

Technical Information

4129 Cd-Free Pb-Free Gold Conductor

The 4129 is a cadmium and lead free gold conductor designed for applications requiring gold or aluminum wire bonding. Ultra fine spherical gold powder technology provides the 4129 with fine line printing capability with straight line edges. It is also compatible with 5804 and 5807 multilayer dielectrics. Key features include:

- RoHS Compliant
- Cadmium, Lead, Nickel Free
- High Electrical Conductivity
- Good Line Resolution
- High Wire Bond Adhesion
- Compatibility with Dielectrics and Resistors

TYPICAL FIRED FILM CHARACTERISTICS⁽¹⁾

	On 96% Alumina	ON 5807 Dielectric
Fired Thickness	10-14 μm	10-14 μm
Line Resolution	125 μm lines and spaces	175 μm lines and spaces
Resistivity	≤ 5.5 milliohms / square at 12 μm	≤ 6.0 milliohms / square at 12 μm
Wire Bond Adhesion		
1 mil gold wire:		
Initial	≥ 10 grams	≥ 10 grams
1000 Hours @ 150°C	≥ 9 grams	≥ 9 grams
1 mil aluminum wire		
Initial	≥ 11 grams	≥ 11 grams
1 hour @ 300°C	≥ 10 grams	≥ 10 grams

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

COMPOSITION PROPERTIES

Viscosity: 250 - 310 Kcps, when measured with Brookfield HBT viscometer, Spindle #14, utility cup, 10 RPM, 25°C.

Specific Gravity: 5.2 - 5.7 g/cm³

Recommended Thinner: KOARTAN B-1194

RECOMMENDED PROCESSING PROCEDURE

Printing: Printing with 325 mesh stainless steel screen using 10-15 μm emulsion and 22.5 degree angle is recommended. Other mesh counts, 250-400, and emulsion thicknesses, 5-25 μm , may be used for special applications. Squeegee speeds of up to 6 inches/second may be utilized.

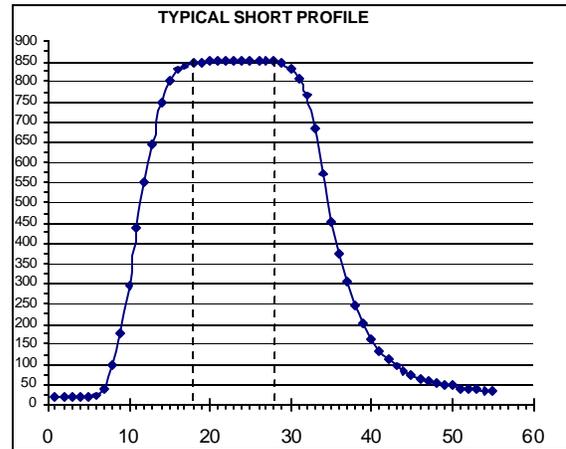
Coverage is approximately 70-80 cm^2/g , when utilizing 325 mesh screen and a wet print thickness of about 35 μm .

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: If not handled properly, thick film gold conductors are prone to blistering. Circuits should be handled using gloves to avoid oily contamination from the fingertips. The rate of temperature rise during firing should not exceed 130°C /minute.

If the 4129 gold is printed on top a silver-bearing viafill conductor, without a barrier layer, the viafill must completely fill the via, and preferably extend slightly higher than the top of the dielectric.



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 B-1194 thinner.

Other System Components:

Dielectric: 5807 (For Gold & Mixed Metal)

Inner Conductor 4129
6120 (Cd, Pb-Free Silver)

Via Fill: 4101 (Cd, Pb-Free Gold)
6101 (Cd, Pb-Free Silver)

Resistor: 7600G Series (Cd-Free)

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. It is the responsibility of the user to verify the information and to establish the suitability of the product(s) for any particular application. 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.