

Technical Information

5483 High-K Capacitor Dielectric

The 5483 High-K capacitor dielectric is suitable for the integration of capacitors ion 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. Key features of the system include:

- High Dielectric Constant
- Firing in Standard 850°C Profile.
- Compatibility with 100% Ag Electrode
- Encapsulation with Low Temperature Glazes
- Blendable with KOARTAN 5350 Series Dielectrics

TYPICAL FIRED FILM CHARACTERISTICS⁽¹⁾

Fired Thickness 3P/D/F	45 – 58 μm
Dielectric Constant ⁽²⁾	> 8000
Dissipation Factor @ 1KHz, 25°C	$\leq 2.0 \%$
Insulation Resistance (IR) Ohms @ 100VDC	$\geq 10^9$
Dielectric Strength VDC @ recommended thickness	≥ 300
Temperature Characteristic	Z5U ⁽³⁾

(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 0.100" x 0.100" capacitors fabricated with 5350 series dielectrics and 6111 or 6120 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

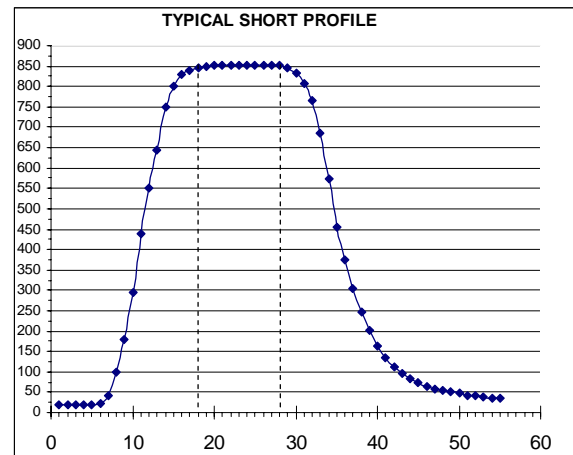
RECOMMENDED PROCESSING PROCEDURE

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 should be utilized if only two layers of dielectric are printed. 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 corrected by incorporating up to 0.5% of Koartan A-1039 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. 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.