

# PRODUCT GUIDE

**isola**<sup>®</sup>  
THE BASE FOR INNOVATION<sup>™</sup>

**THE BASE FOR  
INNOVATION<sup>®</sup>**

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**HIGH PERFORMANCE  
LAMINATE & PREPREG  
MATERIALS FOR PCB  
MANUFACTURING**

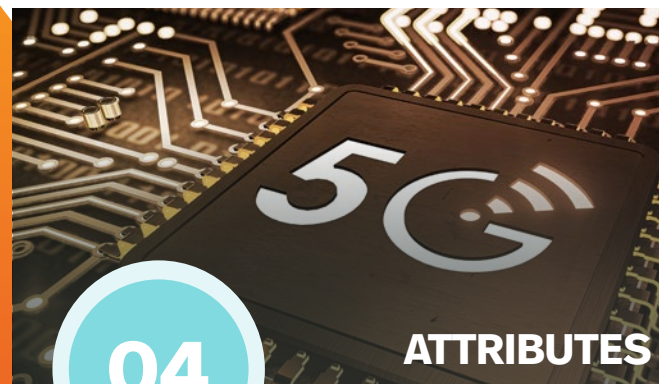


[isola-group.com](http://isola-group.com)

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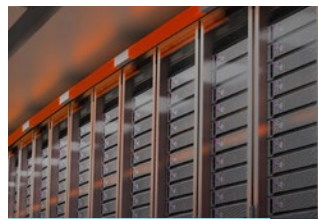


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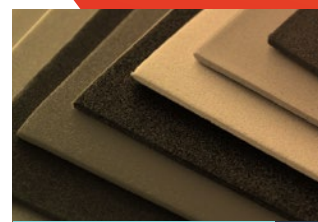
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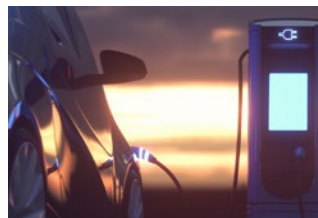
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LAMINATE  
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# ABOUT US

GLOBAL HEADQUARTERS, CHANDLER AZ

The highest quality raw materials, supported by truly global, holistic teams of professionals. Isola products are The Base for Innovation®, and it's our goal to foster breakthroughs that make a difference every day.

## COMPANY OVERVIEW

Isola is a leader in global material sciences. We design, develop, manufacture, and qualify copper-clad laminates and dielectric prepregs used to fabricate multilayer printed circuit boards (PCBs).

## GLOBAL PRESENCE

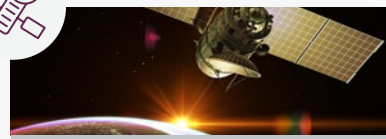
Isola has manufacturing, research and development, technical support and sales teams across Asia, Europe, and the United States. Why is that important? It allows us to service customers all around the world from start to finish. Knowledge sharing and collaboration is at the heart of our values, and our global teams work closely together to deliver our very best solutions, every single time.

## OUR MISSION

Enable innovation and technology with valued products, services, and technological solutions developed through a deep understanding of customer needs and investments in a highly talented, committed and motivated workforce.

# MARKETS

Dive into the markets we've served the most and see how we address the priorities of customers in vastly different worlds with the same consistent, high-performing products, vetted and tested before they ever leave our facilities.



## RADIO FREQUENCY & MICROWAVE

Isola helps designers achieve smaller, more powerful and durable and less power hungry products.



## AUTOMOTIVE & TRANSPORTATION

Isola drives innovation into automobile, railway and aircraft electronics with thermally reliable laminate materials.



## AEROSPACE & DEFENSE

Isola offers high reliability and superior performance laminate materials for extreme conditions



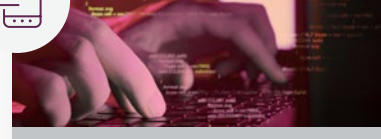
## COMPUTING, STORAGE & PERIPHERALS

Isola's high-speed digital materials are the base for the internet of things.



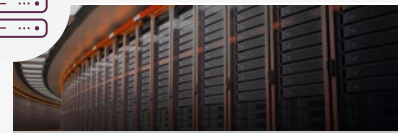
## MEDICAL, INDUSTRIAL & INSTRUMENTATION

Isola's materials help cost savings for today's advanced electronics.



## CONSUMER ELECTRONICS

Isola's materials help put the consumer in control of their electronic devices.



## NETWORKING & COMMUNICATION

Isola helps connect the world with highly reliable and thermally robust materials.

# ATTRIBUTES

We possess an extensive portfolio of patent and other intellectual property rights covering our proprietary resin formulations, and have pioneered the development of several product categories with "best in class" technology.



## 5G APPLICATIONS

Isola 5G materials are designed for low moisture uptake and stable electrical performance across a wide range of temperatures to handle anticipated environmental conditions.



## HIGH SPEED DIGITAL (HSD)

Isola offers a wide range of HSD materials that deliver superior performance and CAF resistance.



## HIGH THERMAL RELIABILITY

Isola offers several products with different levels of electrical performance that all possess excellent thermal reliability.



## HIGH DENSITY INTERCONNECT (HDI)

HDI attributes are PCB designs that employ increased feature density to achieve lighter weight, reduced layer count, and thinner stack ups.



## HALOGEN FREE

Isola offers a variety of non-halogenated materials to meet the industry's increased performance demands for eco-friendly designs.



## HIGH TEMPERATURE

Isola offers materials designed for demanding high temperature printed circuit applications.



## RADIO FREQUENCY & MICROWAVE

Today's designers are challenged with the task of achieving an optimal balance between cost and performance when selecting base materials.

# HIGH SPEED DIGITAL

Isola offers a wide range of High-speed Digital (HSD) materials that deliver superior performance and CAF resistance. These low-loss materials are targeted for applications that require high reliability and signal integrity. Isola also offers halogen-free HSD materials for green electronics.

