

## Technical Information

# 6166 Silver Conductor 600°C Firing Composition

The thick film silver 6166 is a solderable composition with good adhesion to alumina and dielectric coated substrates. Its low firing temperature makes ideal as post firing resistor termination and other applications requiring low firing temperatures. It does

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

- High Conductivity
- Good Line Resolution
- High Speed Printing
- Compatibility with Dielectrics and Resistors.

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

<b>Firing Temperature</b>	600°C
<b>Fired Thickness</b>	12-16 µm
<b>Line Resolution</b>	175/125 µm line/space using 150/150 µm pattern and 325 mesh screen
<b>Resistivity</b>	≤ 3.0 milliohms / sq at 12 µm fired thickness
<b>Solder Acceptance<sup>(2)</sup></b> 36/62/2 Sn/Pb/Ag, on 96% alumina	Excellent
<b>Solder Leach Resistance<sup>(3)</sup></b>	1-2 Cycles
<b>Adhesion<sup>(4)</sup></b>	> 22 N

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

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

(3) Cycles consist of 10-second dips in a 225 +/-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 .080"x.080" pads, by dipping in 225 +/-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:** 120-180 Kcps, when measured with Brookfield HBT, Spindle #14, utility cup, 10 RPM, 25°C.

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

**Recommended Thinner:** KOARTAN A-1039

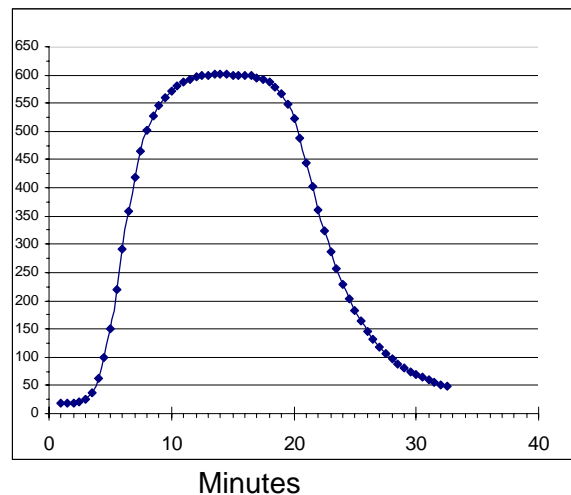
## RECOMMENDED PROCESSING PROCEDURE

**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 60-80 cm<sup>2</sup>, when utilizing 280 mesh screen and a wet print thickness of about 36-40  $\mu\text{m}$ .

**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 30-60 minute profile, with 10 minutes at a peak temperature of 600°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.



**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 replaced by incorporating up to 0.5% of Koartan A-1039 thinner.

The information presented herein is based on data believed to be dependable and is accurate and reliable to the best of our knowledge and belief, but not guaranteed to be so. Koartan Company assumes no liability arising from the use of this product or the information provided herein. Nothing herein is to be construed as recommending any practice or any product in violation of any patent or in violation of any law or regulation.