



## IS400 High Performance Laminate and Prepreg

**IS400** is a proprietary, temperature resistant resin system with a Tg of 150°C. It is intended for multilayer Printed Wiring Board (PWB) applications where demanding thermal performance and high reliability are required. IS400 laminate and prepreg products are manufactured using Isola's patented technology, reinforced with electrical grade (E-glass) glass fabric. This system delivers a 330°C decomposition temperature and a low Z-axis expansion.

[www.isola-group.com/products/IS400](http://www.isola-group.com/products/IS400)

### ORDERING INFORMATION:

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

**Isola Group**  
3100 West Ray Road  
Suite 301  
Chandler, AZ 85226  
Phone: 480-893-6527  
Fax: 480-893-1409  
[info@isola-group.com](mailto:info@isola-group.com)

**Isola Asia Pacific (Hong Kong) Ltd.**  
Unit 3512 - 3522, 35/F  
No. 1 Hung To Road, Kwun Tong,  
Kowloon, Hong Kong  
Phone: 852-2418-1318  
Fax: 852-2418-1533  
[info.hkg@isola-group.com](mailto:info.hkg@isola-group.com)

**Isola GmbH**  
Isola Strasse 2  
D-52348 Düren, Germany  
Phone: 49-2421-8080  
Fax: 49-2421-808164  
[info-dur@isola-group.com](mailto:info-dur@isola-group.com)

High Performance

# IS400 Data Sheet

Tg 150, Td 330  
Dk 3.90, Df 0.022  
/97 /98 /99 /101

### Features

- High Thermal Performance
  - ▶ Tg: 150°C (DSC)
  - ▶ Td: 330°C (TGA @ 5% wt loss)
- T260: >60 minutes
- T288: >10 minutes
- RoHS Compliant
- CAF Resistant
- Low CTE in the Z-axis – 3.3% (50-260°C)
- Core Material Standard Availability
  - ▶ Thickness: 0.002" (0.05 mm) to 0.093" (2.4 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, 35 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-4101D WAM1 /97 /98 /99 /101
  - ▶ UL – File Number E41625

# IS400 Specifications

Property		Typical Values			
		Typical Value	Specification	Units	Test Method
				Metric (English)	IPC-TM-650 (or as noted)
<b>Glass Transition Temperature (Tg) by DSC</b>		150	110-150	°C	2.4.25
<b>Decomposition Temperature (Td) by TGA @ 5% weight loss</b>		330	–	°C	ASTM D3850
<b>T260</b>		>60	–	Minutes	2.4.25
<b>T288</b>		>10	–	Minutes	2.4.25
<b>CTE, Z-axis</b>	A. Pre-Tg	50	AABUS	ppm/°C	2.4.24
	B. Post-Tg	260	–		
<b>CTE, X-, Y-axes</b>	A. Pre-Tg	13	AABUS	ppm/°C	2.4.24
	B. Post-Tg	14	–		
<b>Z-axis Expansion (50-260°C)</b>		3.3	AABUS	%	2.4.24
<b>Thermal Conductivity</b>		0.36	–	W/mK	ASTM D5930
<b>Thermal Stress 10 sec @ 288°C (550.4°F)</b>	A. Unetched	Pass	Pass Visual	Rating	2.4.13.1
	B. Etched				
<b>Dk, Permittivity (Laminate &amp; prepreg as laminated) Tested at 50% resin</b>	A. @ 1 MHz (Fluid cell)	4.00	5.40	–	2.5.5.3
	B. @ 500 MHz (HP4291)	3.90	–		2.5.5.9
	C. @ 1 GHz (HP4291)	–	–		2.5.5.5
<b>Df, Loss Tangent (Laminate &amp; prepreg as laminated) Tested at 50% resin</b>	A. @ 1 MHz (Fluid cell)	0.020	0.035	–	2.5.5.3
	B. @ 500 MHz (HP4291)	0.022	–		2.5.5.9
	C. @ 1 GHz (HP4291)	–	–		2.5.5.5
<b>Volume Resistivity</b>	A. 96/35/90	4.0x10 <sup>8</sup>	1.0x10 <sup>4</sup>	MΩ-cm	2.5.17.1
	B. After moisture resistance	–	–		
	C. At elevated temperature	7.0x10 <sup>7</sup>	1.0x10 <sup>3</sup>		
<b>Surface Resistivity</b>	A. 96/35/90	3.0x10 <sup>6</sup>	1.0x10 <sup>4</sup>	MΩ	2.5.17.1
	B. After moisture resistance	–	–		
	C. At elevated temperature	5.4x10 <sup>6</sup>	1.0x10 <sup>3</sup>		
<b>Dielectric Breakdown</b>		>50	–	kV	2.5.6
<b>Arc Resistance</b>		120	60	Seconds	2.5.1
<b>Electric Strength (Laminate &amp; prepreg as laminated)</b>		48 (1100)	29 (736)	kV/mm V/mil	2.5.6.2
<b>Comparative Tracking Index (CTI)</b>		3 (175-249)	–	Class (Volts)	–
<b>Peel Strength</b>	A. Low profile copper foil and very low profile – all copper weights >17 microns	1.05 (6.0)	0.70 (4.0)	N/mm (lb/inch)	2.4.8
	B. Standard profile copper	1.45 (9.0) 1.25 (8.0) 1.45 (9.0)	1.05 (6.0) 0.70 (4.0) 0.80 (4.5)		2.4.8.2
	1. After thermal stress				2.4.8.3
	2. At 125°C (257°F)				–
3. After process solutions	–				
<b>Flexural Strength</b>	A. Lengthwise direction	82,000	–	lb/inch <sup>2</sup>	2.4.4
	B. Crosswise direction	66,600			
<b>Tensile Strength</b>	A. Lengthwise direction	51,213	–	lb/inch <sup>2</sup>	–
	B. Crosswise direction	41,675			
<b>Young's Modulus</b>	A. Grain direction	3663	–	ksi	ww
	B. Fill direction	3328			
<b>Poisson's Ratio</b>	A. Grain direction	0.183	–	–	xx
	B. Fill direction	0.151			
<b>Moisture Absorption</b>		0.18	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	–	°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/IS400](http://www.isola-group.com/products/IS400)

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