

## Technical Data Sheet

### THICK FILM MATERIALS

**Product Type:** Dielectrics

**Product Name:** IP211 / IP211 Clear

#### High Temperature Glaze for Platinum and Steel Insulation

##### Description

IP211 is a high temperature overglaze for protection of platinum structures, e.g. sensor applications. It also can be used to cover Cr steel with an insulating layer.

The standard color is blue. A clear version, IP 211 Clear, is available on demand.

##### Key Benefits

- It fires to an extremely dense, hermetic film, allowing excellent electrical performance at fired film thicknesses of  $\geq 50 \mu\text{m}$ .
- A continuous operation temperature at up to  $500 \text{ }^\circ\text{C}$  is possible.
- The following steel types may be used:

DIN-Standard No.	Steel Type
1.4016	X 6 Cr 17
1.4742	X 10 CrAl 18
1.4762	X 10 CrAl 24

- Free of cadmium, nickel and phthalate

##### Processing

- Spatulate well prior to processing.

When stored in a refrigerator, the paste should have acquired room temperature before being opened, to avoid condensation.

- Print through 165 – 325 mesh stainless steel screen. A print-dry fire sequence is advised for each layer.
- Level at room temperature for 10 minutes.
- Dry at  $150 \text{ }^\circ\text{C}$  for 10 – 20 minutes.
- Fire at  $950 - 1350 \text{ }^\circ\text{C}$  (peak) for 8 – 12 minutes, and with a total firing cycle time  $\geq 30$  minutes.

##### Thinner

HVS 100

##### Typical Properties (Paste)

Form	Pseudoplastic paste
Viscosity	IP 211 (Blue): 15 – 30 Pas IP 211 (Clear): 25 – 45 Pas ( $25 \text{ }^\circ\text{C}$ , $D = 100/\text{s}$ )
Coverage	c. $40 \text{ cm}^2/\text{g}$ (at $50 \mu\text{m}$ fired film thickness)
Shelf Life	3 months from date of shipment with correct storage (in a dry, cool ( $5 - 25 \text{ }^\circ\text{C}$ ) and dark place with container tightly shut).

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

Dielectric Constant <sup>2</sup>	7 – 10 ( $25 \text{ }^\circ\text{C}$ , 1 kHz)
Dissipation Factor <sup>2</sup>	$< 0.5 \%$ ( $25 \text{ }^\circ\text{C}$ , 1 kHz)
Insulation Resistance <sup>2</sup>	$> 10^{11} \Omega \times \text{cm}$ ( $25 \text{ }^\circ\text{C}$ )
Breakdown Voltage	$> 500 \text{ V DC}$ (3 separately fired layers with a total FFT of $50 \mu\text{m}$ )
Colour	IP211 : Blue IP211 Clear: Colourless Transparent

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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) Depending on conductor material, processing conditions and measurement methods

\* 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](http://www.heraeus-electronics.com)

**Americas**  
Phone +1 610 825 6050  
[electronics.americas@heraeus.com](mailto:electronics.americas@heraeus.com)

**China**  
Phone +86 53 5815 9601  
[electronics.china@heraeus.com](mailto:electronics.china@heraeus.com)

**Asia Pacific**  
Phone +65 6571 7649  
[electronics.apac@heraeus.com](mailto:electronics.apac@heraeus.com)

**Europe, Middle East and Africa**  
Phone +49 6181 35 4370  
[electronics.emea@heraeus.com](mailto:electronics.emea@heraeus.com)