

## Development Product Information Sheet (DPIS\*)

### THICK FILM MATERIALS

**Product Type:** Dielectrics

**Product Name:** SD 1020 (CL90-11255)



#### Dielectric Paste for Chromium Steel

\*DPIS-Typical Properties and Recommended Processing Guidelines subject to change

#### Description

SD 1020 is an ultra-low bowing dielectric paste for insulating Cr-steel substrates mainly for heater applications. Designed for both 300 and 400 steel types, SD 1020 is Pb-free, screen printable, and fires at 850°C. SD 1020 is suitable for planar or cylindrical substrates.

German Standard	DIN Type	UK / US
1.4301	X5 CrNi 18 11	AISI 304
1.4016	X6Cr17	AISI 430
1.4521	X2CrMoTi18-2	AISI 444

#### Key Benefits

- It fires to an extremely dense, hermetic film, allowing excellent electrical performance at a total fired film thickness of  $\geq 70 \mu\text{m}$
- Excellent compatibility with HERAEUS heater tracks, terminations, and overglazes
- Free of lead, cadmium and nickel
- Free of phthalate
- REACH<sup>3</sup> and ROHS<sup>4</sup> compliant

#### Processing

- Spatulate well prior to processing.
- Print through 165 – 200 mesh stainless steel screen. A print-dry fire sequence is advised for each layer.
- Let the print settle at room temperature for 3 – 10 minutes.
- Dry at 150 °C for 20-30 minutes.
- Fire at 850 °C (peak) for 10 – 12 minutes, and with a total firing cycle time of approx. 60 minutes.

#### Thinner

RV-507

#### Typical Properties (Paste)

Form	Pseudoplastic paste
Viscosity	150 - 250 kcps, Brookfield HBT DV-III, #14 Spindle in Utility Cup, 10 rpm, 25C
Shelf Life	3 months from date of shipment with correct storage (in a dry, cool (20–25°C) and dark place with container tightly shut).

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

Breakdown Voltage <sup>2</sup>	>3000 V (AC) >2500 V (AC)
Insulation Resistance	>10 <sup>9</sup> ohms at 100 V

#### Compatibility

Heating Tracks	SR 21-350-025 SR 21-350-100 R2211, R2221 9000 Series R8900 Series
Termination (of Heating Tracks)	C8728 C2129A C4741
Overglaze	SD 1019 SD 1020 IP9036A

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#### 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) 70 µm fired film thickness; 3 separately fired layers on Cr steel (X6Cr17). It was measured after printing with a 165 mesh stainless steel screen 2.0 mil wire with 0.5mil EOM. Total screen thickness was approx. 110-130 µm, and 150µm incl. emulsion.

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)

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

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