



## **RELIABILITY DATA FOR Platinum Silver (PtAg) FIRED ONTO ALUMINUM NITRIDE (AlN) SUBSTRATE**

### ***METAL ADHESION DATA***

#### **Description**

The data tabulated below depicts typical adhesion data for all IMS resistors with PtAg terminations fired on an aluminum nitride (AlN) substrate. The tables specifically depict the long and short term adhesion strength of PtAg metalization on aluminum nitride. The test pieces are 0.080" X 0.060" PtAg pads fired onto AlN.

#### **Test Method**

The test administered for each set was a pin pull test. The data given shows the force necessary (then calculated as PSI) to remove the metal from the AlN substrate. Two sets of data are shown, one set where the pads were tested at room temp. and a 2<sup>nd</sup> set of data taken after the pads were baked at 150 C for 1000 hrs.

For the pull test, a round headed pin was soldered to each pad and pulled at 90 degrees until the PtAg pad separated from the substrate. Data shown gives the pressure that occurred at failure.

#### **Conclusion**

IMS has been offering resistors on Aluminum Nitride for years now and our efforts in producing the finest quality resistors with high quality metal pastes fired onto AlN prove themselves with the data below. Even after 1000's of hours baked at high temperature our pastes exhibit a remarkable adhesion strength to Aluminum Nitride.



Test Results

**PtAg pull test  
on Aluminum  
Nitride**

room temperature data

test #	Force (lb)	PSI
1	>7.50	1563
2	5.00	1042
3	>7.50	1563
4	3.50	729
5	4.50	938
6	5.50	1146
7	5.00	1042
8	>7.50	1563

ave: 1200 psi =  
8.23 N/mm<sup>2</sup>

after 1000 hr bake at 150 C

test #	Force (lb)	PSI
1	>7.50	1563
2	4.00	833
3	5.50	1146
4	4.00	833
5	5.25	1094
6	>7.50	1563
7	4.00	833
8	4.50	938

ave: 1100 psi =  
7.59 N/mm<sup>2</sup>

