

## Technical Information

# 6410 Platinum/Palladium/Silver Conductor

The platinum/palladium/silver conductor composition 6410 was developed for applications requiring an economical conductor with excellent leach resistance. The performance of this material is comparable to that of most 6:1 Ag:Pd inks, but at a lower cost and with less sensitivity to the fluctuations in the price of palladium. The 6410 can also be used for low temperature resistive element applications. Its TCR is about 1300-1400 ppm/°C. It

does not contain cadmium, lead, nickel, or highly toxic organic solvents. Key features include:

- RoHS Compliant
- Excellent Solder Acceptance and Leach Resistance
- Good Line Resolution
- High Adhesion
- Compatibility with Dielectrics and Resistors

### TYPICAL FIRED FILM CHARACTERISTICS<sup>(1)</sup>

<b>Fired Thickness</b>	11-14 µm
<b>Line Resolution</b>	175/125 µm line/space using 150/150 µm pattern and 325 mesh screen
<b>Resistivity</b>	< 10 milliohms/square at 12 µm fired thickness
<b>Solder Acceptance<sup>(2)</sup></b> 36/62/2 Sn/Pb/Ag, on 96% alumina	~ 100%
<b>Solder Leach Resistance<sup>(3)</sup></b>	> 5 Cycles
<b>Adhesion<sup>(4)</sup></b>	
Initial	24 - 36 N
100 Hours @ 150°C	20 - 30 N

(1) Typical properties are based on testing of several batches under various processing conditions. They are not intended as specification limits.

(2) Nearly 100% coverage of both pads and lines, after a 5-second dip in the solder bath at 225°C +/- 5°C, using Alpha 611 mildly activated flux.

(3) Cycles consist of 10-second dips in a 225°C +/- 5°C solder bath. Each cycle is preceded by dipping in Alpha 611 flux.

(4) The adhesion test consists of attaching 20 AWG tinned copper wire to 2mmx2mm pads, by dipping in 225°C +/- 5°C solder for 5 seconds. The wires are then bent 90 degrees and pulled at constant speed, while a force gauge records the peel strength.

## COMPOSITION PROPERTIES

**Viscosity:**  $150 \pm 30$  Kcps, when measured with Brookfield HBT viscometer, Spindle #14, utility cup, 10 RPM, 25°C

**Specific Gravity:** 3.6 – 4.0 g/cm<sup>3</sup>

**Recommended Thinner:** KOARTAN A-1039

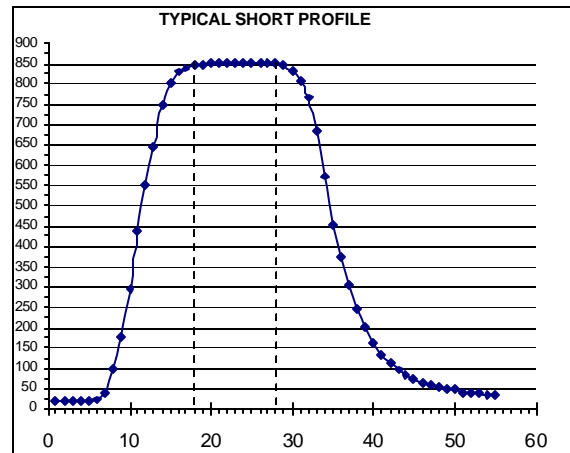
## RECOMMENDED PROCESSING PROCEDURE

**Printing:** Printing with 280 mesh stainless steel screen using 10-15  $\mu\text{m}$  emulsion and 45 degree angle is recommended. Other mesh counts, 200-325, and emulsion thicknesses, 5-25  $\mu\text{m}$ , may be used for special applications. Squeegee speeds of up to 10 inches/sec may be utilized.

Coverage is approximately 70 cm<sup>2</sup>/g, when utilizing 280 mesh screen and a wet print thickness of about 35  $\mu\text{m}$ .

**Drying:** Wet prints should be allowed to level for 5-10 minutes prior to drying. Dry for 10-15 minutes in a convection oven or belt dryer at 125°C -150°C.

**Firing:** Firing in air using a belt furnace and a 36-60 minute profile, with 10 minutes at a peak temperature of 850°C is recommended. Air flow rates must be optimized to ensure that the products of binder burn-off discharge properly and create a fully oxidizing atmosphere in the muffle.



*Temperature (°C) vs. Time (minutes)*

**Storage and Shelf Life:** Store in tightly capped containers at room temperature. Shelf life is 6 months for unopened jars. Under ordinary conditions of storage and use the product should not require thinning. However, solvent loss during extended printing runs may be corrected by incorporating up to 0.5% of Koartan A-1039 thinner.