

## Conductors

### TC 7404

#### Silver / Palladium Conductor Paste for LTCC

##### Description

TC 7404 is a fritted conductor material, with a silver / palladium ratio of 6 : 1. It is ideal for use as a resistor termination, and exhibits excellent wire bonding properties with heavy aluminum wire.

TC 7404 was specifically developed for use as a conductor on Heratape CT 700 Series, CT 707, CT 708 and CT 800 Series. It exhibits a particularly good adhesion when (post-) fired upon these glass-based substrates.

##### Key Benefits

- Good solderability and leach resistance
- Solderable on CT 700 Series, CT 707, CT 708 and on CT 800 Series
- Compatible with Heraeus resistors
- Excellent aluminum wire bond properties.
- Free of cadmium and nickel
- REACH<sup>4</sup> and RoHS<sup>5</sup> compliant

##### Processing

1. Spatulate well prior to processing. When stored in a fridge: The paste should have acquired room temperature before being opened, to avoid condensation.
2. Print trough a 200 – 325 mesh stainless steel screen.
3. Total thickness: 50 – 110 µm
4. Level at room temperature for 5 – 10 minutes.
5. Dry at 150°C for 10 – 20 minutes.
6. Fire at 850 – 865°C (peak) for 10 minutes, and with a total firing cycle time of c. 30 – 60 minutes.

Thinner

HVS 100

##### Typical Properties (Paste)

Form:	Thixotropic Paste
Viscosity:	30 – 50 Pas (25 °C, D=100 s <sup>-1</sup> )
Printing Speed:	Up to at least 10 cm/s
Solids:	78.0 % ± 1.5 %
Coverage :	c. 70 cm <sup>2</sup> / g (FFT: 12 µm)
Shelf Life:	12 months from date of shipment with correct storage (in a dry, cool (5 to 25 °C) and dark place with container tightly shut)

##### Typical Properties (Fired)<sup>1</sup>

Fired Film Thickness <sup>2</sup> : (FFT)	11.0 – 15.0 µm
Line Definition:	≥ 125 µm
Resistivity <sup>2</sup> :	≤ 20 mΩ / □ (FFT: 12 µm)
Solderability: (62Sn / 36Pb / 2Ag)	Excellent ≥ 95% (235 °C, 5 sec dip) (assessment acc. DIN 41850-2 E)

##### Compatibility

Tapes:	CT 700 Series CT 800 Series CT 707, CT 708
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##### Wire Bond Adhesion (cN)<sup>3</sup>:

Wire Type (300 µm)	Al-R-Wire (Heraeus)	Al-H11-Wire (Heraeus)
Initial:	> 600	> 400
Re-firing: (5 x 150°C)	> 600	> 400
100 hours: (150°C)	> 500	> 300

- 1 Typical properties based on laboratory test methods. For optimum results all materials should be fired in a profiled furnace supplied with dried, hydrocarbon and other contaminant free air (PP-1).
- 2 Measured after printing with a 200 mesh stainless steel screen; screen thickness and emulsion thickness combined was c. 100 µm, and the result printed track was 500 µm wide.
- 3 Al wire bonded with an Orthodyne M 360 B; loop length > 8 mm loop height > 3 mm (after bonding).
- 4 REACH compliant according to the Commission Regulation (EU) No 143/2011 of 17 February 2011 amending Annex XIV to Regulation (EC) No 1907/2006 of the European Parliament and of the council on the Registration, Evaluation, Authorisation and Restriction of Chemicals ("REACH") by European Chemicals Agency and its subsequent amendments; the material does not contain any substance listed in the Annex XIV.
- 5 RoHS compliant according to the Directives (European Union) No 2011/65/EC of Restriction of Hazardous Substances ("RoHS") and its subsequent amendments (including the exceptions No. 7.c. I of the EU Directive e.g. related to Pb)

The descriptions and engineering data shown here have been compiled by Heraeus using commonly-accepted procedures, in conjunction with modern testing equipment, and have been compiled as according to the latest factual knowledge in our possession. The information was up-to date on the date this document was printed (latest versions can always be supplied upon request). Although the data is considered accurate, we cannot guarantee accuracy, the results obtained from its use, or any patent infringement resulting from its use (unless this is contractually and explicitly agreed in writing, in advance). The data is supplied on the condition that the user shall conduct tests to determine materials suitability for a particular application.

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