

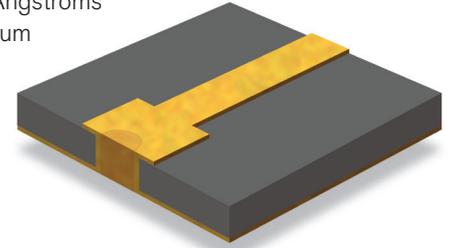
## Product Samples

### ATP1017: Au Solid Filled Via; ATP1017: Cu Solid Filled Via

Applied Thin-Film Products (ATP) is pleased to provide ceramic thin-film samples for your evaluation.

TaN/TiW/Au with solid gold- or copper-filled vias on Aluminum Nitride (AlN). The Au or Cu via is completely filled and polished to provide a planarized surface, providing a low inductance ground path on both sides without venting structures, dissimilar metals or exposed oxides. A filled via can also act as a thermal via or two-sided signal interconnect.

ATP1017, Material is 15 polished AlN  
 TaN Resistors = 50 Ohms per Square  
 TiW = 400–800 Ångströms  
 Au = 120µ" minimum



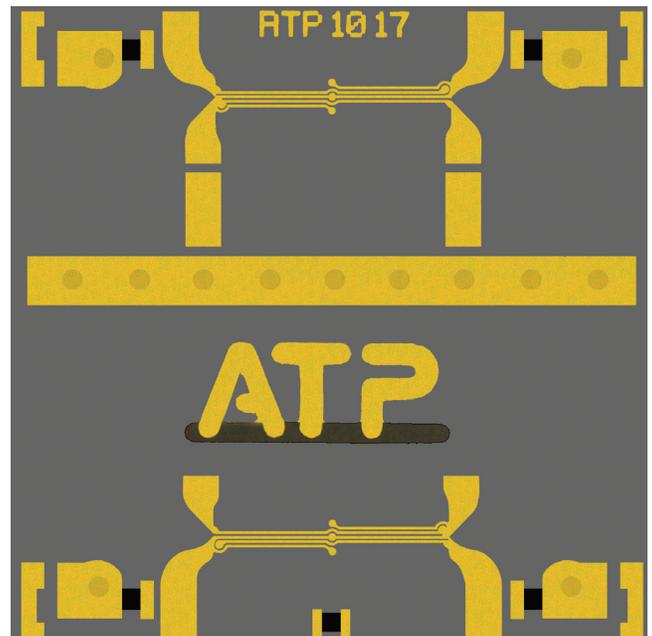
### Material Specifications

#### Aluminum Nitride (Toshiba))

Properties	Values
Chemical Composition	AlN
Purity	98%
Color	Tan
Nominal Density	3.28g/cm
Surface Finish (Polished)	<2.0µ" (50.0nm)
Coefficient of Thermal Expansion (CTE)	4.6 x 10 <sup>-6</sup> (25–300°C)
Camber	0.0003"/0.0005" (7.6/12.7µm)
Thickness	0.015" (0.381mm)
Thickness Tolerance (±)	0.0005" (12.7µm)
Thermal Conductivity	170 Watts/m <sup>2</sup> K
Dielectric Constant 1 MHz	8.6 @ 1 MHz
Dissipation Factor (Loss Tangent)	0.001 @ 1 MHz
Flexural Strength	54K (10 <sup>-3</sup> ) lbs/in <sup>2</sup> (4 pt. bend)
Grain Size	5–7µm

Material Specifications provided by Coors Ceramic Company

### Sample Provided



ATP offers build-to-print service for a wide range of materials and metalization schemes. ATP fabricates circuits on substrates from As-Fired Alumina to Beryllium Oxide to Fused Silica, even Silicon. Metalizations range from the standard TaN/TiW/Au to films including Nickel, Palladium, or Titanium.

At ATP, we constantly evolve our processing and material capabilities to reflect our customer's changing needs. If you have a circuit requirement that is out of the "normal" thin-film type, please contact ATP at 1.510.661.4287 or visit our website at [www.thinfilm.com](http://www.thinfilm.com). ATP would enjoy discussing your application with you and working to develop a solution.