

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

ORDERING INFORMATION:

Contact your local sales representative or visit www.isola-group.com for further information.

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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)
Glass Transition Temperature (Tg) by DSC		150	110-150	°C	2.4.25
Decomposition Temperature (Td) by TGA @ 5% weight loss		330	–	°C	ASTM D3850
T260		>60	–	Minutes	2.4.25
T288		>10	–	Minutes	2.4.25
CTE, Z-axis	A. Pre-Tg	50	AABUS	ppm/°C	2.4.24
	B. Post-Tg	260	–		
CTE, X-, Y-axes	A. Pre-Tg	13	AABUS	ppm/°C	2.4.24
	B. Post-Tg	14	–		
Z-axis Expansion (50-260°C)		3.3	AABUS	%	2.4.24
Thermal Conductivity		0.36	–	W/mK	ASTM D5930
Thermal Stress 10 sec @ 288°C (550.4°F)	A. Unetched	Pass	Pass Visual	Rating	2.4.13.1
	B. Etched				
Dk, Permittivity (Laminate & prepreg as laminated) Tested at 50% resin	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
Df, Loss Tangent (Laminate & prepreg as laminated) Tested at 50% resin	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
Volume Resistivity	A. 96/35/90	4.0x10 ⁸	1.0x10 ⁴	MΩ-cm	2.5.17.1
	B. After moisture resistance	–	–		
	C. At elevated temperature	7.0x10 ⁷	1.0x10 ³		
Surface Resistivity	A. 96/35/90	3.0x10 ⁶	1.0x10 ⁴	MΩ	2.5.17.1
	B. After moisture resistance	–	–		
	C. At elevated temperature	5.4x10 ⁶	1.0x10 ³		
Dielectric Breakdown		>50	–	kV	2.5.6
Arc Resistance		120	60	Seconds	2.5.1
Electric Strength (Laminate & prepreg as laminated)		48 (1100)	29 (736)	kV/mm V/mil	2.5.6.2
Comparative Tracking Index (CTI)		3 (175-249)	–	Class (Volts)	–
Peel Strength	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	–				
Flexural Strength	A. Lengthwise direction	82,000	–	lb/inch ²	2.4.4
	B. Crosswise direction	66,600			
Tensile Strength	A. Lengthwise direction	51,213	–	lb/inch ²	–
	B. Crosswise direction	41,675			
Young's Modulus	A. Grain direction	3663	–	ksi	ww
	B. Fill direction	3328			
Poisson's Ratio	A. Grain direction	0.183	–	–	xx
	B. Fill direction	0.151			
Moisture Absorption		0.18	0.8	%	2.6.2.1
Flammability (Laminate & prepreg as laminated)		V-0	V-0	Rating	UL 94
Max Operating Temperature		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.

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