# TERRAGREEN® 400G

Extremely Low Loss Laminate and Prepreg

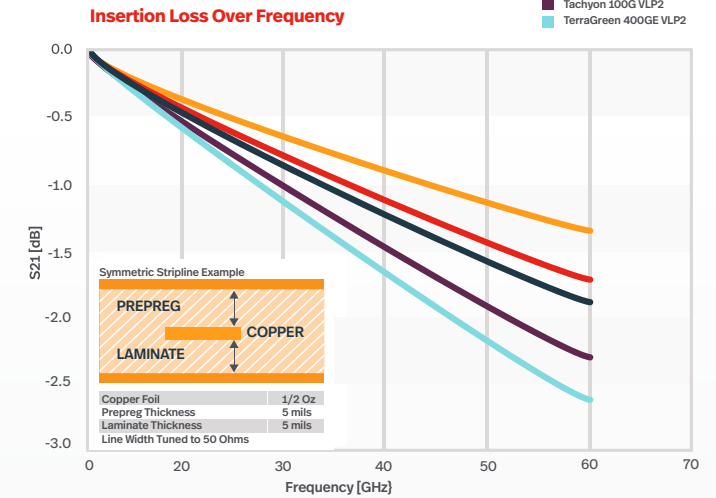
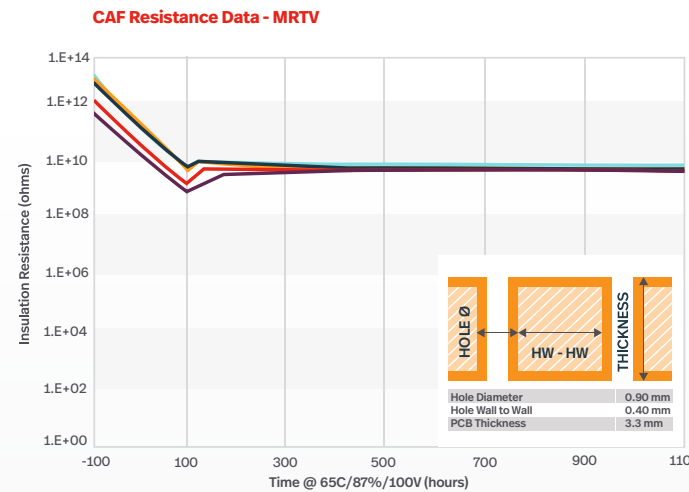
TerraGreen® 400G laminate materials are our most advanced ultra high speed, extremely low loss design solution.

TerraGreen® 400G is our Halogen Free material solution for next generation 5G infrastructure, data center systems, high end computing, wired & wireless communications and AI applications. Our novel resin system, ultra smooth HVLP3(VLP1) copper foil and Low Dk glass has been engineered for very high data rates of >100 Gb/s with excellent cost for loss performance.

The TerraGreen 400G resin system has proven superior CAF performance on tight pitch testing. CAF performance is enhanced by the resin systems excellent interlaminar and bond line adhesion strength. TerraGreen 400G is lead free compatible and sequential lamination capable and can be processed utilizing standard PCB equipment and processing steps. TerraGreen 400G meets UL94 V-0.

## PRODUCT AVAILABILITY

- Standard Material Offering: Laminate**
- 2 to 18 mil (0.05 to 0.46 mm)
- Copper Foil Type**
- HLVP3 (VLP1)  $\leq 1.1$  micron Rz JIS, 1/2 and 1 oz
- Copper Weight**
- 1/2, 1 oz (18 and 35  $\mu$ m) available
  - Heavier copper available
  - Thinner copper foil available
- Standard Material Offering: Prepreg**
- Tooling of prepreg panels available
  - Moisture barrier packaging
- Glass Fabric Availability**
- Low Dk glass, E-glass (400GE), Ultra Low Dk Glass (400G2)
  - Square weave glass
  - Mechanically spread glass



Tg	Td	T-260	T-288	Dk		Df		TYPICAL PEEL STRENGTH	MOISTURE ABSORPTION	UL	CTI
°C	°C	min	min	2GHz	10GHz	2GHz	10GHz	LB/IN	%	RTI °C	UL CLASS
200	380	≥60	≥60	3.10	3.10	0.0018	0.0018	4.10	<0.10	140	2

## MARKETS



## ATTRIBUTES



# TACHYON® 100G

Ultra Low Loss Laminate and Prepreg

Tachyon® 100G laminate materials are designed for very high-speed digital applications up to and beyond data rates of 100 Gb/s.



# I-TERA® MT40

Very Low Loss Laminate and Prepreg

I-Tera® MT40 laminate materials exhibit exceptional electrical properties which are very stable over a broad frequency and temperature range.



## PRODUCT AVAILABILITY

**Standard Material Offering: Laminate**

- 2 to 18 mil (0.05 to 0.46 mm)

**Copper Foil Type**

- HVLP (VLP2)  $\leq 2.5$  micron Rz JIS
- RTF (Reverse Treat Foil)
- Embedded resistor foil

**Copper Weight**

- 1/2, 1 oz (18 and 35  $\mu\text{m}$ ) is standard
- Heavier copper foil available
- Thinner copper foil available

**Standard Material Offering: Prepreg**

- Moisture barrier packaging
- Tooling of prepreg panels available

**Glass Fabric Availability**

- Low Dk Glass
- Square weave glass
- Mechanically spread glass

## PRODUCT AVAILABILITY

**Standard Material Offering: Laminate**

- 2 to 18 mil (0.05 to 0.46 mm)

**Copper Foil Type**

- HVLP (VLP2)  $\leq 2.5$  micron Rz JIS
- RTF (Reverse Treat Foil)
- Embedded resistor foil

**Copper Weight**

- 1/2 to 2 oz (18, 35 and 70  $\mu\text{m}$ ) is standard
- Heavier copper foil available
- Thinner copper foil available

**Standard Material Offering: Prepreg**

- Tooling of prepreg panels
- Moisture barrier packaging

**Glass Fabric Availability**

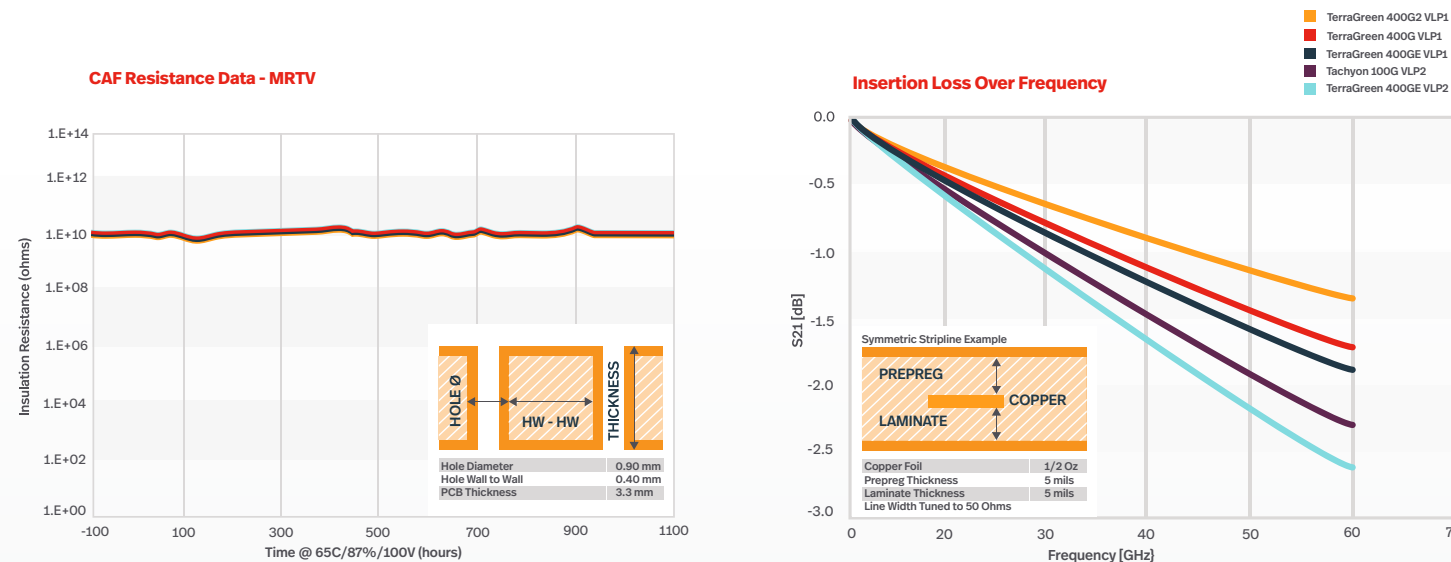
- E-glass
- Square weave glass
- Mechanically spread glass

Tachyon® 100G materials exhibit exceptional electrical properties that are very stable over a broad frequency and temperature range between -55°C and +125°C up to 100 GHz. These electrical properties provide designers a scalable solution for next generation designs of backplanes and daughter cards, enabling 10x improvements from 10 Gb/s data rates.

