



Auto-HR

Auto-HR is a proprietary, high-performance resin system with a glass transition temperature (T_g) $>170^{\circ}\text{C}$ for multilayer Printed Wiring Board (PWB) applications where maximum thermal performance and reliability are required.

Auto-HR laminate and prepreg products are manufactured using Isola's patented technology and are reinforced with electrical grade (E-glass) glass fabric. This system delivers a 340°C decomposition temperature (T_d) and a lower Z-axis expansion compared to competitive products.

The Auto-HR system is also laser fluorescing and UV blocking for maximum compatibility with Automated Optical Inspection (AOI) systems, optical positioning systems and photoimagable solder mask imaging. Auto-HR is available in limited thicknesses, including 0.014", 0.028", 0.035", 0.042".

ORDERING INFORMATION:

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

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Performance

T_g 170°C

T_d 340°C

Dk 4.23

Df 0.0174

zIPC- 4101C /21 /24 /26 /98 /101 /126

UL - File Number E41625

Qualified to UL's MCIL Program

Product Features

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

Product Availability

- Standard Material Offering: Laminate
 - Available in full size sheet or panel form
- Copper Foil Type
 - HTE Grade 3
 - RTF (Reverse Treat Foil)
- Copper Weight
 - $\frac{1}{2}$ 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

Auto-HR Specifications

Property		Typical Value	Units	Test Method
			Metric (English)	IPC-TM-650 (or as noted)
Test data generated from		45	%	2.3.16.2
Glass Transition Temperature (Tg) by DSC		170	°C	2.4.25
Decomposition Temperature (Td) by TGA @ 5% weight loss		340	°C	2.4.24.2
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)	35 210 2.6	ppm/°C ppm/°C %	2.4.24
X/Y-Axis CTE	Pre-Tg	13/14	ppm/°C	2.4.24.1
Thermal Conductivity		0.4	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. @ 100 MHz B. @ 1 GHz C. @ 2 GHz D. @ 5 GHz E. @ 10 GHz	4.34 4.27 4.23 4.12 4.11	—	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	0.0141 0.0168 0.0174	—	2.5.5.3 2.5.5.9 Bereskin Stripline
Dk, Permittivity	A. @ 5 GHz B. @ 10 GHz	0.0200 0.0201	—	Bereskin Stripline
Volume Resistivity	A. C-96/35/90 B. After moisture resistance C. At elevated temperature	— 3.0×10^8 7.0×10^8	MΩ-cm	2.5.17.1
Surface Resistivity	A. C-96/35/90 B. After moisture resistance C. At elevated temperature	— 3.0×10^6 2.0×10^8	MΩ	2.5.17.1
Dielectric Breakdown		>50	kV	2.5.6
Arc Resistance		115	Seconds	2.5.1
Electric Strength (Laminate & laminated prepreg)		54 (1350)	kV/mm (V/mil)	2.5.6.2
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)	2.4.8 2.4.8.2 2.4.8.3 2.4.8.3
Flexural Strength	A. Length direction B. Cross direction	97,100 54,100	lb/inch ²	2.4.4
Tensile Strength	A. Length direction B. Cross direction	53,337 35,678	lb/inch ²	ASTM D3039
Poisson's Ratio	A. Length direction B. Cross direction	.172 .155	—	ASTM D3039
Moisture Absorption		.15	%	2.6.2.1
Flammability (Laminate & laminated prepreg)		V-0	Rating	UL 94
Max Operating Temperature		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.

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