

Preliminary Technical Information

5662 Pd-Saver Overglaze Paste

When palladium-containing thick films are re-fired, the palladium oxidizes in the 500°C -700°C range. Once out of this temperature range the oxide converts back to metallic form. However, if the circuit is overglazed, particularly at 600°C-650°C, the fired overglaze film prevents the PdO to fully reduce back to metallic. This often results in upward resistance shifts of 20% or more depending on Pd content, film thickness, and cooling rate. The result is more difficult processing, the use of lower resistivity pastes, and lower power handling capability.

The 5662 overglaze paste was designed to prevent the oxidation of palladium, resulting in very small resistance shift. The 5662 composition does not contain cadmium or highly toxic organic solvents. Key features include:

- RoHS Compliant
- Compatibility with Aluminum Nitride
- Resistance to Electroplating Solvents
- Compatibility with Most Pd-Containing Films

TYPICAL FIRED FILM CHARACTERISTICS

Color	Green/Green
Firing Temperature	600°C - 650°C
Surface Finish	Shinny
Resistivity Shift, ΔR ⁽¹⁾	$\pm 1\%$

1) Obtained on KOARTAN Pd:Ag resistor paste 7981, fired on Koartan's Koar-Cool aluminum nitride substrate, overglazed with 5662 at 625°C.

COMPOSITION PROPERTIES

Viscosity:	130 \pm 30 Kcps, when measured with Brookfield HBT viscometer, Spindle #14, utility cup, 10 RPM, 25°C
Specific Gravity:	1.8 - 2.4 g/cm ³
Recommended Thinner:	KOARTAN A-1039

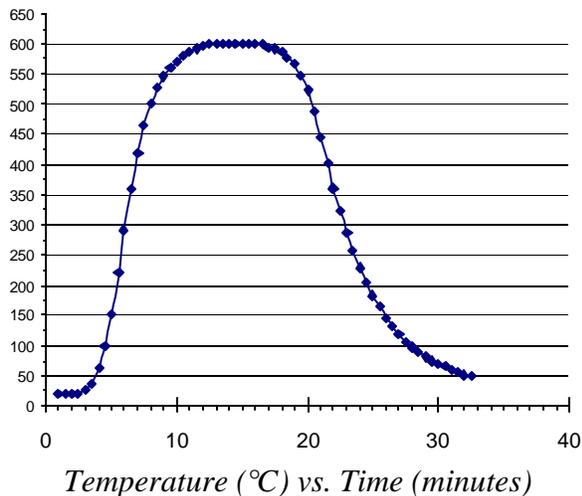
RECOMMENDED PROCESSING PROCEDURE

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 30-45 minute profile, with 10 minutes at a peak temperature of 600°C-650°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.



Application Notes: Most aluminum nitride substrates outgas at 700°C and higher temperatures. Minimal out-gassing may also occur at temperatures above 600°C in some cases. The 5662 overglaze provides a nearly hermetic film. However, when fired properly, it has sufficient porosity to allow small amounts of gas to escape, thus making it compatible with most aluminum nitride substrates.

Please consult Koartan's technical staff 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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