

ITEQ Laminate/Prepreg : IT-158TC / IT-158BS

IPC-4101C Spec /99

LAMINATE (IT-158TC)

| 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) 1.58 (9.0) 1.31 (7.5) 1.14 (6.5) | 0.70 (4.00) 0.80 (4.57) 0.70 (4.00) 0.55 (3.14) | 0.88 (5.0) 1.66 (9.5) 1.40 (8.0) 1.23 (7.0) | 0.70 (4.00) 1.05 (6.00) 0.70 (4.00) 0.80 (4.57) | 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 ¹⁰ -- 5.0x10 ¹⁰ | 10 ⁶ -- 10 ³ | -- 5.0x10 ¹⁰ 1.0x10 ¹⁰ | -- 10 ⁴ 10 ³ | 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 | 1.0x10 ¹⁰ -- 5.0x10 ¹⁰ | 10 ⁴ -- 10 ³ | -- 1.0x10 ¹⁰ 3.0x10 ¹⁰ | -- 10 ⁴ 10 ³ | MΩ | 2.5.17.1 |
| Moisture Absorption, maximum | -- | -- | 0.08 | 0.5 | % | 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 | 4.3 4.3 4.2 4.1 4.0 | 5.4 | 4.4 4.3 4.2 4.1 4.0 | 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 | 0.016 0.016 0.017 0.018 0.019 | 0.035 | 0.016 0.016 0.017 0.018 0.018 | 0.035 | -- | 2.5.5.9 2.5.5.13 |
| Flexural Strength, minimum A. Length direction B. Cross direction | -- -- -- -- | -- -- -- -- | 450-480 (65,250-69,600) 370-400 (53,650-62,350) | 415 (60,190) 345 (50,140) | N/mm ² (lb/in ²) | 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) | 155 | 150 minimum | 155 | 150 minimum | °C | 2.4.25 |
| Decomposition Temperature | -- | -- | 345 | 325 minimum | °C | 2.4.24.6 (5% wt loss) |
| X/Y Axis CTE (40°C to 125°C) | -- | -- | 11-13 | -- | ppm/°C | 2.4.24 |
| Z-Axis CTE A. Alpha 1 B. Alpha 2 C. 50 to 260 Degrees C | -- -- -- | -- -- -- | 40 240 3.3 | 60 maximum 300 maximum 3.5 maximum | ppm/°C ppm/°C % | 2.4.24 |
| Resistance A. T260 B. T288 | -- -- | -- -- | >60 >30 | 30 minimum 5 minimum | Minutes Minutes | 2.4.24.1 |
| CAF Resistance | -- | -- | Pass | AABUS | Pass/Fail | 2.6.25 |