

IPC-4101 /98 /99 /101 /126 UL - File Number E41625

IS420 is a high performance 170°C glass transition temperature (Tg) FR-4 system for multilayer Printed Wiring Board (PWB) applications where maximum thermal performance and reliability are required.

#### 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 93 mil (0.05 to 2.4 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

IS420 laminate and prepreg products are manufactured with a unique high performance multifunctional epoxy resin, reinforced with electrical grade (E-glass) glass fabric. This system provides improved thermal performance and low expansion rates in comparison to traditional FR-4 while retaining FR-4 processability.

In addition to this superior thermal performance, the mechanical, chemical and moisture resistance properties all equal or exceed the performance of traditional FR-4 materials. The IS420 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



HIGH THERMAL  
RELIABILITY



LEGACY

#### ORDERING INFORMATION:

Contact your local sales representative or contact [info@isola-group.com](mailto:info@isola-group.com) for further information.

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# Typical Values Table

Property	Typical Value	Units		Test Method
		Metric (English)	IPC-TM-650 (or as noted)	
Glass Transition Temperature (Tg) by DSC	170	°C		2.4.25C
Decomposition Temperature (Td) by TGA @ 5% weight loss	350	°C		2.4.24.6
Time to Delaminate by TMA (Copper removed)	A. T260 B. T288	60 >15	Minutes	2.4.24.1
Z-Axis CTE	A. Pre-Tg B. Post-Tg C. 50 to 260°C, (Total Expansion)	45 230 2.8	ppm/°C ppm/°C %	2.4.24C
X/Y-Axis CTE	Pre-Tg	13/14	ppm/°C	2.4.24C
Thermal Conductivity		0.4	W/m-K	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. @ 100 MHz B. @ 1 GHz C. @ 2 GHz D. @ 5 GHz E. @ 10 GHz	4.24 4.17 4.04 3.92 3.92	—	2.5.5.3 2.5.5.9 Bereskin Stripline Bereskin Stripline Bereskin Stripline
Df, Loss Tangent	A. @ 100 MHz B. @ 1 GHz C. @ 2 GHz D. @ 5 GHz E. @ 10 GHz	0.0150 0.0161 0.0210 0.0250 0.0250	—	2.5.5.3 2.5.5.9 Bereskin Stripline Bereskin Stripline Bereskin Stripline
Volume Resistivity	A. After moisture resistance B. At elevated temperature	$3.0 \times 10^8$ $7.0 \times 10^8$	MΩ-cm	2.5.17.1
Surface Resistivity	A. C-96/35/90 B. After moisture resistance C. At elevated temperature	— $3.0 \times 10^6$ $2.0 \times 10^8$	MΩ	2.5.17.1
Dielectric Breakdown		>50	kV	2.5.6B
Arc Resistance		115	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	1.14 (6.5) 1.25 (7.0) 1.25 (7.0) 1.14 (6.5)	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	82.7 60.9	ksi	2.4.4B
Moisture Absorption		0.15	%	2.6.2.1A
Flammability (Laminate & laminated prepreg)		V-0	Rating	UL 94
Relative Thermal Index (RTI)		130	°C	UL 796

## NOTES

Visit our site <http://www.isola-group.com> for more details.

Revisions:

A: Initial release - 4/17

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

C: Change MOT to RTI 5/19

D: Added /126 slash sheet 02/20

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