

Technical Information

5652 LOW TEMP OVERGLAZE PASTE

Pb-FREE COMPOSITION FOR ALUMINUM NITRIDE SUBSTRATE

The low temperature overglaze paste 5652 was developed specifically for use on aluminum nitride substrate. It provides a smooth, hermetic protective layer on AlN substrate, as well as underlying conductors and resistors. Glazing with 5652 generally results in less than 3% shift in the value of most thick film resistors. The 5652 composition does not contain cadmium,

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

- RoHS Compliant
- Cd-Free, Pb-Free Composition
- Fast Laser Trimming
- Excellent Hermeticity
- Compatibility with Most Resistor Systems and AlN Substrates

TYPICAL FIRED FILM CHARACTERISTICS⁽¹⁾

Color	Green
Firing Temperature	500°C - 525°C
Resistivity Shift, ΔR ⁽²⁾	$\leq 5\%$

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

(2) The shift in resistance of Koartan 7981 resistor, fired on aluminum nitride substrate.

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/cm³

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 22-40 minute profile, with 10 minutes at a peak temperature of 500°C-510°C or 3 minutes at a peak temperature of 525°C-530°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: A thin layer of 5652 overglaze is recommended for most applications requiring circuit protection from the environment.

For applications requiring electroplating or involving water-washable fluxes please check Koartan 5660 acid-resistant overglaze paste. 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.

Other Pastes for Aluminum Nitride :

Koartan offers a number of other standard products specifically developed for aluminum nitride substrate. Please check www.koartan.com for the latest additions or contact us with your special requests.

6122 *100% Silver Conductor Paste*
6292 *Silver-Palladium Conductor Paste*
4906 *600°C firing Gold Conductor Paste*
7961 *Series Pd:Ag Power Resistors*
7981 *Series Pd:Ag Resistors for Heaters*
5660 *600°C firing Acid-Resistant Glaze*
5662 *Pd-Saver Overglaze Paste*