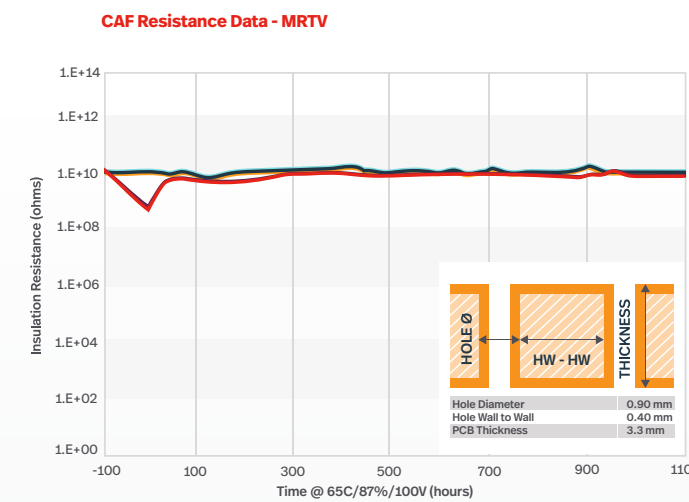
Tachyon 100G has the highest level of thermal performance for high layer count line cards. The very low Z-axis CTE makes it a perfect choice for fine pitch BGA applications of 0.8 mm or less. The material is optimized with the use of spread glass to mitigate skew, improve rise times, reduce jitter, and increase eye width/height and that use ultra smooth HVLP (VLP2) 2um Rz copper that significantly reduces conductor losses.

I-Tera® MT40 is suitable for many of today's high speed digital and RF/microwave printed circuit designs. I-Tera MT40 features a dielectric constant (Dk) that is stable between -55°C and +125°C up to W-band frequencies. In addition, I-Tera MT40 offers a lower dissipation factor (Df) of 0.0031 making it a cost effective alternative to PTFE and other commercial microwave and high-speed digital laminate materials.

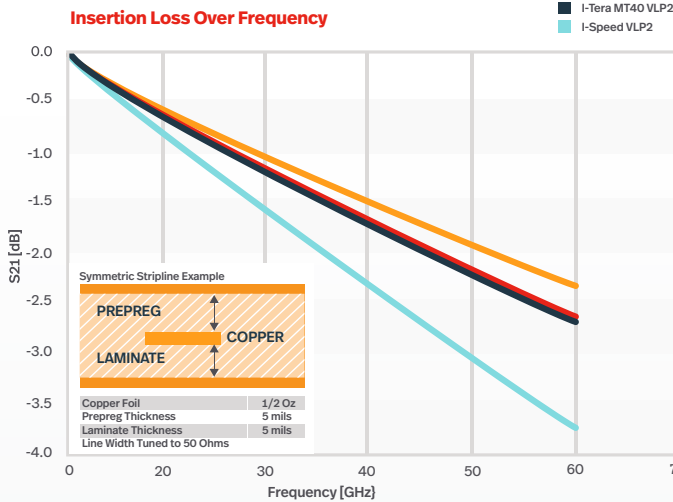
I-Tera MT40 laminate materials are currently being offered in both laminate and prepreg form in typical thicknesses and standard panel sizes. This provides a complete materials solution package for high-speed digital multilayer, hybrid, RF/microwave, multilayer and double-sided printed circuit designs. I-Tera MT40 does not require any special through hole treatments commonly needed when processing PTFE-based laminate materials.



Tg	Td	T-260	T-288	Dk	Df	TYPICAL PEEL STRENGTH	MOISTURE ABSORPTION	UL	CTI
°C	°C	min	min	2GHz 10GHz	2GHz 10GHz	LB/IN	%	RTI °C	UL CLASS
215	360	≥60	≥60	3.04 3.02	0.0021 0.0021	4.50	0.10	130	3



Tg	Td	T-260	T-288	Dk	Df	TYPICAL PEEL STRENGTH	MOISTURE ABSORPTION	UL	CTI
°C	°C	min	min	2GHz 10GHz	2GHz 10GHz	LB/IN	%	RTI °C	UL CLASS
215	360	≥60	≥60	3.45 3.45	0.0031 0.0031	4.50	0.10	130	3



## MARKETS



## ATTRIBUTES



## MARKETS



## ATTRIBUTES



# TERRAGREEN®

Very Low Loss Laminate and Prepreg

TerraGreen® laminate materials exhibit exceptional electrical properties which are very stable over a broad frequency and temperature range.



TerraGreen® is engineered for such high performance applications as power amplifier boards for LTE base stations, internet infrastructure and cloud computing. TerraGreen features a Dielectric Constant (Dk) that is stable between -55°C and 125°C, up to 20 GHz.

TerraGreen is a lead-free assembly material and is easy to process. This high performance material utilizes a short-lamination cycle; the product is easy to drill, does not require plasma desmear, and the prepreg shelf life is similar to FR-4 materials.

TerraGreen is suitable for high-layer count, high-speed digital backplanes and is compatible with Isola's FR-4 materials for hybrid designs.

TerraGreen meets UL 94 V-0 and is halogen free.

## PRODUCT AVAILABILITY

**Standard Material Offering: Laminate**

- 2 to 18 mil (0.05 to 0.46 mm)

**Copper Foil Type**

- HTE Grade 3
- HVLP (VLP2) ≤2.5 micron Rz JIS

**Copper Weight**

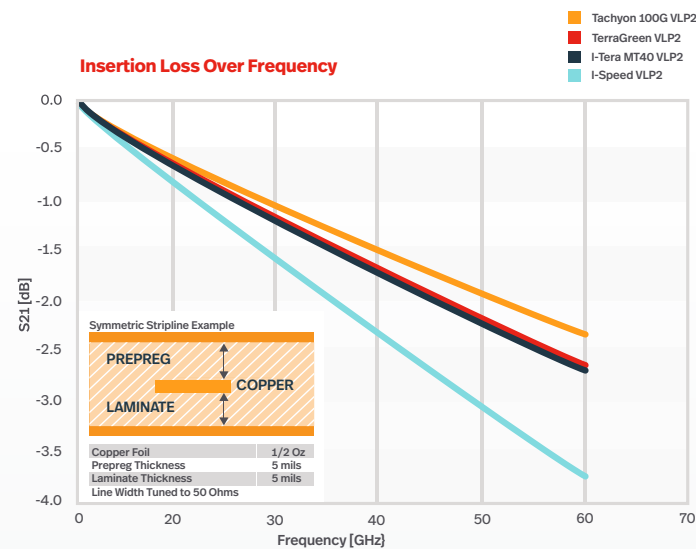
- ½ to 2 oz (18,35 and 70 µm) is standard
- Heavier copper foil available
- Thinner copper foil available

