

Micromax™ 1105

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 100	Pa.s

Application Technique	Value	Unit
Drying time	10 to 15	min
Drying temperature	150	°C
Recommended film thickness	18 to 22	μ m
Leveling time	5 to 10	min

Electrical Properties	Value Unit
Resistivity ²	80 to 100 kOhm per square
Hot Temperature Coefficient Resistance ³	-100 to 100 ppm/°C
Cold Temperature Coefficient Resistance ⁴	-100 to 100 ppm/°C
Voltage Coefficient of Resistance ⁵	-60 ppm

Storage and Stability	Value Unit
Shelf life ⁶	6 months

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

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

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

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

⁵ ppm/V/mm, 30V/300V, test on 1.0mm x 1.0mm untrimmed resistors unless otherwise noted

⁶ in unopened containers, from date of shipment, stable environment at room temperature between 5°C - 30°C.

PROCESSING GUIDELINES

Terminations

Unless otherwise stated, 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 a 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	-0.5
Short Term Overload Voltage (STOL), 1000V 10sec, %DR	-1.0
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

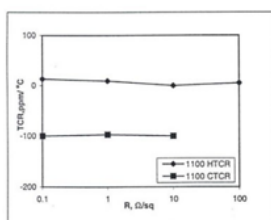


Figure 2. 110X Series Blend

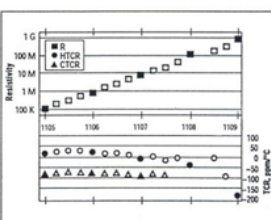


Figure 3. VCR vs R

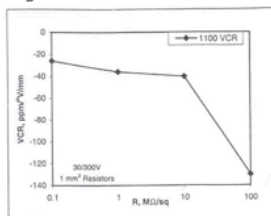


Figure 4. Load Life vs Time

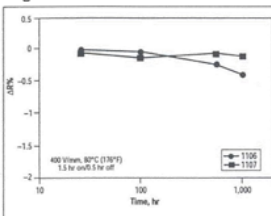


Figure 5. Length Effect

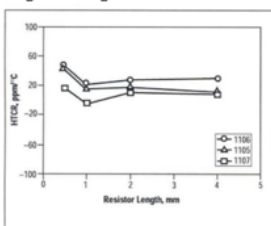
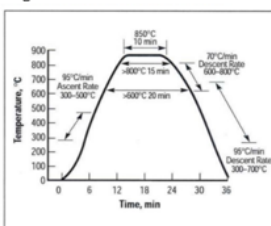


Figure 6. Recommended 30 min Profile



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 & 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

www.macdermidalpha.com

North America	Europe	Asia
470 Research Drive Wilmington, DE, USA 855.622.7813	Bristol & Bath Science Park Dirac Crescent, Emersons Green, Bristol, BS16 7FR, United Kingdom 44.117.4769148	No. 45 Hsing-Point Road Taoyuan City, 330457 Taiwan 886.3.3773588

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

DISCLAIMER: All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed. No statement or recommendation shall constitute a representation unless set forth in an agreement signed by officers of seller and manufacturer. NO WARRANTY OF MERCHANTABILITY, WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY IS MADE. The following warranty is made in lieu of such warranties and all other warranties, express, implied, or statutory. Products are warranted to be free from defects in material and workmanship at the time sold. The sole obligation of seller and manufacturer under this warranty shall be to replace any noncompliant product at the time sold. Under no circumstances shall manufacturer or seller be liable for any loss, damage or expense, direct, indirect, incidental or consequential, arising out of the inability to use the product. Notwithstanding the foregoing, if products are supplied in response to a customer request that specifies operating parameters beyond those stated above, or if products are used under conditions exceeding said parameters, the customer by acceptance or use thereof assumes all risk of product failure and of all direct, indirect, incidental and consequential damages that may result from use of the products under such conditions, and agrees to exonerate, indemnify, defend and hold harmless MacDermid, Incorporated and its affiliates therefrom. No suggestion for product use nor anything contained herein shall be construed as a recommendation to use any product in a manner that infringes any patent or other intellectual property rights, and seller and manufacturer assume no responsibility or liability for any such infringement.

© 2026 MacDermid, Inc. and its group of companies. All rights reserved. "(R)" and "TM" are registered trademarks or trademarks of MacDermid, Inc. and its group of companies in the United States and/or other countries.