

## Technical Data Sheet

### THICK FILM MATERIALS

**Product Type:** Resistors

**Product Name:** 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, nickel and phthalate
- REACH<sup>3</sup> and ROHS<sup>4</sup> 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	Pseudoplastic paste
Viscosity	30 – 60 Pas (25 °C, D = 100/s)
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)<sup>1</sup>

Fired Film Thickness<sup>2</sup> 11 – 16 µm (FFT)

List of Sheet Resistance (Rs) and HTCR (Fired) available

Series <sup>5</sup>	Rs <sup>2,6</sup> (mΩ/□)	HTCR (ppm/K) <sup>7</sup>
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
Conductor	SC 1001 (AgPt)
Overglaze	SD 1019

## Technical Data Sheet



### Silver Heater Paste for Dielectric on Steel / DPIS\* \* Development Product Information Sheet

#### Legend:

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 latest \*\* Annex XIV to Regulation (EC) 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 Annex XIV.

4) RoHS compliant according to the latest \*\* Directives (European Union) of Restriction of Hazardous Substances ("RoHS") and its subsequent amendments (including the exceptions related to Pb)

5) Also applicable on alumina 96% - in this case user should collect data of resistance and HTCR in his facility.

6) AT FFT: 15 µm

7) 25 to 125 °C

\* See the data sheet issue date (DD/MM/YY) as reference of validity of latest edition which is available on request

**Heraeus Electronics**  
Heraeus Deutschland GmbH & Co. KG  
Heraeusstraße 12 – 14  
63450 Hanau, Germany  
www.heraeus-electronics.com

**Americas**  
Phone +1 610 825 6050  
electronics.americas@heraeus.com

**China**  
Phone +86 21 3357 5457  
electronics.china@heraeus.com

**Asia Pacific**  
Phone +65 6571 7677  
electronics.apac@heraeus.com

**Europe, Middle East and Africa**  
Phone +49 6181 35 3069, +49 6181 35 3627  
electronics.emea@heraeus.com