**Standard Material Offering: Prepreg**

- Moisture barrier packaging
- Tooling of prepreg panels

**Glass Fabric Availability**

- E-glass
- Square weave glass
- Mechanically spread glass



Tg	Td	T-260	T-288	Dk	Df	TYPICAL PEEL STRENGTH (HTE)	MOISTURE ABSORPTION	UL	CTI		
°C	°C	min	min	2GHz	10GHz	2GHz	10GHz	LB/IN	%	RTI °C	UL CLASS
200	390	≥60	≥60	3.44	3.44	0.0033	0.0032	5.00	0.050	130	2

## MARKETS



## ATTRIBUTES



# I-SPEED®

Low Loss, Epoxy Laminate and Prepreg



I-Speed® is a 180°C Tg FR-4 resin system for multilayer PWB applications where maximum thermal performance and reliability are required.

I-Speed® laminate and prepreg products are manufactured with Isola's patentable high performance multi-functional resin system, reinforced with electrical grade (E-glass) glass fabric. This system delivers a low Z-axis expansion and offers 25% reduction in loss compared to our mid-loss products. These properties coupled with superior moisture resistance at reflow, result in a product that bridges the gap from both a thermal and electrical perspective.

The I-Speed resin system is laser fluorescing and UV blocking for maximum compatibility with Automated Optical Inspection (AOI) systems, optical positioning systems and photo imagable solder mask imaging.

## PRODUCT AVAILABILITY

**Standard Material Offering: Laminate**

- 2 to 20 mil (0.05 to 0.51 mm)

**Copper Foil Type**

- HTE Grade 3
- HVLP (VLP2) ≤2.5 micron Rz JIS
- RTF (Reverse Treat Foil)
- Embedded resistor foil

**Copper Weight**

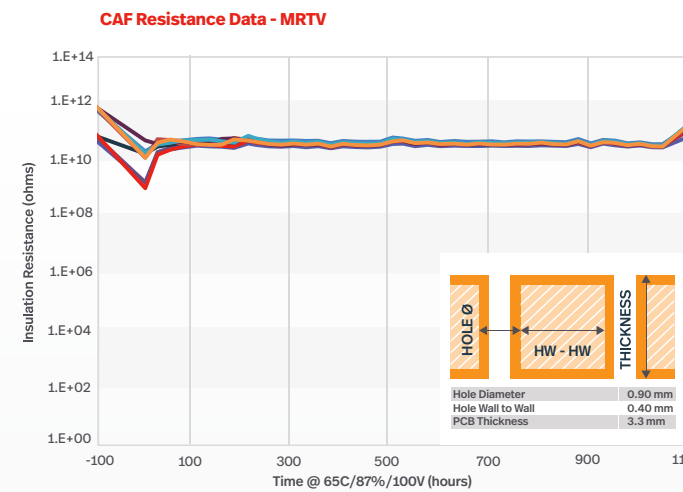
- ½ to 2 oz (18,35 and 70 µm) is standard
- Heavier copper foil available
- Thinner copper foil available

**Standard Material Offering: Prepreg**

- Tooling of prepreg panels
- Moisture barrier packaging

**Glass Fabric Availability**

- E-glass
- Square weave glass
- Mechanically spread glass



Tg	Td	T-260	T-288	Dk	Df	TYPICAL PEEL STRENGTH	MOISTURE ABSORPTION	UL	CTI		
°C	°C	min	min	2GHz	10GHz	2GHz	10GHz	LB/IN	%	RTI °C	UL CLASS
180	360	>60	≥60	3.64	3.63	0.0059	0.0060	5.50	0.061	130	2

## MARKETS



## ATTRIBUTES





# RADIO FREQUENCY & MICROWAVE

Today's RF / microwave and millimeter wave designers are challenged more than ever with the task of achieving an optimal balance between cost and performance when selecting base materials.

## ASTRA® MT77

Ultra Low Loss Laminate and Prepreg



Astra® MT77 materials are a breakthrough, very low-loss dielectric constant (Dk) product for millimeter wave frequencies and beyond.

Astra® MT77 laminate materials exhibit exceptional electrical properties which are very stable over a broad frequency and temperature range. Astra MT77 is suitable for many of today's commercial RF/microwave printed circuit designs. It features a dielectric constant (Dk) that is stable between -40°C and +140°C at up to W-band frequencies. In addition, Astra MT77 offers an ultra-low dissipation factor (Df) of 0.0017, making it a cost-effective alternative to PTFE and other commercial microwave laminate materials.

Key applications include long antennas and radar applications for automobiles, such as adaptive cruise control, pre-crash, blind spot detection, lane departure warning and stop and go systems.

**PRODUCT AVAILABILITY**

**Standard Material Offering: Laminate**

- 2.5, 5, 7.5, 10, 12.5, 15, 20, 30, 60 mil (0.0635, 0.127, 0.1905, 0.254, 0.3175, 0.381, 0.510, 0.760, 1.50 mm)

**Copper Foil Type**

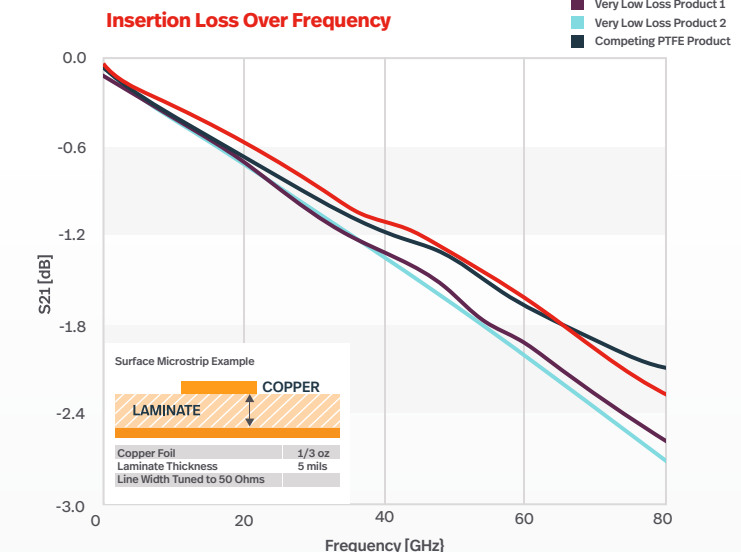
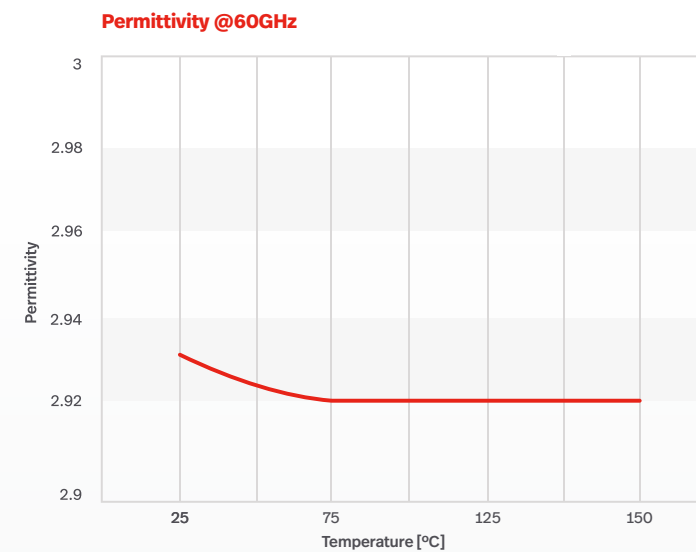
- HVLP (VLP2) ≤2.5 micron Rz JIS
- Embedded resistor foil

