

Preliminary Technical Information

5671H & 5671 Low Temp Overglaze Pastes Pb-Free Compositions for Thick Film Capacitor Protection

The 5671H and 5671 are low temperature overglazes designed specifically for protection of thick film capacitors. The 5671H fires at about 525°C to a green semi-matte finish, which is strong enough to withstand the CTE difference between capacitor dielectrics and 96% alumina substrate. A layer of 5671 overglaze is then required for hermetic sealing of the capacitor. The 5671H and 5671 compositions do not contain lead, cadmium,

nickel, or highly toxic organic solvents. Key features include:

- RoHS Compliant
- Compatibility with Thick Film Capacitors and Resistors
- Low Firing Temperatures

TYPICAL FIRED FILM CHARACTERISTICS

	5671H	5671
Color	Green	Green
Firing Temperature	520°C - 540°C	500°C - 520°C
Surface Finish	Semi-matte	Shinny

COMPOSITION PROPERTIES

Viscosity:	120 ± 30 Kcps, when measured with Brookfield HBT viscometer, Spindle #14, utility cup, 10 rpm, 25°C
Specific Gravity:	1.7 – 2.1 g/cm ³
Recommended Thinner:	KOARTAN A-1039

RECOMMENDED PROCESSING PROCEDURE

Printing: Printing with 250 mesh stainless steel screen using 10-15 μm emulsion and 45 degree angle is recommended. Other mesh counts, 200-325, and emulsion thicknesses, 5-25 μm , may be used for special applications.

Coverage is approximately 120 cm^2/g per layer, when utilizing 250 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 22-45 minute profile, with 10 minutes at a peak temperature of 520°C -540°C for 5671H and 500°C-520°C for 5671 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.

Application Notes: When encapsulating thick film capacitors, care must be exercised to ensure that the capacitor is covered entirely by the overglazes. It is recommended that the 5671H overlaps the capacitor dielectric by at least 5 mils all around. The second overglaze, 5671, should

also completely overlap the 5671H by at least 5 mils.

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: Koartan offers a series of Pb-free capacitor dielectrics and termination electrodes for the system:

5371 Series Dielectrics, K25 to K500
6231DL Pb-Free Ag:Pd Electrode
4129 Pb-Free Gold Electrode
6120 Pb-Free Silver Electrode
5672H & 5672 High Temperature glazes