

Anteo™ Laminates

Anteo™ laminates, designed with a dielectric constant (Dk) to match that of FR-4, offer a more cost-effective solution without compromising on performance. Despite their lower cost, these laminates retain the tight Dk and thickness tolerances required to cater to the burgeoning needs of the wireless market, typically addressed by more expensive FR-4 materials.

As the demand for wireless data skyrockets, mobile network capacity and performance need to keep pace. Traditional FR-4 materials, while suitable for less demanding RF applications, have occasionally fallen short due to evolving wireless infrastructure and escalating performance demands, particularly in small cells and carrier-grade Wi-Fi. This has can lead to RF performance inconsistencies and inadequacies.

With Anteo laminates, wireless circuit designers are poised for a breakthrough. These materials match the performance of mid-tier circuit materials, extending past the constraints of FR-4 and providing an optimal balance of cost, performance, and reliability. Moreover, Anteo laminates are designed to be fabricated using standard epoxy/glass (FR-4) processes, aligning with conventional bondplies.

In terms of compliance, Anteo laminates leverage RoHS-compliant flame-retardant technology to achieve a UL 94 V-0 flame retardant rating. Additionally, they are compatible with lead-free solder processes. Adhering to the requirements of IPC-4103B, slash sheet /250, these materials promise robust compliance with industry standards while offering a more affordable alternative.



Features and Benefits:

Glass Reinforced Hydrocarbon Thermoset Platform

- Ease of PCB manufacturing and assembly in line with FR-4

Dk Tailored to FR-4 Industry Standard Norms

- Anteo L43 laminate has a Dk of 4.38 for ease of transition when upgraded electrical performance is needed over FR-4

