

Micromax™ 5063R

Electronic Inks & Pastes

PRODUCT DESCRIPTION

Gold Brazing Low Temperature Braze System

Micromax™ 5062S and 5063R constitute a two component all thick films paste system designed to facilitate the use of high temperature solders and low temperature alloys on:

- Low temperature cofire ceramic (Micromax™ GreenTape™ 951)
- 96% Alumina
- Multilayer hybrid circuits (Micromax™ QM44)

Micromax™ 5062S is the gold base conductor and Micromax™ 5063R is the top frit-less gold conductor.

Product benefits

- Cd, Pb and Phthalate free*
- High strength, high reliability attachment mechanism
- Hermetic packaging

* Phthalate, Lead oxide and Cadmium oxide 'free' as used herein means that cadmium and phthalate are not intentional ingredients in and are not intentionally added to the referenced product. Trace amounts however may be present.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

PRODUCT INFORMATION

General Properties	Value	Unit
Application	Gold conductor	
Solvent or thinner	Micromax™ 9180R	
Blend member or series	5062S and 5063R	

TECHNICAL DATA

Rheological Properties		Value	Unit
Viscosity ¹		225 to 325	Pa.s
Application Technique		Value	Unit
Mask mesh ²		325 to 280	
Drying time		10 to 15	min
Drying temperature		150	°C
Recommended film thickness		≥30	µm
Leveling time		≥10	min
Electrical Properties		Value	Unit
Resistivity ³		≥6.2	mOhm per square
Storage and Stability		Value	Unit
Shelf life ⁴		6	months

¹Brookfield 2xHAT, UC&SP, SC4-14/6R, 10 rpm, 25°C ± 0.2°C

²stainless steel mesh 1.1-1.4 wire diameter

³@ 10µm

⁴in unopened containers, from date of shipment, stable environment at room temperature between 5°C - 30°C

PROCESSING GUIDELINES

Substrates

Substrates of different compositions and from various manufacturers may result in variations in performance properties.

Screen types

Print onto fired Micromax™ 5062S using a 325-mesh stainless steel. Ensure that Micromax™ 5063R completely covers the Micromax™ 5062S print.

Printing

The composition should be thoroughly mixed before use. This is best achieved by slow, gentle hand stirring with a clean burr-free spatula (flexible plastic or stainless steel) for about 1-2 minutes. Care must be taken to avoid air entrapment. Printing should be performed in a well-ventilated area. Print Micromax™ 5062S onto fired substrate using a 325-280 mesh, 13-15 µm emulsion screen.

Thinning

Micromax™ 5062S and 5063R compositions are optimized for screen printing and thinning is not normally required. Use the Micromax™ recommended thinner for slight adjustments to viscosity or

to replace evaporation losses. The use of too much thinner or the use of a non recommended thinner may affect the rheological behavior of the materials and their printing characteristics.

Drying

Allow prints to level for over 10 minutes at room temperature, then dry for 10-15 minutes at 150°C.

Dry in a well-ventilated oven or conveyor dryer.

Firing

Fire using standard 850°C, 30 minutes profile.

Fire in well-ventilated belt, conveyor furnace or static furnace. Air flows and extraction rates should be optimized to ensure that oxidizing conditions exist within the muffle and that no exhaust gases enter the room.

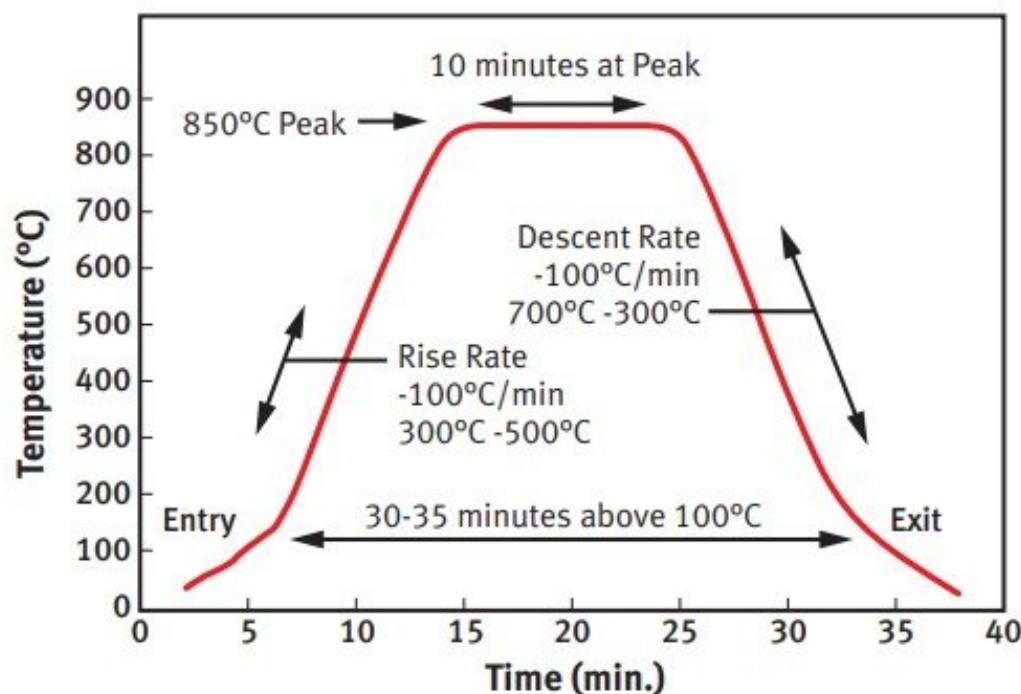
Repeat previous printing, drying and firing steps

Ensure that Micromax™ 5063R completely covers the Micromax™ 5062S print.

Total Micromax™ 5063R fired thickness should be $\geq 30\mu\text{m}$.

Attachment

Once the substrate has been prepared with Micromax™ 5062S and 5063R pins, window frames or heat sinks may be attached with braze alloys (Au/Sn), preforms or pastes/ Brazing is performed in nitrogen atmosphere using fixed fixtures which position the attachment and braze alloy directly on top of the Micromax™ 5062S/5063R metallization.

FIGURE 1. 30 MINUTES PROFILE


Typical Fired Properties^{*1}

Test	Properties
Fired Thickness (µm) Total (5062S + 5063R)	≥ 39
PGA Reliability Thermal Aging ^{*2} (N)	≥ 65

^{*1} Average tensile pull strength of a pin a standard pin grind array (PGA) brazed to Micromax™ GreenTape™ 951, PGA consists of 1.8 mm diameter pad of Micromax™ 5062S/5063R, and a 400 µm diameter Kovar pin with a 800 µm diameter nail head.

^{*2} 1000 hrs in air at 150° ensile strength 370-450g

Information in this datasheet shows anticipated typical physical properties for Micromax™ 5062S & 5063R based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request. Brazing in a nitrogen atmosphere is recommended. We have not tested brazing in a reducing atmosphere.

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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