



## 370 TURBO® High Performance Laminate and Prepreg

**370 TURBO®** is the new standard in a high performance FR-4. The 175°C glass transition temperature (Tg) and 340°C degradation temperature (Td) make it the best choice for the most thermally demanding multilayer Printed Wiring Board (PWB) applications. The application of TURBO manufacturing and curing technology to the industry-leading 370 system provides this dramatic improvement in thermal performance and reliability. TURBO technology also results in faster curing, allowing lamination press cycle time reductions of 30% or more. This combination provides not only improved performance but retains FR-4 processability, with mechanical, chemical and moisture resistance and laser fluorescing and UV blocking properties that equal or exceed the performance of any other FR-4 material available.

[www.isola-group.com/products/370TURBO](http://www.isola-group.com/products/370TURBO)

### ORDERING INFORMATION:

Contact your local sales representative or visit [www.isola-group.com](http://www.isola-group.com) for further information.

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High Performance

# 370 TURBO® Data Sheet

Tg 175, Td 340  
Dk 4.10, Df 0.02  
/21 /24 /26 /121 /124

## Features

- High Thermal Performance
  - ▶ High Tg: 175°C (DSC)
  - ▶ High Td: 340°C (TGA @ 5% wt loss)
  - ▶ Superior performance through multiple thermal excursions
  - ▶ Superior chemical and thermal resistance
  - ▶ Lower CTE from ambient to 288°C
- T260: 45 minutes
- T288: >10 minutes
- RoHS Compliant
- UV Blocking and AOI Compatible
  - ▶ UV blocking and enhanced fluorescence
  - ▶ Compatible with all AOI equipment, including laser-enhanced reflectance systems
- Standard FR-4 Processing
  - ▶ No post bake after pressing
  - ▶ Drilling parameters and hole wall preparation are standard
- Core Material Standard Availability
  - ▶ Thickness: 0.002" (0.05 mm) to 0.125" (3.2 mm)
  - ▶ Available in full size sheet or panel form
- Prepreg Standard Availability
  - ▶ Roll or panel form
  - ▶ Tooling of prepreg panels available
- Copper Foil Type Availability
  - ▶ Standard HTE Grade 3
  - ▶ RTF (Reverse Treat Foil)
- Copper Weights
  - ▶ ½, 1 and 2 oz (18, 38 and 70 µm) available
  - ▶ Heavier copper available upon request
  - ▶ Thinner copper foil available upon request
- Glass Fabric Availability
  - ▶ Standard E-glass
  - ▶ Square weave glass fabric available
- Industry Approvals
  - ▶ IPC-4101C /21 /24 /26 /121 /124
  - ▶ UL - File Number E41625
  - ▶ Qualified to UL's MCIL Program

# 370 TURBO® Specifications

Property	Typical Values				
			Units	Test Method	
	Typical Value	Specification	Metric (English)	IPC-TM-650 (or as noted)	
<b>Glass Transition Temperature (Tg) by DSC</b>	175	150-200	°C	2.4.25	
<b>Decomposition Temperature (Td) by TGA @ 5% weight loss</b>	340	–	°C	ASTM D3850	
<b>T260</b>	45	–	Minutes	2.4.25	
<b>T288</b>	>10	–	Minutes	2.4.25	
<b>CTE, Z-axis</b>	A. Pre-Tg B. Post-Tg	AABUS –	ppm/°C	2.4.24	
<b>CTE, X-, Y-axes</b>	A. Pre-Tg B. Post-Tg	AABUS –	ppm/°C	2.4.24	
<b>Z-axis Expansion (50-260°C)</b>	3.5	–	%	2.4.24	
<b>Thermal Conductivity</b>	0.3-0.4	–	W/mK	ASTM D5930	
<b>Thermal Stress 10 sec @ 288°C (550.4°F)</b>	A. Unetched B. Etched	Pass	Pass Visual	Rating	2.4.13.1
<b>Dk, Permittivity (Laminate &amp; prepreg as laminated) Tested at 50% resin</b>	A. @ 2 GHz (Bereskin Stripline) B. @ 5 GHz (Bereskin Stripline) C. @ 10 GHz (Bereskin Stripline)	4.10 4.00 –	5.4 – –	–	2.5.5.3 2.5.5.9 2.5.5.5
<b>Df, Loss Tangent (Laminate &amp; prepreg as laminated) Tested at 50% resin</b>	A. @ 2 GHz (Bereskin Stripline) B. @ 5 GHz (Bereskin Stripline) C. @ 10 GHz (Bereskin Stripline)	0.022 0.024 –	0.035 – –	–	2.5.5.3 2.5.5.9 2.5.5.5
<b>Volume Resistivity</b>	A. 96/35/90 B. After moisture resistance C. At elevated temperature	– 3.0x10 <sup>9</sup> 7.0x10 <sup>9</sup>	– 1.0x10 <sup>4</sup> 1.0x10 <sup>3</sup>	MΩ-cm	2.5.17.1
<b>Surface Resistivity</b>	A. 96/35/90 B. After moisture resistance C. At elevated temperature	– 3.0x10 <sup>9</sup> 2.0x10 <sup>9</sup>	– 1.0x10 <sup>4</sup> 1.0x10 <sup>3</sup>	MΩ	2.5.17.1
<b>Dielectric Breakdown</b>	>50	40	kV	2.5.6	
<b>Arc Resistance</b>	125	60	Seconds	2.5.1	
<b>Electric Strength (Laminate &amp; prepreg as laminated)</b>	52 (1300)	29 (736)	kV/mm (V/mil)	2.5.6.2	
<b>Comparative Tracking Index (CTI)</b>	3 (175-249)	–	Class (Volts)	UL-746A ASTM D3638	
<b>Peel Strength</b>	A. Low profile copper foil and very low profile – all copper weights >17 microns B. Standard profile copper 1. After thermal stress 2. At 125°C (257°F) 3. After process solutions	1.23 (7.0) – 1.58 (9.0) 1.23 (7.0) 1.58 (9.0)	0.70 (4.0) – 1.05 (6.0) 0.70 (4.0) 0.80 (4.5)	N/mm (lb/inch)	2.4.8 2.4.8.2 2.4.8.3 – –
<b>Flexural Strength</b>	A. Lengthwise direction B. Crosswise direction	– –	– –	lb/inch <sup>2</sup>	2.4.4
<b>Tensile Strength</b>	A. Lengthwise direction B. Crosswise direction	– –	– –	lb/inch <sup>2</sup>	–
<b>Moisture Absorption</b>	0.15	0.8	%	2.6.2.1	
<b>Flammability (Laminate &amp; prepreg as laminated)</b>	V-0	V-0	Rating	UL 94	
<b>Max Operating Temperature</b>	130	UL Cert	°C	–	

The data, while believed to be accurate and based on analytical methods considered to be reliable, is for information purposes only. Any sales of these products will be governed by the terms and conditions of the agreement under which they are sold.

[www.isola-group.com/products/370TURBO](http://www.isola-group.com/products/370TURBO)

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