Micromax™ QM44

Microcircuit and Component Materials

Dielecttic

Micromax™ QM44 is a filled, crystallizable screen printed thick film dielectric composition and is an integral element of the Micromax™ QM44 multilayer system. It is a versatile dielectric for use in both high reliability and low cost MCM (Multi-Chip Module) and hybrid interconnect applications.

Product benefits

- Broad conductor compatibility (gold, silver, and mixed metal)
- Thin, 2 print, hermetic dielectric film.
- High resistance to E.M.F. (electro-motive force) blistering and shorting.
- Robust electrical and mechanical properties.
- Compatible co-fire conductors.

Product information

Solvent or thinner	Micromax™ 4553

Rheological properties

Viscosity	80 - 120[1]	Pa.s

[1]: Brookfield HBT, UC&SP, 50rpm, 25 °C

Application technique

Mask mesh	230 - 280	
Drying time	10 - 15	min
Drying temperature	150	°C
Theoretical coverage	110 - 130[2]	cm^2/g
Recommended film thickness, fired	28 - 32	µm
Via, diameter resolution	250 - 300	µm
Leveling time	5 - 10	min

[2]: based on a fired thickness of 14 µm

Electrical properties

Dielectric Constant	8 - 10[3]	
Dissipation Factor	≤0.2[3]	%
Insulation Resistance, DC	≥1E12	Ohm
Surface Leakage Current	≥1	$\mu A/cm^2$
Breakdown Voltage	≥1000	V

[3]: at 1 KHZ

[4]: at 100VDC

[5]: Standard measurements made after 5 min at 10 VDC.

[6]: at 30µm

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Storage and stability

Shelf life	6[7] months

[7]: in unopened containers, from date of shipment, at room temperature (<25°C)

Additional information

How to use

Processing

- Substrates
  - Properties are based on tests on 96% alumina substrates. Substrates of other compositions and from various manufacturers may result in variations in performance properties.
- Printing
  - Printing should be carried out in a clean and well ventilated area. The combined fired thickness of the dielectric should be 30±2 µm. This can generally be obtained by printing the individual layers with a 230-280 mesh stainless steel screen at speeds of 6 ips.
- Drying
  - Allow prints to level at room temperature, then dried.
- Firing
  - Fire each dielectric print separately in well ventilated moving conveyor furnace, in air. A 30-minute cycle with a peak temperature of 850°C held for 10 minutes should be used.

Properties

Typical Fired & Electorical Properties

Test	Properties
Max.no.circuit layers	< 8
Camber*1 (mil/in)	< 2
EMF Blister Resistance*2 (firings)	> 30

*1 Measured deflection of 5"x1" substrate with 5 circuit layers. Single-sided.
*2 Maximum no. of firings performed without blisters observed with Substrate/gold/dielectric/silver configuration.

Information in this datasheet shows anticipated typical physical properties for Micromax™ QM44 based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

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Storage and shelf life

Containers should be stored, tightly sealed, in a clean, stable environment at room temperature (<25°C). Shelf life of material in unopened containers is six months from date of shipment. Some settling of solids may occur and compositions should be thoroughly mixed prior to use.

Safety and handling

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

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