

Technical Information

5483 High-K Capacitor Dielectric

The 5483 High-K capacitor dielectric is suitable for the integration of capacitors in thick film microcircuits, as well as for the manufacture of discrete components. Its high dielectric constant makes it useful for the fabrication of smaller capacitors, resulting in increased miniaturization and higher packing density. Its key features include:

- High Dielectric Constant
- Firing in Standard 850°C Profile
- Compatible with 100% Ag Electrode
- Encapsulation with Low Temperature Glazes
- Blendable with other Koartan Capacitor Dielectrics

TYPICAL FIRED FILM CHARACTERISTICS⁽¹⁾

FIRED THICKNESS 3 P/D/F	45-58 μm
DIELECTRIC CONSTANT ⁽²⁾	≥ 8000
DISSIPATION FACTOR @ 1KHz, 25°C	≤ 2.0 %
INSULATION RESISTANCE (IR) Ohms @ 100VDC	≥ 10 ⁹
DIELECTRIC STRENGTH VDC @ recommended thickness	≥ 300
TEMPERATURE CHARACTERISTIC	Z5U ⁽³⁾

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

(2) The electrical results are based on 0.100" x 0.100" capacitors fabricated with 5483 dielectric and 6111 silver pastes. Three layers of dielectric were utilized to achieve the recommended fired film thickness.

(3) The Z5U designation means a maximum change in capacitance of +22%, from +25°C to +85°C, and -56% from +25°C to -55°C.

COMPOSITION PROPERTIES

VISCOSITY: 190 ± 30 Kcps, when measured with Brookfield HBT, Spindle #14, utility cup, 10 rpm, 25 C.

SPECIFIC GRAVITY: 2.8-3.6 g/cm³

RECOMMENDED THINNER: KOARTAN A-1039

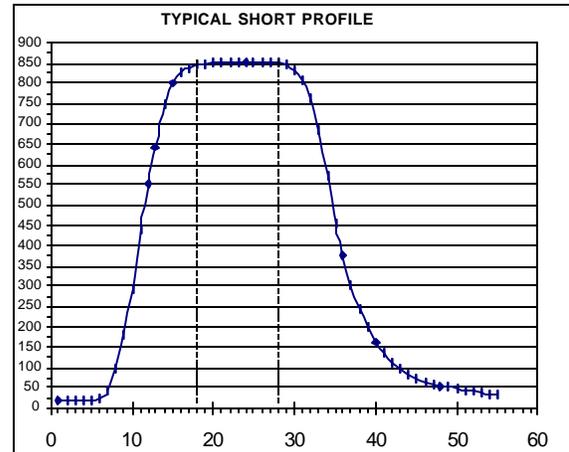
RECOMMENDED PROCESSING PROCEDURE

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. Each printing operation should consist of two wet passes. Other mesh counts, 200-250, and emulsion thicknesses, 5-25 μm, may be used for special applications. A class 10,000 or better clean room would result in better insulation resistance and higher yield. Depending on the print area, squeegee speeds of up to 10 inches/sec may be utilized.

Coverage is approximately 100 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, 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.



Passivation: Two layers of a hermetic overglaze are recommended. The overglaze must overlap the capacitor by at least .010" all around. Please consult Koartan's technical staff for recommendation for your particular application.

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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