Tighter Dk and Thickness Tolerance than FR-4

- Consistent circuit performance

Low Z Axis CTE and High Tg

- Improved design flexibility, PTH reliability
- Automated assembly compatible

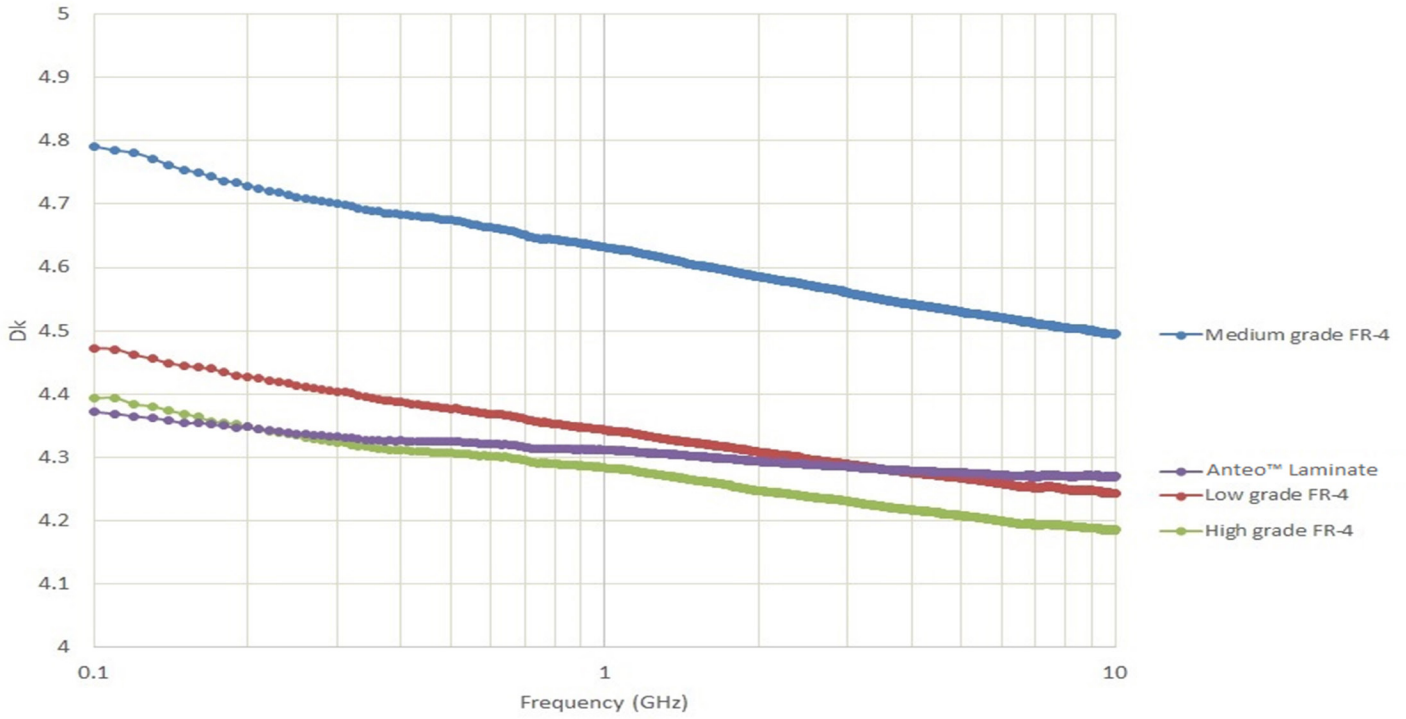
Flame Retardant Laminate

- UL 94 V-0

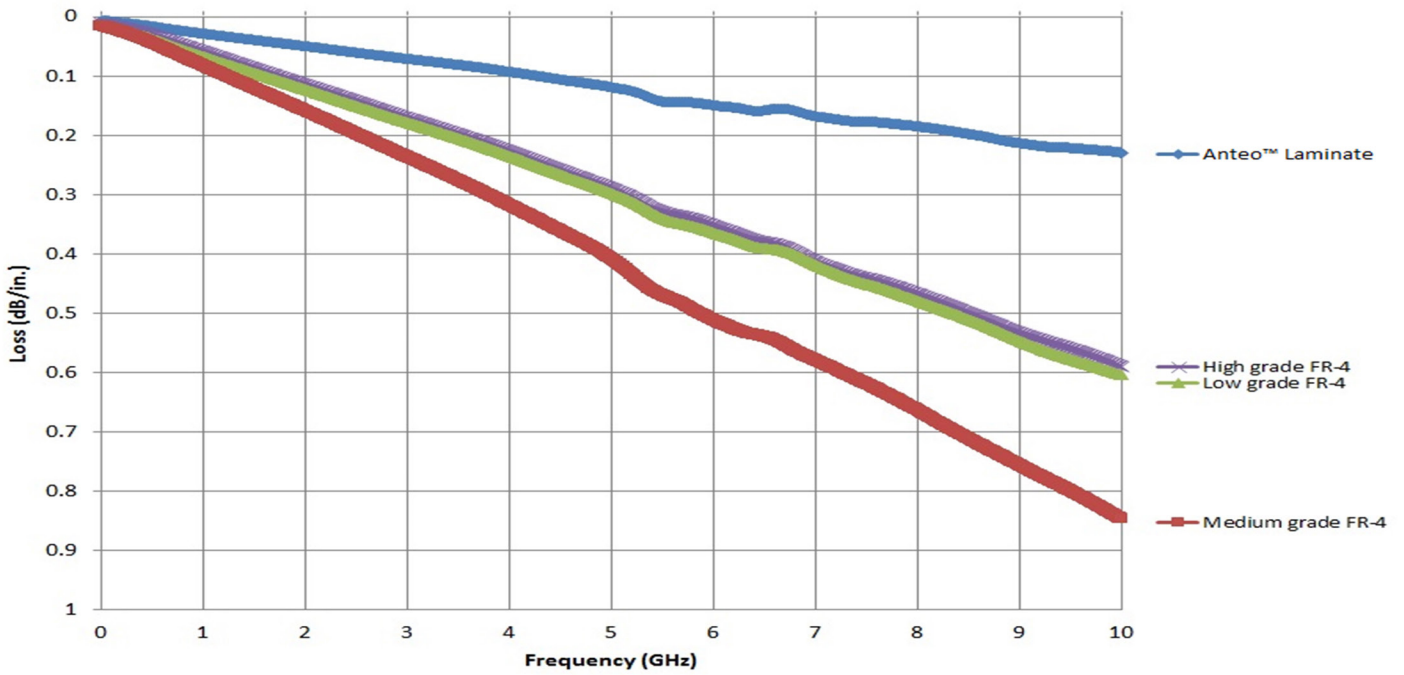
Typical Applications:

