

Technical Information

5690 High Temperature Glaze

The 5690 is a filled glass overglaze requiring mechanically strong protection against moisture. These include microcircuits as well as capacitors and inductors. The 5690 fires to a shiny blue finish and its coefficient of thermal expansion is matched to 96% aluminum oxide. It may be used by itself or as a buffer layer, followed by

low temperature glazes or polymers. Higher and lower CTE versions and other colors are available on request. Key features include:

- Wide latitude in firing. May be fired up to 900°C.
- Dense, hermetic composition.

TYPICAL FIRED FILM CHARACTERISTICS⁽¹⁾

Fired Thickness	36-44 μm
Color	Blue
Dielectric Constant⁽²⁾	6-10
Dissipation Factor @ 1KHz	$\leq .5\%$
Insulation Resistance (IR) Ohms @ 100VDC	$\geq 10^{12}$
Dielectric Strength VDC/mil	≥ 800

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

(2) The electrical results are based on 0.350" x 0.600" capacitors fabricated with 5690 dielectric and 4100 gold pastes. Three layers of dielectric were utilized to achieve the recommended fired film thickness.

COMPOSITION PROPERTIES

Viscosity: 160 ± 40 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, two 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.

The 5690 glaze is provided in screen printing rheology. It may be thinned and roller coated or sprayed on irregular shape substrates.

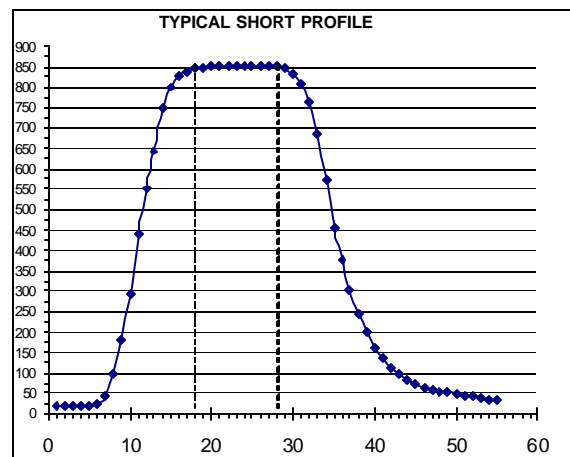
Coverage is approximately 120 cm² per layer, when utilizing 325 mesh screen and a wet print thickness of about 35 μm .

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.



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