

Micromax™ 1106

Electronic Inks & Pastes

PRODUCT DESCRIPTION

High Voltage Thick Film Resistor Composition

Product benefits

- 100K Ω /sq - 1G Ω /sq resistivity
- Superior TCR
- Excellent VCR behavior
- Co-fireable with terminations
- Excellent blend behavior

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

PRODUCT INFORMATION

Application	Variable resistor
Solvent or thinner	Micromax™ 4553
Blend member or series	110Xsrs

TECHNICAL DATA

Rheological Properties	Value	Unit
Viscosity ¹	80 to 120	Pa.s

Application Technique	Value	Unit
Drying time	10 to 15	min
Drying temperature	150	°C
Leveling time	5 to 10	min

Electrical Properties	Value	Unit
Resistivity ²	0.9 to 1.1	MOhm per square

Electrical Properties	Value	Unit
Hot Temperature Coefficient Resistance ³	-100 to 100	ppm/°C
Cold Temperature Coefficient Resistance ⁴	-100 to 100	ppm/°C
Electrostatic discharge ⁵	≥0	(avgDeltaR)(%)
Voltage Coefficient of Resistance ⁶	-60	ppm
Storage and Stability	Value	Unit
Shelf life ⁷	6	months

¹Brookfield HBT, UC&SP, SC4-14/6R, 10 rpm, 25°C

²Coefficient of Variation (CV) <5, test on 1.0mm x 1.0mm untrimmed resistors unless otherwise noted.

³test on 1.0mm x 1.0mm untrimmed resistors unless otherwise noted

⁴test on 1.0mm x 1.0mm untrimmed resistors unless otherwise noted

⁵test on 1.0mm x 1.0mm untrimmed resistors unless otherwise noted

⁶ppm/V/mm, 30V/300V, test on 1.0mm x 1.0mm untrimmed resistors unless otherwise noted

⁷in unopened containers, from date of shipment, stable environment at room temperature between 5°C - 30°C.

PROCESSING GUIDELINES

Terminations

Reported properties are based on tests with Micromax™ 6130 silver/palladium conductor composition prefired at 850°C.

Substrates

Reported properties are based on tests with Coors 96% alumina substrates. Substrates of other chemical composition or from other manufacturers may result in variations in performance.

Printing

Specified properties are based on resistors printed to 20 ± 2µm dried print thickness.

Drying

Prints should be allowed to level 5-10 min at room temperature and then dried 10-15 min at 150°C.

Firing

Micromax™ 110X Series resistor properties are based on resistors fired with 850°C, 30-min profile.

Resistor geometry

Micromax™ 110X Series compositions are Quality Assurance tested using a 1.0mm x 1.0mm resistor with prefired Micromax™ 6130 silver/palladium conductor termination. Variations in resistor geometry will cause variations in R and TCR.

Properties

Fire Resistor Properties

Test	Properties
Load Life 1000hr Irreversible, %DR	-0.5
Short Term Overload Voltage (STOL), 1000V 5sec, %DR	-0.1
Short Term Overload Voltage (STOL), 1000V 10sec, %DR	0.0
Pulsed Voltage, %DR, Stability, 1kV, 100 pulses 1.5mm x 1.5mm	0.0

All test on 1.0mm x 1.0mm untrimmed resistors unless otherwise noted.

Figure 1. TCR vs R

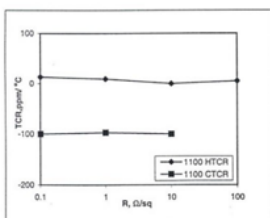


Figure 2. 110X Series Blend

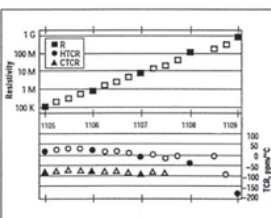


Figure 3. VCR vs R

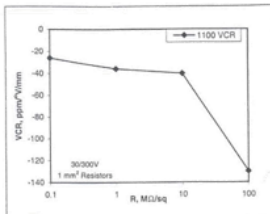


Figure 4. Load Life vs Time

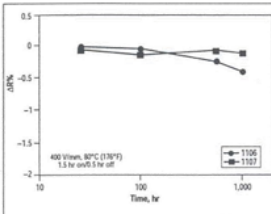


Figure 5. Length Effect

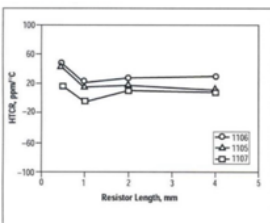
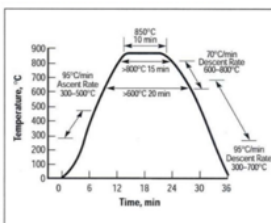


Figure 6. Recommended 30 min Profile



Information in this datasheet shows anticipated typical physical properties for Micromax™ 110X series based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

Storage and shelf life

Containers should be stored, tightly sealed, in a clean, stable environment at room temperature between 5°C - 30°C. Shelf life of material in unopened containers is 6 months from date of shipment. Some settling of solids may occur and compositions should be thoroughly mixed prior to use.

Storage conditions on the product data sheets are intended to represent long-term material storage recommendations and not a shipping or temperature-at-receipt requirement.

Transportation: Under normal shipping conditions, without temperature control, Micromax™ products are not expected to exhibit a change in quality or fitness for use. Should extraordinary

events result in extended transportation periods, Micromax™ recommends customers confirm products remain suitable for the intended application.

Safety and handling

For safety and handling information pertaining to this product, read Safety Data Sheet (SDS).

SAFETY & WARNING

It is recommended that the company/operator read and review the Safety Data Sheets for the appropriate health and safety warnings before use.

Safety Data Sheets are available.

WASTE TREATMENT

Prior to using any recommendations or suggestions for waste treatment, the user is required to know the appropriate local/state/federal regulations for on-site or off-site treatment which may require permits. If there is any conflict regarding our recommendations, local/state/federal regulations take precedence.

CONTACT INFORMATION

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Also read carefully warning and safety information on the Safety Data Sheet. This data sheet contains technical information required for safe and economical operation of this product. READ IT THOROUGHLY PRIOR TO PRODUCT USE. Emergency safety directory assistance: US 1 202 464 2554, Europe + 44 1235 239 670, Asia + 65 3158 1074, Brazil 0800 707 7022 and 0800 172 020, Mexico 01800 002 1400 and (55) 5559 1588

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