



# TerraGreen® 400GNL2

## Halogen-free, Extremely Low Loss Material

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 and computing applications. Our novel resin system has been engineered for high data rates with excellent cost for loss performance.

TerraGreen® 400G is lead free compatible and can be processed utilizing standard PCB equipment and processing steps.

TerraGreen® 400G meets UL 94 V-0 and is halogen free.

### ORDERING INFORMATION:

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

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## Data Sheet

Tg 210°C

Td 400°C

Dk 3.05

Df 0.0018

UL - TBD

Last Updated April 22, 2020  
Revision No: A

## Product Features

- Industry Recognition
  - UL File Number: E41625
- Performance Attributes
  - CAF resistant
  - Lead-free assembly compatible
  - Halogen free
  - 0.8 mm pitch capable
  - 6x 260°C reflow capable
- Processing Advantages
  - FR-4 process compatible
  - Excellent fill and flow for heavy copper

## Product Availability

- Standard Material Offering: Laminate
  - 2 to 18 mil (0.05 to 0.46 mm)
- Copper Foil Type
  - VLP-1 (1 micron), 1 oz and below
  - VLP-2 (2 micron), 1 oz and below
- Copper Weight
  - ½, 1 oz (18 and 35 µm) available
  - Heavier copper available
  - Thinner copper foil available
- Standard Material Offering: Prepreg
  - Tooling of prepreg panels
- Glass Fabric Availability
  - E-glass
  - Low Dk glass
  - Very Low Dk glass
  - Square weave glass
  - Mechanically spread glass

# TerraGreen® 400GNL2 Typical Values

Last Updated Apr 22, 2020

Property		Typical Value	Units	Test Method
			Metric (English)	IPC-TM-650 (or as noted)
Glass Transition Temperature (Tg) by DMA		210	°C	2.4.24.4
Glass Transition Temperature (Tg) by TMA		180	°C	2.4.24C
Decomposition Temperature (Td) by TGA @ 5% weight loss		400	°C	2.4.24.6
Time to Delaminate by TMA (Copper removed)	T288	60+	Minutes	2.4.24.1
Z-Axis CTE	50 to 260°C, (Total Expansion)	2.8 *	%	2.4.24C
X/Y-Axis CTE	Pre-Tg	12 *	ppm/°C	2.4.24C
Thermal Stress 10 sec @ 288°C (550.4°F)	A. Unetched B. Etched	Pass	Pass Visual	2.4.13.1
Dk, Permittivity	@ 10 GHz	3.05	—	Bereskin Stripline
Df, Loss Tangent	@ 10 GHz	0.0018	—	Bereskin Stripline
Peel Strength	Low profile copper foil and very low profile copper foil all copper foil >17 µm [0.669 mil]	0.65 (3.9)	N/mm (lb/inch)	2.4.8C
Flammability (Laminate & laminated prepreg)		V-0	Rating	UL 94
Relative Thermal Index (RTI)		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.

[172.18.64.23/products/all-printed-circuit-materials/terragreen-400g-copy-2/](https://www.isola.com/172.18.64.23/products/all-printed-circuit-materials/terragreen-400g-copy-2/)

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## NOTE

### Notes:

**All data is preliminary and subject to change**

**\* Data was developed using 55% RC rigid laminate**

Revisions:

A: Preliminary Release