

Micromax™ 3500N

Electronic Inks & Pastes

PRODUCT DESCRIPTION

Insulating Glaze for Steel

Micromax™ 3500N Insulating Glaze for steel is intended to form an electrically insulating layer on stainless steel sheets, in order to provide a substrate for electrical circuitry. It is applied to the steel by screen printing and is fired in a conveyor furnace in an air oxidizing atmosphere. Micromax™ 3500N Glaze is a dense dielectric based upon a high softening point partially crystallizable glass. This is combined with a unique inorganic filler combination to minimize bowing on 430 grade and similar stainless steels. Micromax™ 3500N Glaze may be used with other system components to build circuits on steel, for example for use as heating elements.

Product benefits

- No pre-oxidation of the steel surface required prior to application
- Bowing minimized for use on 430 grade stainless steel and derivatives
- Firing using 30 minute profile
- Excellent breakdown voltage
- Cadmium, Lead, Nickel and Phthalate free*

*Cadmium, Lead, Nickel and Phthalate 'free' as used herein means that cadmium, lead, nickel, 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	Dielectric
Solvent or thinner	Micromax™ 9179
Solid content	75.5 to 80 %

TECHNICAL DATA

Rheological Properties	Value Unit
Viscosity ¹	60 to 140 Pa.s

Application Technique	Value	Unit
Mask mesh	145 to 200	
Drying time	15	min
Drying temperature	150	°C
Theoretical coverage ²	30	cm ² /g
Leveling time	2 to 5	min
Storage and Stability	Value	Unit
Shelf life ³	6	months

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

²based on fired film thickness of 75µm

³in unopened containers, from date of shipment, stable environment at room temperature between 5°C - 30°C

PROCESSING GUIDELINES

Design & compatibility

Compatibility

While Micromax™ has tested this composition with specified materials and under the recommended processing conditions, it is impossible or impractical to cover every combination of materials, customer processing conditions and circuit layout. It is therefore essential that customers thoroughly evaluate this material in their specific situations, in order to completely satisfy themselves as to the overall quality and suitability of the composition for its intended application(s).

Substrates

Properties are based on work carried out on S430 or S444 grade stainless steels with either a dull polished or on a grit blasted (180/220 alumina) surface. Substrates of different compositions, with different surface finishes or from alternative manufacturers may result in variations in performance. For applications where the substrate is larger than 10 cm², the use of steel which is thicker than 1mm is recommended for ease of processing. It is the responsibility of the user to determine the suitability of any particular grade of steel for their application.

Printing

Micromax™ 3500N insulating glaze composition should be thoroughly mixed before use. This is best achieved by slow, gentle hand stirring with a clean, burr-free spatula (flexible plastic) for 0.5 - 1 minute. Care must be taken to avoid air-bubble entrapment.

Printing should be carried out in a clean, well-ventilated area. The optimum printing characteristics of Micromax™ 3500N are generally achieved in the temperature range 20°C - 23°C. It is therefore important that the material, in its container, is at this temperature prior to

commencement of printing.

Printing with 145-200 mesh stainless steel screens is recommended. The glaze may be applied in 3 - 4 prints, with each layer being sequentially fired to give a minimum of 75µm fired thickness.

Drying

Allow prints to level at room temperature for 2 - 5 minutes. Dry for 15 minutes at 150°C in a well-ventilated oven or using a belt drier. The surface should be touch dry.

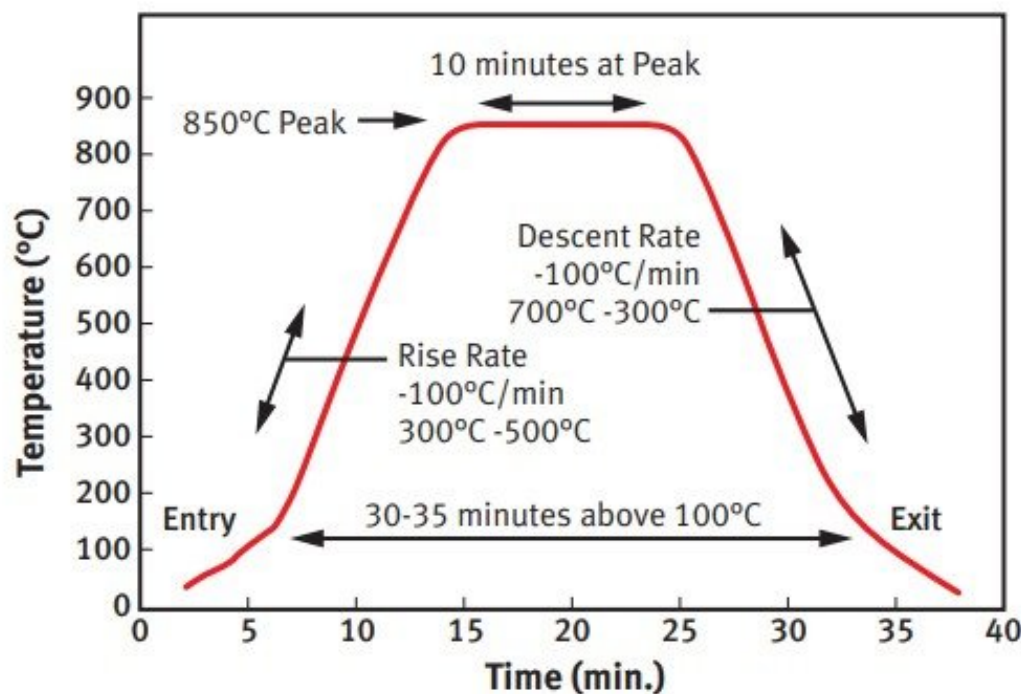
Firing

Fire in a well-ventilated belt or conveyor furnace, in air with a 30 minute cycle to a peak temperature of 850°C for 10 minutes, see figure 1. Care must be taken to ensure that any gases/vapors from other chemicals/materials (e.g. halogenated solvents) do not enter the furnace muffle. It is essential that the air supply to the furnace is clean, dry and free of contaminants.

Properties

Information in this datasheet shows anticipated typical physical properties for Micromax™ 3500N based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

FIGURE 1. 30 MINUTES PROFILE



Other system components

- Micromax™ LF131 silver termination

General

Yield and performance will depend to a large degree on the level of attention and care taken during processing, particularly in screen printing. Scrupulous care should be taken to keep the Micromax™ 3500N insulating glaze composition, printing screens and other tools free of metal contamination. Dust, lint and other particulate matter may also contribute to poor yields.

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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