- GPS Antennas
- Wifi Antennas
- Vehicle to Vehicle/Vehicle to Infrastructure Communications (V2X)
- Internet of Things (IoT) Segments: Smart Home and Wireless Meters

Microstrip differential phase length method, Dk vs. Frequency using 30mil thick circuit materials



Microstrip Insertion Loss, Differential Length Method Using 30mil thick circuit materials



Property	Typical Value Anteo L43 Laminate [1]	Direction	Units	Condition	Test Method
^[3] Dielectric Constant, ϵ_r Design	4.38 ^[2]	Z	-	2.5 GHz	Differential Phase Length Method
Dissipation Factor \tan, δ	0.005	Z	-	10 GHz/23°C	IPC-TM-650 2.5.5.5
Thermal Coefficient of Dielectric Constant ϵ_r	-21	-	ppm/°C	10 GHz (-50 to 150°C)	Modified IPC-TM-650 2.5.5.5
Volume Resistivity	2.9×10^9	-	M Ω ·cm	COND A	IPC-TM-650 2.5.17.1
Surface Resistivity	6.2×10^7	-	M Ω	COND A	IPC-TM-650 2.5.17.1
Electrical Strength	675	Z	V/mil	-	IPC-TM-650 2.5.6.2
Tensile Strength	16 12	MD CMD	kpsi	-	ASTM D3039/D3039-14
Flexural Strength	25 19	MD CMD	kpsi	-	IPC-TM-650 2.4.4
Dimensional Stability	-0.48 -0.59	MD CMD	mm/m	-	IPC-TM-650 2.4.39a
Coefficient of Thermal Expansion	13	X	ppm/°C	-55 to 288°C	IPC-TM-650 2.4.41
	16	Y			
	42	Z			
Thermal Conductivity	0.64	Z	W/(m·K)	80°C	ASTM D5470
Time to Delamination (T288)	>60	-	minutes	288°C	IPC-TM-650 2.4.24.1
Tg	>280	-	°C TMA	-	IPC-TM-650 2.4.24.3
Td	414	-	°C	-	IPC-TM-650 2.3.40
Moisture Absorption	0.07	-	%	24/23	IPC-TM-650 2.6.2.1
Copper Peel Strength After Thermal Stress	5.3	-	lbs/in	1 oz (35 μ m) foil	IPC-TM-650 2.4.8
Flammability	V-0	-	-	-	UL 94
Lead-Free Process Compatible	Yes	-	-	-	

NOTES:

[1] Typical values are a representation of an average value for the population of the property. For specification values contact Rogers Corporation.

[2] Dielectric Constant using stripline method IPC-TM-650 2.5.5.5 at 10 GHz is 4.07 +/- 0.08 for Rogers' internal Q.A. testing

[3] The design Dk is an average number from several different tested lots of material and on the most common thickness/s. If more detailed information is required please contact Rogers Corporation.

Standard Thicknesses	Standard Panel Sizes:	Standard Cladding
0.020" (0.508 mm) +/- 0.0015"	24" X 18" (610 X 457 mm)	Electrodeposited Copper Foil ½ oz. (18 μ m) 1 oz. (35 μ m)
0.030" (0.762 mm) +/- 0.002"	48" X 36" (1219 X 915 mm)	
0.040" (1.016 mm) +/- 0.003"		
0.060" (1.524 mm) +/- 0.004"	*Additional panel sizes available	
0.090" (2.286 mm) +/- 0.004"		
0.120" (3.048 mm) +/- 0.006"		

*Contact Customer Service or Sales Engineering to inquire about additional available product configurations

The information in this data sheet is intended to assist you in designing with Rogers' circuit materials. It is not intended to and does not create any warranties express or implied, including any warranty of merchantability or fitness for a particular purpose or that the results shown on this data sheet will be achieved by a user for a particular purpose. The user should determine the suitability of Rogers' circuit materials for each application.

Prolonged exposure in an oxidative environment may cause changes to the dielectric properties of hydrocarbon based materials. The rate of change increases at higher temperatures and is highly dependent on the circuit design. Although Rogers' high frequency materials have been used successfully in innumerable applications and reports of oxidation resulting in performance problems are extremely rare, Rogers recommends that the customer evaluate each material and design combination to determine fitness for use over the entire life of the end product.

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