**Copper Weight**

- ½ to 2 oz (18,35 and 70 μm) is standard
- Thinner copper foil available

**Standard Material Offering: Prepreg**

- Tooling of prepreg panels
- Moisture barrier packaging



Tg	Td	T-260	T-288	Dk		Df		TYPICAL PEEL STRENGTH	MOISTURE ABSORPTION	UL	CTI
°C	°C	min	min	2GHz	10GHz	2GHz	10GHz	LB/IN	%	RTI °C	UL CLASS
200	360	≥60	≥60	3.00	3.00	0.0017	0.0017	5.70	0.10	130	3

**MARKETS**



**ATTRIBUTES**



# I-TERA® MT40 (RF/MW)

Very Low Loss Laminate



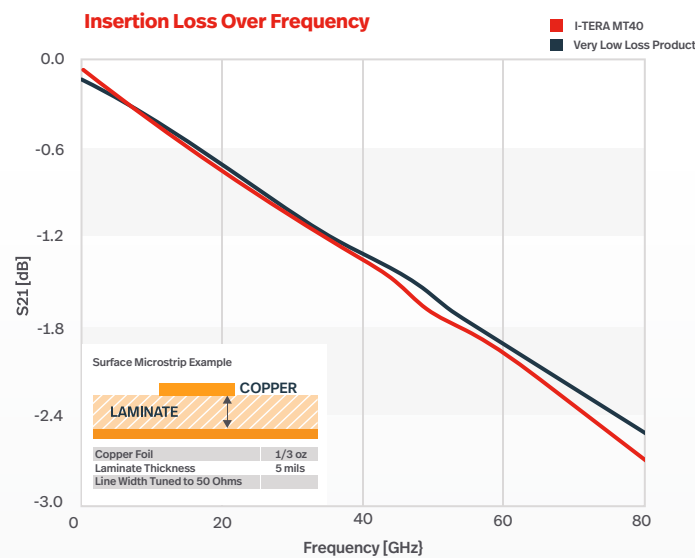
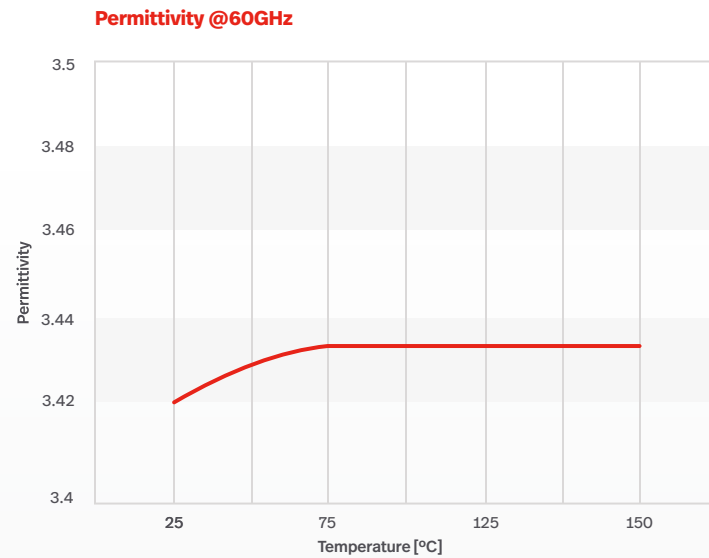
I-Tera® MT40 laminate materials exhibit exceptional electrical properties which are very stable over a broad frequency and temperature range.

I-Tera® MT40 is suitable for many of today's high speed digital and RF/microwave printed circuit designs. I-Tera MT40 features a dielectric constant (Dk) that is stable between -40°C and +140°C up to W-band frequencies. In addition, I-Tera MT40 offers a very low dissipation factor (Df) of 0.0028 - 0.0035 making it a cost effective alternative to PTFE and other commercial microwave and high-speed digital laminate materials.

I-Tera MT40 laminate materials are currently being offered in both laminate and prepreg form in typical thicknesses and standard panel sizes. This provides a complete materials solution package for high-speed digital multilayer, hybrid, RF/microwave, multilayer and double-sided printed circuit designs. I-Tera MT40 does not require any special through hole treatments commonly needed when processing PTFE-based laminate materials.

## PRODUCT AVAILABILITY

- Standard Material Offering: Laminate**
- 10, 20, 30, 60 mil (0.25, 0.51, 0.76, 1.5 mm)
- Copper Foil Type**
- HTE Grade 3
  - HVLP (VLP2)  $\leq 2.5$  micron Rz JIS
  - RTF (Reverse Treat Foil)
  - Embedded resistor foil
- Copper Weight**
- $\frac{1}{2}$  to 2 oz (18,35 and 70  $\mu\text{m}$ ) is standard
  - Thinner copper foil available
- Glass Fabric Availability**
- Square weave glass
  - Mechanically spread glass



Tg	Td	T-260	T-288	Dk		Df		TYPICAL PEEL STRENGTH (HTE)	MOISTURE ABSORPTION	UL	CTI
°C	°C	min	min	2GHz	10GHz	2GHz	10GHz	LB/IN	%	RTI °C	UL CLASS
215	360	$\geq 60$	$\geq 60$	3.38 to 3.75	3.38 to 3.75	0.0028 to 0.0035	0.0028 to 0.0035	5.70	0.100	130	3

## MARKETS



## ATTRIBUTES



# TERRAGREEN® (RF/MW)

Very Low Loss Laminate



TerraGreen® laminate materials exhibit exceptional electrical properties which are very stable over a broad frequency and temperature range.

