

Technical Data Sheet

THICK FILM MATERIALS

Product Type: Resistors

Product Name: R400AR



Low Range Ohmic Resistor Paste

Description

Heraeus' R400AR Series is a low range, lead free, low TCR air-fired resistor system, compatible with lead free Pt/Ag and Pd/Ag conductors. This series gives a dense fired film and was designed to give very tight resistance distribution when co firing the front and back side of circuits. The series exhibits excellent print resolution for use in typical serpentine layouts. Heraeus' R400AR Series is laser trimmable and has outstanding power handling capability.

Key Benefits

- REACH¹ and ROHS² compliant
- Free of lead and cadmium
- Low range ohmic resistor
- Low TCRs
- Dense microstructure
- Tight as fired distribution

Typical Properties

	R405AR	R410AR	R415AR	R425AR	R450AR	R475AR	R490AR	R400AR-05	R400AR-10
Resistance mΩ/□	50 ± 15 %	100 ± 10 %	150 ± 10 %	250 ± 10 %	500 ± 10 %	750 ± 10 %	1000 ± 10 %	5000 ± 10 %	10000 ± 10 %
TCR (ppm)	< 425	100	75	75	75	75	75	75	75
Refine Stability									
ΔR @ 500 °C	< 1 %	< 1 %	< 1 %	< 1 %	< 1 %	< 1 %	< 1 %	< 1 %	< 1 %
ΔR @ 850 °C	< -3 %	< -3 %	< -3 %	< -3 %	< -4 %	< -4 %	< -4 %	< 8 %	< 8 %

* Measured on a 600 square serpentine pattern, 25 mil lines and spaces

Viscosity

180 – 260 Kcps, Brookfield HBT,
SC4 – 14 spindle and 6R utility cup at 10 rpm, 25 °C

Solids

R405AR and R410AR 77.0 ± 1.0 %
All other values 70.0 ± 1.0 %

Recommended Pb/Cd Free 500 °C overglaze – IP9035A

Recommended Pb/Cd Free 600 °C overglaze – IP9036A

Recommended Pb/Cd Free 850 °C overglaze – IP9217

Recommended Pb/Cd Free Termination Conductors – C2130B, C2180 and C4729

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Recommended Processing Guidelines

Printing Conditions

250 – 325 mesh, 1.1 mil wire and 0.5 mil emulsion screen

Drying Conditions

150 °C for 8 – 10 minutes

Firing Conditions

850 °C peak with a 10 minutes dwell time

Thickness Information (µm)

	R405AR	R410AR	R415AR	R425AR	R450AR	R475AR	R490AR	R400AR-05	R400AR-10
Dry	12 – 19	17 – 21	14 – 17	14 – 17	14 – 17	15 – 18	15 – 18	14 – 17	14 – 17
Fired	7 – 11	9 – 13	7 – 9	7 – 9	8 – 10	8.5 – 11	8.5 – 11	8.5 – 11	8.5 – 11

Warranty

Material guaranteed to meet specifications for 6 months from date of shipment.

Storage

Store in a dry location at 5 – 25 °C.

DO NOT REFRIGERATE.

Allow paste to come to room temperature prior to opening. Spatulate well before using, as settling may occur during storage.

Legend:

1) 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)

2) 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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