KOARTAN
MICROELECTRONIC INTERCONNECT MATERIALS

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REV. 110212D

## Technical Information

# 4101 Viafill Gold Conductor Paste

The 4101 viafill gold composition is designed to provide easy and efficient filling of small and large via holes in multilayer dielectrics. Its good flow characteristics make it suitable for filling of small via holes, while its high solids loading and low shrinkage keep it from separating from the walls of larger holes. The 4101 may be co-fired with dielectric. It does not contain cadmium, lead, nickel, or highly toxic organic solvents. Its key features include:

- RoHS Compliant
- High Electrical Conductivity
- High Speed Printing
- Low Shrinkage
- Compatibility with Most Dielectric

## TYPICAL FIRED FILM CHARACTERISTICS(1)

| | |
|---|---|
| **Fired Thickness**(2) Using 325 mesh screen | 12-16 µm |
| **Resistivity**(2) | ≤ 6.00 milliohms / square at 12 µm fired thickness |

(1) Typical properties are based on testing of several batches under various processing conditions. They are not intended as specification limit
(2) Measured on .020" wide lines.

## COMPOSITION PROPERTIES

**Viscosity:** 150 ± 30 Kcps, when measured with Brookfield HBT viscometer, Spindle #14, utility cup, 10 RPM, 25℃.

**Specific Gravity:** 5.4 – 6.0 g/cm³

**Recommended Thinner:** KOARTAN B-1194

## RECOMMENDED PROCESSING PROCEDURE

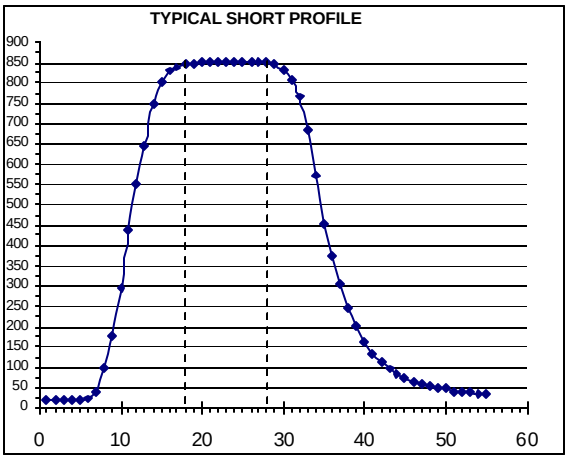
**Printing:** Printing with 325 mesh stainless steel screen using 10-15 µm emulsion and 45 degree angle is recommended. Other mesh counts, 200-280, and emulsion thicknesses, 5-25 µm, may be used for special applications. Squeegee speeds of up to 10 inches/sec may be utilized.

Coverage is approximately 50 $cm^2/g$, when utilizing 325 mesh screen and a wet print thickness of about 35 µm.

**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.

**Application Notes:** The 4101 composition was formulated to have very high solids content, while maintaining good flow characteristics. It is recommended that the top of the fired viafill be slightly higher than the surface of the surrounding dielectric. This is a good practice, leading to more reliable interconnects, particularly in case of "stacked" via connections.




*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 replaced by incorporating up to 0.5% of Koartan B-1194 thinner.