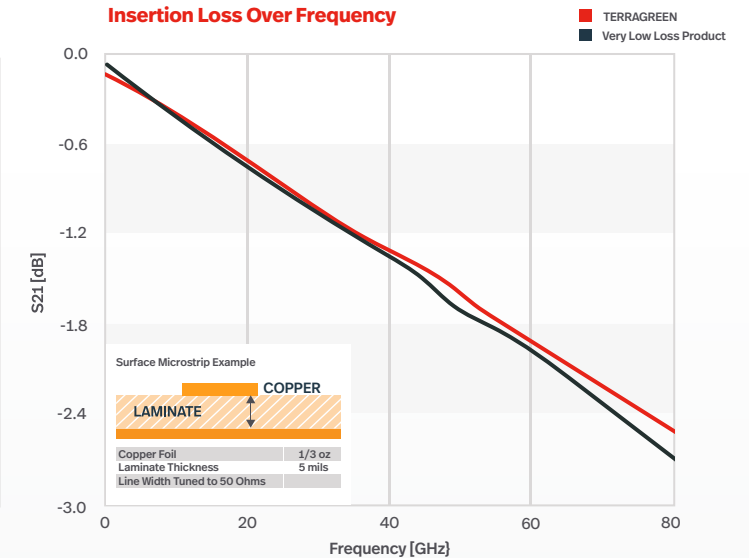
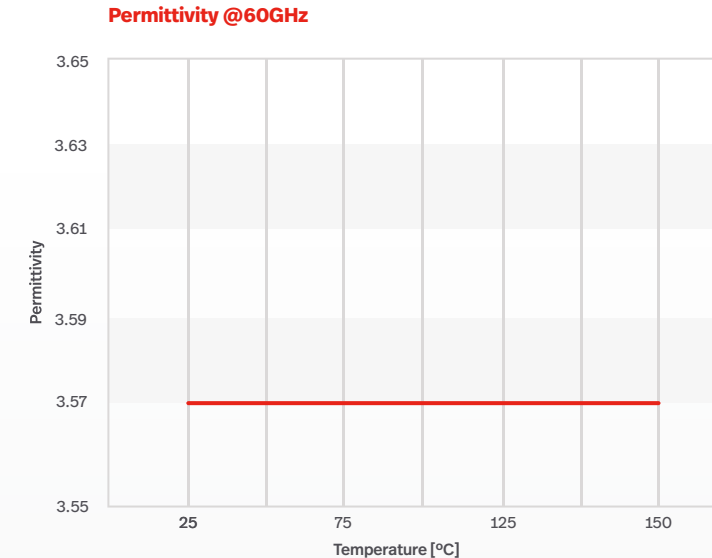
TerraGreen® is engineered for such high performance applications as power amplifier boards for LTE base stations, internet infrastructure and cloud computing. TerraGreen® features a Dielectric Constant (Dk) that is stable between -55°C and 125°C, up to to W-band.

TerraGreen is a lead-free assembly material and is easy to process. This high performance material utilizes a short-lamination cycle; the product is easy to drill, does not require plasma desmear, and the prepreg shelf life is similar to FR-4 materials. TerraGreen® is suitable for high-layer count, high-speed digital backplanes and is compatible with Isola's FR-4 materials for hybrid designs.

TerraGreen® meets UL 94 V-0 and is halogen free.

## PRODUCT AVAILABILITY

- Standard Material Offering: Laminate**
- 10, 20, 30, 60 mil (0.25, 0.51, 0.76, 1.5 mm)
- Copper Foil Type**
- HTE Grade 3
  - HVLP (VLP2)  $\leq 2.5$  micron Rz JIS
- Copper Weight**
- $\frac{1}{2}$  to 2 oz (18,35 and 70  $\mu\text{m}$ ) is standard
  - Thinner copper foil available
- Glass Fabric Availability**
- Square weave glass
  - Mechanically spread glass



Tg	Td	T-260	T-288	Dk		Df		TYPICAL PEEL STRENGTH	MOISTURE ABSORPTION	UL	CTI
°C	°C	min	min	2GHz	10GHz	2GHz	10GHz	LB/IN	%	RTI °C	UL CLASS
200	390	$\geq 60$	$\geq 60$	3.45	3.45	0.0032	0.0032	5.00	0.050	130	2

## MARKETS



## ATTRIBUTES





# HIGH THERMAL RELIABILITY

Thermal reliability requirements can be separated into two categories. The first involves survival of a PCB through assembly without defects such as blisters or delamination. The second category involves thermal reliability in the operating environment over a product's lifetime. Both types of thermal reliability are critical.

## IS550H

### High Reliability Laminate and Prepreg

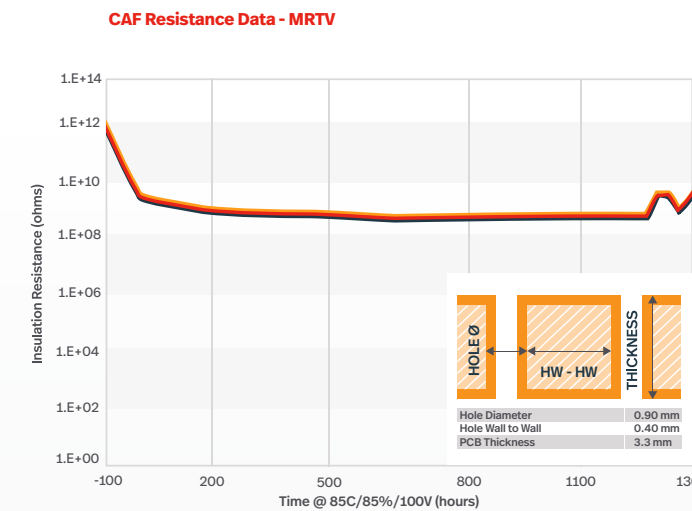
IS550H is our Halogen Free laminate solution for high power & voltage applications that require extreme thermal stability.



#### PRODUCT AVAILABILITY

- Standard Material Offering: Laminate**
  - 2 to 60 mil (0.05 to 1.5 mm)
- Copper Foil Type**
  - HTE Grade 3
  - RTF (Reverse Treat Foil)
- Copper Weight**
  - 1/2 to 2 oz (18,35 and 70 μm) is standard
  - Heavier copper available
- Standard Material Offering: Prepreg**
  - Tooling of prepreg panels
  - Moisture barrier packaging
- Glass Fabric Availability**
  - E-glass
  - Square weave glass
  - Mechanically spread glass

IS550H was developed in conjunction with a consortium of industry experts for high power & high voltage applications and PEV & HEV automotive electrification. The resulting solution addresses critical application needs for use in a harsh environment where very demanding, long term thermal reliability performance, extreme thermal cycling and very high voltage CAF & electro-migration resistance are required.



Tg	Td	T-260	T-288	Dk		Df		TYPICAL PEEL STRENGTH (HTE)	MOISTURE ABSORPTION	UL	CTI
°C	°C	min	min	2GHz	10GHz	2GHz	10GHz	LB/IN	%	RTI °C	UL CLASS
200	400	>60	>60	4.50	4.43	0.014	0.0160	8.20	0.25	150	3

#### MARKETS



#### ATTRIBUTES



# 370HR

Industry Leading Epoxy Laminate and Prepreg

370HR is the industry's "best in class" lead-free compatible product for high-reliability applications across a wide range of markets.



