KOARTAN
MICROELECTRONIC INTERCONNECT MATERIALS
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Technical Information

4225 Aluminum Bondable Gold Conductor

The 4225 is an alloyed gold conductor designed for heavy aluminum, as well as gold, wire bonding. Its high adhesion and good wire bonding capability make it suitable for most single and multilayer microcircuit applications. Key features include:

- High Electrical Conductivity
- Good Line Resolution
- High Wire Bond Adhesion
- Compatibility With Dielectrics and Resistors

TYPICAL FIRED FILM CHARACTERISTICS(1)

Fired Thickness	8-11 µm
Line Resolution	175/125 µm line/space using 150/150 µm pattern and 325 mesh screen
Resistivity	≤ 6 Milliohms/square at 10 µm fired thickness
Wire Bond Adhesion	
1 mil gold wire:	
Initial	≥ 9 grams
1000 Hours @ 150℃	≥ 8 grams
10 mil aluminum wire	
Initial	≥ 500 grams
1 hour @ 300℃	≥ 400 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: 280 ± 30 Kcps, when measured with Brookfield HBT viscometer, Spindle #14, utility cup, 10 RPM, 25℃.

Specific Gravity: 5.2 - 5.7 g/cm^3

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, 230-250, and emulsion thicknesses, 5-25 µm, may be used for special applications. Squeegee speeds of up to 6 inches/second may be utilized.

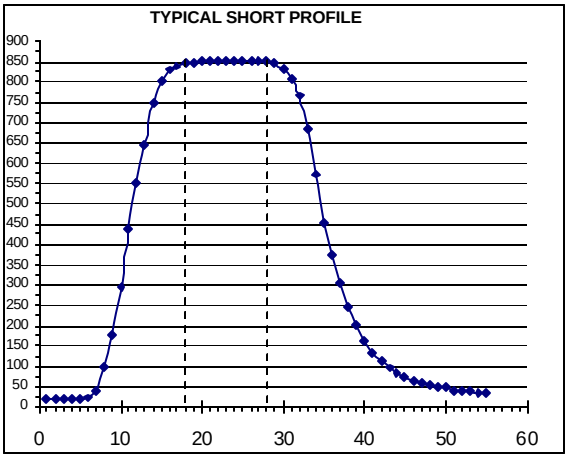
Coverage is approximately 60 cm^2/g, when utilizing 325 mesh screen and a wet print thickness of about 35 µm.

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 4225 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 (Gold & Mixed Metal) 5804 (Gold Only)
Inner Conductor	4100, 4171, 4150QJ (Gold) 6120 (Silver)
Via Fill:	4101 (Gold) 6101 (Ag)
Top Conductor	4225, 4100 (Au bondable gold) 4496 (Solderable gold) 6261 (Ag:Pd)
Resistor:	7600D, 7600 DG Series