

Technical Information

5804 Gold Multilayer Dielectric

The 5804 dielectric composition was developed as a general purpose insulation material for high density multilayered gold circuitry. It is also suitable for cross-over applications. The 5804 fires to a flat blue finish and its coefficient of thermal expansion is matched to 96% aluminum oxide. This dielectric provides an excellent surface for fine line printing of gold conductors

and subsequent wire boning operations. Its key features include:

- Wide latitude in firing. May be fired up to 875°C.
- Good via resolution.
- Compatible with most gold conductors.
- Dense, hermetic, Pb-free composition.

TYPICAL FIRED FILM CHARACTERISTICS⁽¹⁾

Fired Thickness	40-48 μm
Via Resolution⁽²⁾	250 μm (0.010")
Dielectric Constant⁽³⁾	6-10
Dissipation Factor @ 1KHz	$\leq .5\%$
Insulation Resistance (IR) Ohms @ 100VDC	$\geq 10^{12}$
Dielectric Strength VDC/mil	≥ 800
Camber 10 layers	$\leq .003\%$ inch

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

(2) Using 325 mesh screen

(3) The electrical results are based on 0.350" x 0.600" capacitors fabricated with 5804 dielectric and 4100 gold pastes. Three layers of dielectric were utilized to achieve the recommended fired film thickness.

COMPOSITION PROPERTIES

Viscosity: 250 ± 30 Kcps, when measured with Brookfield HBT, Spindle #14, utility cup, 10 RPM, 25°C.

Specific Gravity: 1.90 - 2.30 g/cm³

Recommended Thinner: KOARTAN A-1039

RECOMMENDED PROCESSING PROCEDURE

Printing: For best results, three separate print/dry/fire operations with 325 mesh stainless steel screen using 10-15 μm emulsion and 45 degree angle is recommended. Other mesh counts, 200-250, and emulsion thicknesses, 5-25 μm , may be used for special applications.

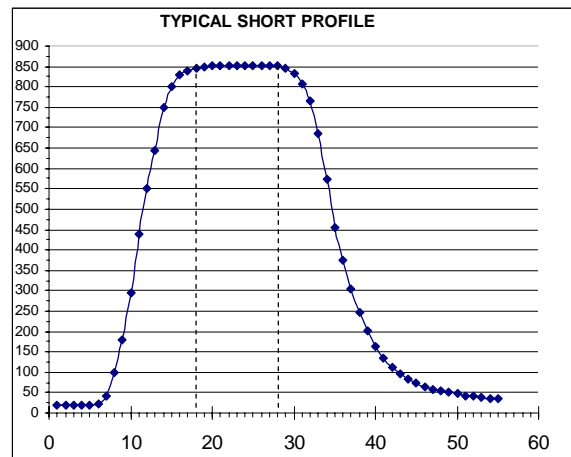
Coverage is approximately 120 cm² per layer, when utilizing 325 mesh screen and a wet print thickness of about 35 μm .

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- 900°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. Thorough mixing of the paste before each use is recommended. 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.



Other System Components:

Inner Conductor	4100 (100% Au)
Via Fill	4101
Top Conductor	4100 (Au bondable Au) 4225 (Al bondable Au) 4496 (Solderable Au)
Resistor	7600GD Series

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