# GLOBAL NETWORK

**PRODUCT AVAILABILITY**

**Standard Material Offering: Laminate**

- 2 to 125 mil (0.05 to 3.2 mm)

**Copper Foil Type**

- HTE Grade 3
- RTF (Reverse Treat Foil)
- Embedded resistor foil

**Copper Weight**

- ½ to 2 oz (18,35 and 70 µm) is standard
- Heavier copper available
- Thinner copper foil available

**Standard Material Offering: Prepreg**

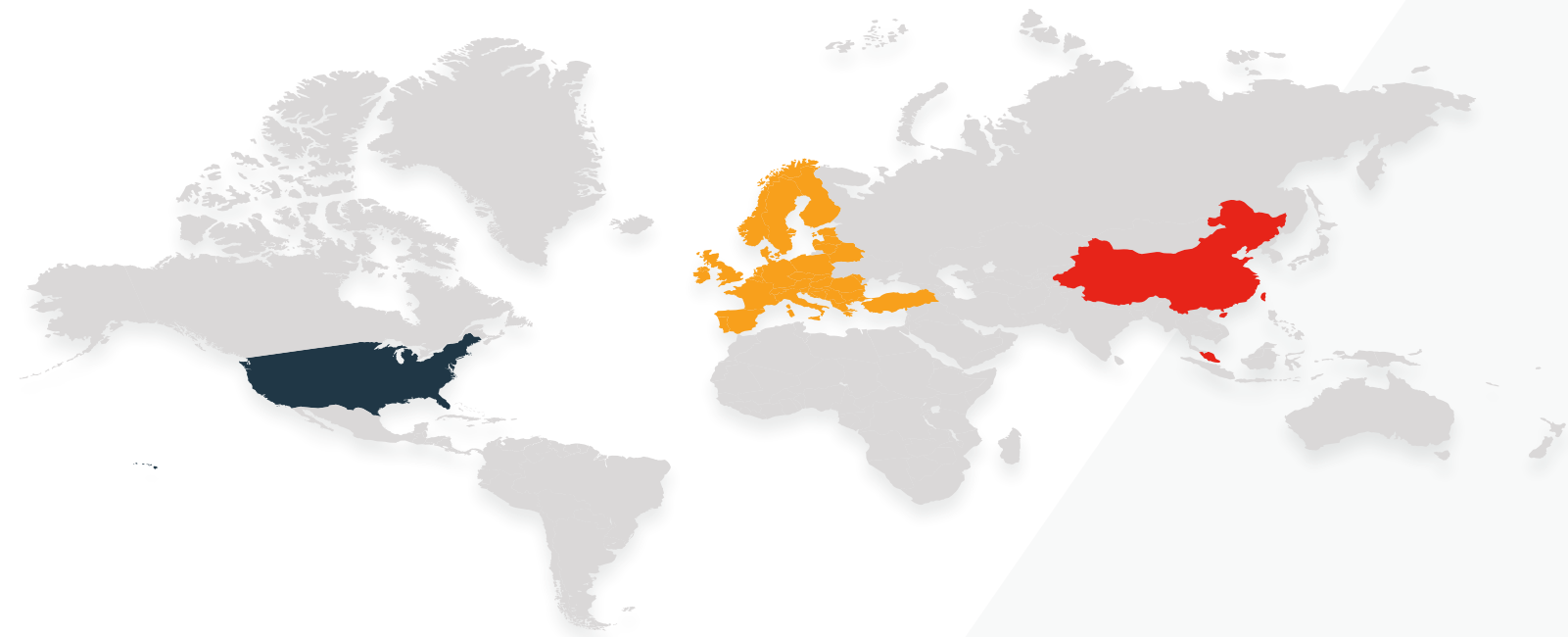
- Tooling of prepreg panels
- Moisture barrier packaging

**Glass Fabric Availability**

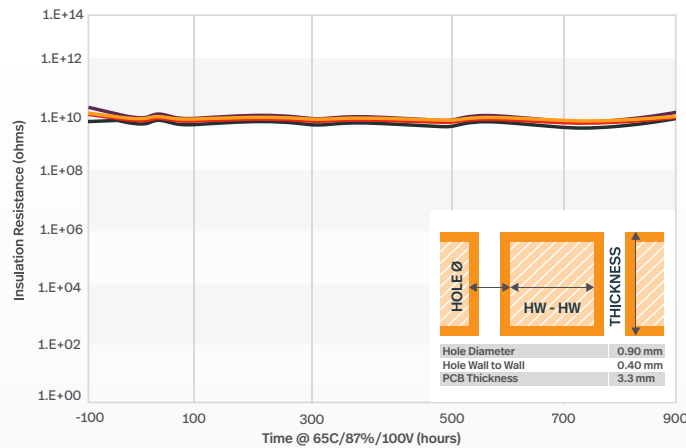
- E-glass
- Square weave glass
- Mechanically spread glass

370HR laminates and prepregs, designed by Polyclad, are made using a patented high performance 180°C Tg FR-4 multifunctional epoxy resin system that is designed for multilayer Printed Wiring Board (PWB) applications where maximum thermal performance and reliability are required. We manufacture 370HR laminates and prepregs with high quality E-glass glass fabric for superior Conductive Anodic Filament (CAF) resistance. 370HR provides superior thermal performance with low Coefficient of Thermal Expansion (CTE) and the mechanical, chemical and moisture resistance properties that equal or exceed the performance of traditional FR-4 materials.

370HR is used in thousands of PWB designs and has proven to be best in class for thermal reliability, CAF performance, ease of processing and proven performance on sequential lamination designs.



CAF Resistance Data - MRTV



Tg	Td	T-260	T-288	Dk		Df		TYPICAL PEEL STRENGTH (HTE)	MOISTURE ABSORPTION	UL	CTI
°C	°C	min	min	2GHz	10GHz	2GHz	10GHz	LB/IN	%	RTI °C	UL CLASS
180	340	60	30	4.04	3.92	0.021	0.025	7.00	0.15	130	3

Whether you're just figuring out what you need or you're ready to start building, we're here to collaborate and get your product to market fast.

