

Resistors

SR 21-350 Series



Silver Heater Paste for Dielectric on Steel / DPIS*

* Development Product Information Sheet

Description

SR 21-350 Series is a pure silver resistor paste, especially developed for use as heater paste on dielectric like SD 1010. It should be applied in a post-firing process on the dielectric.

Key Benefits

- Very cost effective using pure silver
- Free of lead, cadmium and nickel
- Free of phthalate
- REACH³ and RoHS⁴ compliant.

Processing

1. Spatulate well prior to processing. When stored in a refrigerator allow paste to come to room temperature prior to opening, to avoid condensation.
2. Print through a 200 - 325 mesh stainless steel screen.
3. Level at room temperature for 5 - 10 minutes.
4. Dry at 150 °C for 10 minutes.
5. Fire at 850 °C (peak) for 10 minutes, and with a total firing cycle time of approx. 30 - 60 minutes.

Thinner

HVS 100

Typical Properties (Paste)

Form:	Thixotropic paste
Viscosity:	30 - 50 Pas (25 °C, D = 100 s ⁻¹)
Solids:	76.0 % ± 1.5 %
Printing speed:	Up to 20 cm/s
Shelf life:	6 months from date of shipment with correct storage (in a dry, cool (5 - 25 °C) and dark place with container tightly shut)

Typical Properties (Fired)¹

Fired Film Thickness²: 13 – 18 µm (FFT)

Resistivity and HTCR (Fired)

Series ⁵	Rs ^{2,6} (mΩ/□)	HTCR [ppm/K] ⁷
SR 21-350-018	15 - 20	3500 ± 200
SR 21-350-025	20 - 30	3500 ± 200
SR 21-350-100	80 - 120	3500 ± 200

Compatibility

Dielectrics:	SD 1010
Conductors:	SC 1001 (AgPt)
Overglaze:	SD 1019

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- 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 325 mesh steel screen; screen thickness and emulsion thickness combined was c. 75 µm, and the resultant printed track was 500 µm wide, post-fired on SD 1010.
- 3 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; we define a material as REACH compliant, as long as substances used are not recorded in the Annex XIV.
- 4 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)
- 5 Also applicable on alumina 96% - in this case user should collect data of resistance and HTCR in his facility.
- 6 @ FFT: 15 µm
- 7 25 °C to 125 °C

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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