



# 254

## High Performance, Mid-Tg Laminate and Prepreg Materials

254 is a high-performance 150°C glass transition temperature (Tg) FR-4 system for multilayer Printed Wiring Board (PWB) applications where increased thermal performance and reliability are required.

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The 254 system is also laser fluorescing and UV blocking for maximum compatibility with Automated Optical Inspection (AOI) systems, optical positioning systems and photoimable solder mask imaging.

### Product Attributes

Legacy Materials

#### 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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Legacy Materials

# Data Sheet

Tg 150°C

Td 340°C

Dk 4.30

Df 0.020

IPC-4101 - / 21 / 24

UL - File Number E41625

Last Updated February 27, 2020  
Revision No: C

### Product Features

- Industry Recognition
  - UL File Number: E41625
  - Qualified to UL's MCIL Program
  - RoHS Compliant
- Performance Attributes
  - Lead-free assembly compatible
- Processing Advantages
  - FR-4 process compatible
  - UV blocking and AOI fluorescence

### Product Availability

- Standard Material Offering: Laminate
  - 2 to 125 mil (0.05 to 3.2 mm)
  - Available in full size sheet or panel form
- Copper Foil Type
  - HTE Grade 3
  - RTF (Reverse Treat Foil)
- Copper Weight
  - ½ to 2 oz (18 to 70 µm) available
  - Heavier copper available
  - Thinner copper foil available
- Standard Material Offering: Prepreg
  - Roll or panel form
  - Tooling of prepreg panels
- Glass Fabric Availability
  - E-glass
  - Square weave glass

Property	Typical Value	Units	Test Method	
		Metric (English)	IPC-TM-650 (or as noted)	
Test data generated from rigid laminate	50	%	2.3.16.2	
Glass Transition Temperature (Tg) by DSC	150	°C	2.4.25C	
Decomposition Temperature (Td) by TGA @ 5% weight loss	340	°C	2.4.24.6	
Time to Delaminate by TMA (Copper removed)	A. T260 B. T288	30 >5	Minutes	2.4.24.1
Z-Axis CTE	A. Pre-Tg B. Post-Tg C. 50 to 260°C, (Total Expansion)	65 250 3.4	ppm/°C ppm/°C %	2.4.24C
X/Y-Axis CTE	Pre-Tg	13	ppm/°C	2.4.24C
Thermal Conductivity		0.45	W/mK	ASTM E1952
Thermal Stress 10 sec @ 288°C (550.4°F)	A. Unetched B. Etched	Pass	Pass Visual	2.4.13.1
Dk, Permittivity	A. @ 2 GHz B. @ 5 GHz	4.30 4.20	—	Bereskin Stripline
Df, Loss Tangent	@ 2 GHz	0.020	—	Bereskin Stripline
Dk, Permittivity	@ 5 GHz	0.022	—	Bereskin Stripline
Volume Resistivity	A. C-96/35/90 B. After moisture resistance C. At elevated temperature	— $2.4 \times 10^8$ $2.3 \times 10^8$	MΩ-cm	2.5.17.1
Surface Resistivity	A. C-96/35/90 B. After moisture resistance C. At elevated temperature	— $2.6 \times 10^8$ $2.8 \times 10^8$	MΩ	2.5.17.1
Dielectric Breakdown		>50	kV	2.5.6B
Arc Resistance		105	Seconds	2.5.1B
Electric Strength (Laminate & laminated prepreg)		54 (1350)	kV/mm (V/mil)	2.5.6.2A
Comparative Tracking Index (CTI)		3 (175-249)	Class (Volts)	UL 746A ASTM D3638
Peel Strength	A. Low profile copper foil and very low profile copper foil all copper foil >17 μm [0.669 mil] B. Standard profile copper 1. After thermal stress 2. At 125°C (257°F) 3. After process solutions	1.05 (6.0) 1.56 (6.0) 1.23 (4.0) 1.58 (4.5)	N/mm (lb/inch)	2.4.8C 2.4.8.2A 2.4.8.3 2.4.8.3
Flexural Strength	A. Length direction B. Cross direction	79.8 67.9	ksi	2.4.4B
Tensile Strength	A. Length direction B. Cross direction	53.9 41.2	ksi	ASTM D3039
Poisson's Ratio	A. Length direction B. Cross direction	0.174 0.54	—	ASTM D3039
Moisture Absorption		0.3	%	2.6.2.1A
Flammability (Laminate & laminated prepreg)		V-0	Rating	UL 94
Relative Thermal Index (RTI)		130	°C	UL 796

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.

[172.18.64.23/products/all-printed-circuit-materials/254-2/](https://www.isola.com/172.18.64.23/products/all-printed-circuit-materials/254-2/)

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## NOTE

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Revisions:

A: Initial release - 4/17

B: Corrected units for Flexural and Tensile Strength - 8/18

C: Change MOT to RTI 5/19