After Thermal Stress 2. At 125°C [257 F] 3. After Process Solutions	0.88 (5.0)	0.70 (4.00)	0.88 (5.0)	0.70 (4.00)	N/mm (lb/inch)	2.4.8 2.4.8.2 2.4.8.3
Volume Resistivity, minimum A. C-96/35/90 B. After moisture resistance C. At elevated temperature E-24/125	3.0x10 <sup>10</sup> -- 5.0x10 <sup>10</sup>	10 <sup>6</sup> -- 10 <sup>3</sup>	-- 3.0x10 <sup>10</sup> 1.0x10 <sup>10</sup>	-- 10 <sup>4</sup> 10 <sup>3</sup>	MΩ-cm	2.5.17.1
Surface Resistivity, minimum A. C-96/35/90 B. After moisture resistance C. At elevated temperature E-24/125	3.0x10 <sup>10</sup> -- 4.0x10 <sup>10</sup>	10 <sup>4</sup> -- 10 <sup>3</sup>	-- 3.0x10 <sup>10</sup> 4.0x10 <sup>10</sup>	-- 10 <sup>4</sup> 10 <sup>3</sup>	MΩ	2.5.17.1
Moisture Absorption, maximum	--	--	0.12	0.8	%	2.6.2.1
Dielectric Breakdown, minimum	--	--	60	40	kV	2.5.6
Permittivity (Dk, 50% resin content) (Laminate & Laminated Prepreg) A. 1MHz B. 1GHz C. 2GHz D. 5GHz E. 10GHz	4.4 4.4 4.2 4.1 4.0	5.4	4.4 4.4 4.3 4.1 4.1	5.4	--	2.5.5.9 2.5.5.13
Loss Tangent (Df, 50% resin content) (Laminate & Laminated Prepreg) A. 1MHz B. 1GHz C. 2GHz D. 5GHz E. 10GHz	0.015 0.015 0.015 0.016 0.017	0.035	0.014 0.015 0.015 0.016 0.016	0.035	--	2.5.5.9 2.5.5.13
Flexural Strength, minimum A. Length direction B. Cross direction	-- -- -- --	-- -- -- --	500-530 (72,500-76,850) 410-440 (59,450-63,800)	415 (60,190) 345 (50,140)	N/mm <sup>2</sup> (lb/in <sup>2</sup> )	2.4.4
Arc Resistance, minimum	125	60	125	60	s	2.5.1
Thermal Stress 10 s at 288°C [550.4F], minimum A. Unetched B. Etched	Pass Pass	Pass Visual Pass Visual	Pass Pass	Pass Visual Pass Visual	Rating	2.4.13.1
Electric Strength, minimum (Laminate & Laminated Prepreg)	45	30	--	--	kV/mm	2.5.6.2
Flammability, (Laminate & Laminated Prepreg)	V-0	V-0	V-0	V-0	Rating	UL94
Glass Transition Temperature(DSC)	175	170 minimum	175	170 minimum	°C	2.4.25
Decomposition Temperature	--	--	345	340 minimum	°C	2.4.24.6 (5% wt loss)
X/Y Axis CTE (40°C to 125°C)	--	--	10-13	--	PPM/°C	2.4.24
Z-Axis CTE A. Alpha 1 B. Alpha 2 C. 50 to 260 Degrees C	-- -- --	-- -- --	45 210 2.7	60 maximum 300 maximum 3.0 maximum	PPM/°C PPM/°C %	2.4.24
Thermal Resistance A. T260 B. T288	-- --	-- --	>60 >30	30 minimum 15 minimum	Minutes Minutes	2.4.24.1
CAF Resistance	--	--	Pass	AABUS	Pass/Fail	2.6.25

The above data and fabrication guide provide designers and PCB shop for their reference. We believe that these information are accurate, however, the data may vary depend on the test methods and specification used. The actual sales of the product should be according to specification in the agreement between ITEQ and its customer. ITEQ reserves the right to revise its data at any time without notice and maintain the best information available to users.

