

## PTFE/Woven Fiberglass/Ceramic Filled Laminate for Commercial, Low Cost Antenna Applications

### Features:

- Low Loss Ceramic Filled PTFE
- 100% Dielectric Constant conformance Testing for 18" x 24" Panels
- Designed for thicker (>0.060") patch antenna applications

### Benefits:

- Superior cost optimized product for commercial antenna applications
- Multiple antennas per panel (reduced edge trim waste) provides higher degree of material utilization

### Typical Applications:

- Applications Requiring Low Loss and Miniaturization
- Satellite Radio Antennas, DAB Antennas, Telemetry Antennas
- GPS Antennas
- Multimedia Transmission Systems
- Hand held radio and communication systems

Arlon's AD600A is a woven fiberglass reinforced, ceramic filled, PTFE-based composite for use as a printed circuit board substrate. AD600A is designed to provide a cost optimized, thick dielectric while also providing low dielectric loss and insertion loss. AD600A is especially designed to tackle thicker (>0.060") laminate applications which require a lower priced material to achieve success. AD600A is well suited for applications which require lower losses that result in higher Antenna Gains/Efficiencies and for patch antennas that require greater thickness to achieve bandwidth requirements.

100% of all 18" x 24" panels are tested for dielectric constant conformance via IPC TM-650 2.5.5.6, Full Sheet Resonance Test (FSR) to insure higher circuit yields. Statistical data and specific serialized panel dielectric constant is collected and is available upon request.

The electrical properties of AD600A are highly desired in applications where higher frequency and expectations for increased fidelity with broadband signals are beyond the performance capabilities of cheaply designed PTFE/ceramic/glass composites that have a very high glass content, products that have a high dielectric constant sensitivity with temperature or PTFE/ceramic chemistries that are lack reinforcement and do not enjoy the dimensional stability or mechanical robustness or dielectric constant consistency of a coated woven glass mechanical membrane.

AD600A is a "soft substrate" and irrelatively insensitive to stress from vibration. This gives RF designers the advantage of low loss, without sacrificing mechanical robustness required to fulfill the needs of shock, drop and impact testing requirements of electronics.



## Typical Properties: AD600A

Property	Test Method	Condition	Result
Dielectric Constant (10 GHz)	IPC TM-650 2.5.5.5	C23/50	6.15
Dissipation Factor (10 GHz) Dissipation Factor (1.8 GHz)	IPC TM-650 2.5.5.5 DM-185-AR	C23/50 C23/50	0.0031 0.0025
Thermal Coefficient of $\epsilon_r$ (ppm/°C)	IPC TM-650 2.5.5.5 Adapted	-50°C to +140°C	-230
Density (g/cm <sup>3</sup> )	ASTM D-792 Method A	A, 23°C	2.90
Water Absorption (%)	IPC TM-650 2.6.2.1	E1/105 + D24/23	0.05
Coefficient of Thermal Expansion (ppm/°C) X Axis Y Axis Z Axis	IPC TM-650 2.4.24 TMA	0°C to 100°C	10 10 30
Thermal Conductivity (W/mK)	ASTM E-1225	100°C	0.5
Peel Strength (lbs per inch)	IPC TM-650 2.4.8	After thermal stress	12
Outgassing Total Mass Loss (%) Collected Volatile Condensable Material (%) Water Vapor Recovered Visible Condensate ( $\pm$ )	NASA SP-R-0022A Maximum 1.00% Maximum 0.10%	125°C, $\leq 10^{-6}$ torr	Base materials meet outgassing requirements
Flammability	UL 94 Vertical Burn IPC TM-650 2.3.10	C48/23/50, E24/125	Meets requirements of UL94-V0

### **Material Availability:**

AD600A laminate is supplied with 1/2, 1 or 2 ounce electrodeposited copper on both sides.

When requesting samples of AD600A product, please specify thickness, cladding, panel size, and any other special considerations. Panel sizes cut from a master sheet include: 12" x 18", 18" X 24", 16" X 18". Contact Customer Service for other custom panel sizes.

FSR testing of panels is limited to 24" x 36". Special arrangements and a qualification agreement would need to be agreed upon with full size, 36" x 48" sheets.



**TECHNOLOGY ENABLING INNOVATION**

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**CONTACT INFORMATION:**

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For samples, technical assistance, customer service or for more information, please contact Arlon Materials for Electronics Division at the following locations:

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