KOARTAN
MICROELECTRONIC INTERCONNECT MATERIALS
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REV. 110212K

Technical Information

4586 Thin-Print Solderable Gold Conductor

The gold paste composition 4586 was designed to provide a very economical solderable conductor for applications in which a higher resistivity can be tolerated. Alternatively, two layers of this material may be utilized to obtain a competitive performance at considerably thinner prints than standard solderable gold pastes. The 4586 fired film properties are rather insensitive to furnace profile. Key features include:

- Good Solder Acceptance and Leach Resistance, Sn/Pb 63/37 and Sn/Pb/Ag 62/36/2
- High Adhesion
- TCR 400-500 ppm/°C
- Compatibility with Dielectrics and Resistors

TYPICAL FIRED FILM CHARACTERISTICS(1)

	ON ALUMINA	ON 5807 DIELECTRIC
Fired Thickness		
1 P/D/F, 250 mesh	6-7 µm	6-7 µm
2 P/D/F, 325 mesh	10-12 µm	10-12 µm
Resistivity		
1 P/D/F, milliohm/square at 6 µm fired thickness	200-240	200-240
2 P/D/F, milliohm/square at 11µm fired thickness	70-80	80-90
Solder Acceptance(2)		
36/62/2 Sn/Pb/Ag	> 90%	> 90%
63/37 Sn/Pb	> 90%	> 90%
Solder Leach Resistance(3)		
Cycles @ 6 µm fired thickness	>15	> 20
Cycles @ 11µm fired thickness	> 20	> 25
Soldered Adhesion(4)		
Initial @ 6 µm , 11 µm	12-18N, 15-20N	11-15N, 15-20N
100 Hours @ 150°C	12-18 N, 15-20N	9-13N, 12-16N

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

(2) Solder acceptance is measured after a 5-second dip in the solder bath at 225℃ +/-5℃ for Sn/Pb/Ag 62/36/2 or 240℃ +/-5℃ for Sn/Pb 63/37, using Alpha 611 mildly activated flux.
(3) Cycles consist of 10-second dips in solder at appropriate temperature. 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 Sn/Pb/Ag 62/36/2 solder at 225℃ +/-5℃ 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 ± 30 Kcps, when measured with Brookfield HBT viscometer, Spindle #14, utility cup, 10 RPM, 25℃

Specific Gravity: 2.20 - 2.60 g/cm^3

Recommended Thinner: KOARTAN B-1194

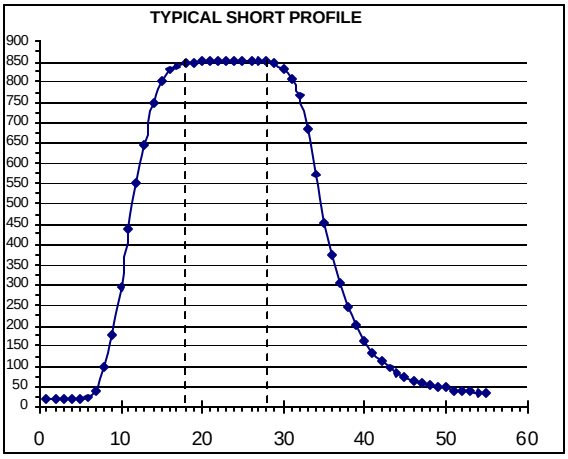
RECOMMENDED PROCESSING PROCEDURE

Printing: Printing with a 250 mesh stainless steel screen using 10-15 µm emulsion and 45 degree angle is recommended. Two P/D/F with 250-325 mesh screen may be utilized to obtain low resistivity and high leach resistance

Coverage is approximately 130-160 cm^2/g, when utilizing a 250 mesh screen and a dry print thickness of about 11±2 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℃-150℃.

Firing: Firing in air using a belt furnace and a 36-60 minute profile, with 10 minutes at a peak temperature of 850℃ 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 (℃) 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.

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.