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**OUR REACH**

**3 GLOBAL HEADQUARTERS**

**3 RESEARCH LABORATORIES**

**7 MANUFACTURING FACILITIES**

**MARKETS**



**ATTRIBUTES**



**LEGACY**

**IS410**  
Lead Free, High Tg Epoxy Laminate and Prepreg

Tg: 180°C Dk: 3.97  
Td: 350°C Df: 0.020

**DE104**  
Standard Tg Laminate and Prepreg

Tg: 135°C Dk: 4.37  
Td: 315°C Df: 0.022

**IS680**  
Very Low Loss Material

Tg: 200°C Dk: 2.80-3.45  
Td: 360°C Df: 0.0025-0.0035

**185HR**  
Standard Loss, Thermally Robust Epoxy Laminate and Prepreg

Tg: 180°C Dk: 4.01  
Td: 340°C Df: 0.020

**IS400**  
Lead Free, Mid Tg Epoxy Laminate and Prepreg

Tg: 150°C Dk: 3.90  
Td: 330°C Df: 0.022

**NO FLOW**

**FR406N**  
No-Flo® and Lo-Flo® Specialty Prepreg

Tg: 170°C Dk: 4.3  
Td: 300°C Df: 0.025

**P25N**  
Polyimide UL HB No Flow Prepreg

Tg: 250°C Dk: 3.67  
Td: 383°C Df: 0.018

**IS680AG**  
Very Low Loss Material

Tg: 200°C Dk: 3.00/3.38/3.45/3.48  
Td: 360°C Df: 0.0020 - 0.0029

**IS550H**  
Low CTE, Very High Thermal Reliability Laminate and Prepreg

Tg: 200°C Dk: 4.43  
Td: 400°C Df: 0.016

**370HR**  
Standard Loss, Thermally Robust Epoxy Laminate and Prepreg

Tg: 180°C Dk: 4.04  
Td: 340°C Df: 0.021

**HIGH TEMPERATURE**

**P95/P25**  
Polyimide UL HB Laminate and Prepreg

Tg: 260°C Dk: 3.76  
Td: 416°C Df: 0.017

**P96/26**  
Polyimide UL V-0 Laminate and Prepreg

Tg: 260°C Dk: 3.76  
Td: 396°C Df: 0.017

**TERRAGREEN® (RF/MW)**  
Very Low Loss Material

Tg: 200°C Dk: 3.45  
Td: 390°C Df: 0.0032

**I-SPEED®**  
Low Loss, Epoxy Laminate and Prepreg

Tg: 180°C Dk: 3.64  
Td: 360°C Df: 0.0060

**FR408HR**  
Lead Free, Mid Loss Laminate and Prepreg

Tg: 190°C Dk: 3.68  
Td: 360°C Df: 0.0092

# LAMINATES & PREPREGS

**I-TERA® MT40 (RF/MW)**  
Very Low Loss Material

Tg: 215°C Dk: 3.38/3.45/3.60/3.75  
Td: 360°C Df: 0.0028 - 0.0035

**I-TERA® MT40**  
Very Low Loss Laminate and Prepreg

Tg: 215°C Dk: 3.45  
Td: 360°C Df: 0.0031

**TERRAGREEN®**  
Very Low Loss Laminate and Prepreg

Tg: 200°C Dk: 3.44  
Td: 390°C Df: 0.0032

**ASTRA® MT77**  
Ultra Low Loss, RF/MW Laminate and Prepreg

Tg: 200°C Dk: 3.00  
Td: 360°C Df: 0.0017

**TACHYON® 100G**  
Very Low Loss Laminate and Prepreg

Tg: 215°C Dk: 3.02  
Td: 360°C Df: 0.0021

**TERRAGREEN® 400G**  
Extremely Low Loss Laminate and Prepreg

Tg: 200°C Dk: 3.10  
Td: 380°C Df: 0.0018



**ATTRIBUTES**

		HALOGEN FREE				Dk		Df		TYPICAL PEEL STRENGTHS	MOISTURE ABSORPTION	UL RTI °C	CTI
		Tg °C	Td °C	T-260 min	T-288 min	2GHz	10GHz	2GHz	10GHz				
RF/MICROWAVE	IS680	200	360	≥60	≥60	2.80 to 3.45	2.80 to 3.45	0.0025 to 0.0035	0.0025 to 0.0035	4.01	0.100%	110	2
	IS680 AG	200	360	≥60	≥60	3.00 to 3.45	3.00 to 3.45	0.0020 to 0.0029	0.0020 to 0.0029	4.01	0.100%	110	2
	I-TERA® MT40 (RF/MW)	215	360	≥60	≥60	3.38 to 3.75	3.38 to 3.75	0.0028 to 0.0035	0.0028 to 0.0035	5.70	0.100%	130	3
	TERRAGREEN® (RF/MW)	200	390	≥60	≥60	3.45	3.45	0.0032	0.0032	5.00	0.050%	130	2
HIGH SPEED DIGITAL	ASTRA® MT77	200	360	≥60	≥60	3.00	3.00	0.0017	0.0017	5.70	0.100%	130	3
	IS415	200	370	60	>20	3.72	3.71	0.0120	0.0125	7.00	0.150%	130	1
	FR408HR	190	360	≥60	>30	3.68	3.65	0.0092	0.0095	5.50	0.061%	130	2
	I-SPEED®	180	360	>60	≥60	3.64	3.63	0.0059	0.0060	5.50	0.061%	130	2
	TERRAGREEN®	200	390	≥60	≥60	3.44	3.44	0.0032	0.0032	5.00	0.050%	130	2
	I-TERA® MT40	215	360	≥60	≥60	3.45	3.45	0.0031	0.0031	5.70	0.100%	130	3
THERMAL RELIABLE	TACHYON® 100G	215	360	≥60	≥60	3.04	3.02	0.0021	0.0021	4.50	0.100%	130	3
	TERRAGREEN® 400G	200	380	≥60	≥60	3.10	3.10	0.0018	0.0018	4.10	0.100%	140	2
	IS400	150	330	>60	>10	3.90	3.80	0.0210	0.0260	9.00	0.180%	130	3
	185HR	180	340	60	>15	4.01	3.88	0.0200	0.0236	4.50	0.150%	130	3
SPECIALTY PRODUCTS	370HR	180	340	60	≥30	4.04	3.92	0.0210	0.0250	7.00	0.150%	130	3
	IS550H	200	400	>60	>60	4.50	4.43	0.014	0.0160	8.20	0.250%	150	3
	P95/P25	260	416	≥60	≥60	3.76	3.76	0.0179	0.0210	7.00	0.500%	140	2
	P96/P26	260	396	≥60	≥60	3.76	3.76	0.0179	0.0210	7.00	0.500%	140	4

THERMAL RELIABILITY

HIGH SPEED DIGITAL

RF / MICROWAVE

Isola high-performance laminate products feature proprietary resin formulations that are engineered to meet your design specifications and exceed your expectations.

ACCORDING TO **IPC-4101**

		/40	/41	/97	/98	/99	/101	/102	/126	/129	/134	/140
THERMAL RELIABLE	IS400			●	●	●	●					
	185HR				●	●	●		●			
	370HR				●	●	●		●			
	IS550H										●	
HIGH SPEED DIGITAL	IS415				●	●	●		●			
	FR408HR				●	●	●		●			
	I-SPEED®				●	●	●		●			
	I-TERA® MT40							●				
	TACHYON® 100G							●				
SPECIALTY PRODUCTS	TERRAGREEN® 400G										●	
	P95/P25	●	●									
	P96/P26	●	●									

ACCORDING TO **IPC-4103**

		/17
HIGH SPEED DIGITAL	TERRAGREEN®	●
	I-TERA® MT40	●
	TACHYON® 100G	●
RF/MICROWAVE	IS680	●
	IS680 AG	●
	TERRAGREEN® (RF/MW)	●
	I-TERA® MT40 (RF/MW)	●
	ASTRA® MT77	●

# HIGH PERFORMANCE LAMINATE & PREPREG MATERIALS FOR PCB MANUFACTURING





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**Revisions:**

A: Initial release - 1/23