

Resistors

R400A



Low Range Ohmic Resistor Paste

Description:

Heraeus' R400A 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 cofiring the front and back side of circuits. The series exhibits excellent print resolution for use in typical serpentine layouts. Heraeus' R400A Series is laser trimmable and has outstanding power handling capability.

● **Key Benefits:**

- Pb & Cd Free
- Low range ohmic resistor
- Low TCRs
- Dense microstructure
- Tight as fired distribution

● **Typical Properties:**

	R405A	R410A	R415A	R425A	R450A	R475A	R490A	R400A-05	R400A-10
Resistance milliohms/sq.*	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
Refire 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, 10 rpm @ 25°C.

Solids: 70.0 ± 1% (all values)

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 – C2130, C2180 and C4729

● **Recommended Processing Guidelines:**

Printing

Conditions: 250-325 mesh, 1.1 mil wire and 0.5 mil emulsion screen

Drying

Conditions: Dry at 150°C for 8-10 minutes

Firing

Conditions: Fire at 850°C peak with a 10 minute dwell time.

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● **Thickness Information:**
(microns)

	R405A	R410A	R415A	R425A	R450A	R475A	R490A	R400A-05	R400A-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°C -25°C.

DO NOT REFRIGERATE.

Allow paste to come to room temperature prior to opening.

Spatulate well before using.

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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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