# ITEQ CORPORATION

core IT-180A

		Dk					Df				
Core Thickness	Standard Construction	Dk at 1.0 MHz	Dk at 1GHz	Dk at 2.0 GHz	Dk at 5.0 GHz	Dk at 10.0 GHz	Df at 1.0 MHz	Df at 1GHz	Df at 2.0 GHz	Df at 5.0 GHz	Df at 10.0 GHz
0.0020	106	4.00	3.90	3.70	3.60	3.50	0.0140	0.0140	0.0150	0.0150	0.0150
0.0025	1067	4.05	3.85	3.65	3.60	3.60	0.0140	0.0140	0.0150	0.0150	0.0150
0.0030	1086/1080	4.10	3.80	3.70	3.65	3.65	0.0140	0.0140	0.0150	0.0150	0.0150
0.0040	2116	4.20	4.00	3.80	3.90	3.70	0.0140	0.0140	0.0150	0.0150	0.0150
0.0050	1080x2	4.10	3.80	3.70	3.65	3.65	0.0140	0.0140	0.0150	0.0150	0.0150
0.0050	2116	4.30	4.10	3.90	3.90	3.70	0.0140	0.0140	0.0150	0.0150	0.0150
0.0060	1506	4.50	4.30	4.10	3.90	3.80	0.0140	0.0140	0.0150	0.0150	0.0150
0.0070	7628	4.50	4.30	4.10	3.90	4.00	0.0140	0.0140	0.0150	0.0150	0.0150
0.0080	7628	4.50	4.30	4.10	3.90	3.80	0.0140	0.0140	0.0150	0.0150	0.0150
0.0100	2116X2	4.50	4.30	4.10	3.90	3.80	0.0140	0.0150	0.0150	0.0150	0.0150
0.0120	1506X2	4.60	4.40	4.20	4.00	3.90	0.0140	0.0150	0.0150	0.0150	0.0150
0.0140	7628X2	4.60	4.40	4.20	4.00	4.00	0.0140	0.0150	0.0150	0.0150	0.0150
0.0210	7628X3	4.60	4.40	4.20	4.00	4.00	0.0130	0.0140	0.0150	0.0150	0.0150
0.0280	7628X4	4.60	4.40	4.20	4.10	4.00	0.0130	0.0140	0.0150	0.0140	0.0150
0.0370	7628X5	4.60	4.40	4.20	4.10	4.00	0.0130	0.0130	0.0150	0.0140	0.0140

Note:DK test range +/-0.2 ,Resin content for reference

Note:Df test range +/-0.005 ,Resin content for reference

Test methods: 100~1GHz network analyzer by HP4291B,  
2GHz,5GHz,10GHz by Agilent technologies

prepreg IT-180A

Dk								Df @				
Prepreg	Thickness (in.)	Resin Content	Dk @ 1 MHz	Dk @ 1 GHz	Dk @ 2.0 GHz	Dk @ 5.0 GHz	Dk @ 10.0 GHz	Df @ 1MHz	Df @ 1.0 GHz	Df @ 2.0 GHz	Df @ 5.0 GHz	Df @ 10.0 GHz
106	2.0	72	4.00	3.90	3.85	3.80	3.60	0.0140	0.0150	0.0170	0.0190	0.0200
1067	2.4	71	4.10	3.90	3.90	3.85	3.65	0.0140	0.0150	0.0160	0.0180	0.0190
1080	2.8	62	4.15	4.05	3.90	3.85	3.65	0.0140	0.0150	0.0160	0.0180	0.0190
1086	3.0	62	4.15	4.05	3.90	3.85	3.65	0.0140	0.0150	0.0160	0.0180	0.0190
2113	3.8	56	4.15	4.05	3.95	3.85	3.75	0.0140	0.0150	0.0160	0.0170	0.0190
2116	4.6	53	4.20	4.10	4.00	3.90	3.70	0.0140	0.0150	0.0160	0.0170	0.0180
1506	6.4	48	4.20	4.10	4.10	3.90	3.80	0.0140	0.0150	0.0160	0.0160	0.0160
7628	7.4	43	4.20	4.10	4.00	3.90	3.70	0.0140	0.0150	0.0160	0.0160	0.0160
7628HR	8.2	50	4.30	4.20	4.20	4.00	3.90	0.0140	0.0150	0.0160	0.0160	0.0160

Note:DK test range +/-0.2 ,Resin content for reference

Note:Df test range +/-0.005 ,Resin content for reference

Test methods: 100~1GHz network analyzer by HP4291B,  
2GHz,5GHz,10GHz by Agilent technologies