

Micromax™ 7484R

Microcircuit and Component Materials

Palladium/Silver Conductor

Micromax™ 7484R Palladium/silver conductor Composition is intended to be applied to ceramic substrates by screen printing and fired in a conveyor furnace in an air atmosphere to form interconnection tracks and pads for component and lead attachment, in hybrid microcircuits and networks.

Product benefits

- Fine line resolution
- Thin, dense fired films
- Fireable on 30-or 60-minutes 850 °C profiles
- Excellent solderability on both Alumina and Micromax™ QM44 or Micromax™ 5704 Dielectric
- Excellent aged adhesion on Alumina and on Micromax™ QM44 or Micromax™ 5704 Dielectric
- Phthalate, Cadmium, Nickel oxide free*

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

Product information

Solvent or thinner

Micromax™ 4553

Rheological properties

Viscosity

150 - 230^[1] Pa.s

[1]: Brookfield HBT, #14 spindle, UC&S @10 rpm, 25 °C

Application technique

Mask mesh

325^[2]

Mask emulsion

10 - 12 µm

Drying time

10 - 15 min

Drying temperature

150 °C

Theoretical coverage

85 - 95^[3] cm²/g

Recommended film thickness, fired

9 - 13^[4] µm

Print resolution, lines

≥150 µm

Leveling time

5 - 10 min

[2]: Screen Types: Stainless steel

[3]: based on fired film thickness of 11µm

[4]: Fired Thickness line, Pads (µm)_On Alumina

[5]: on Alumina

Micromax™ 7484R

Microcircuit and Component Materials

Electrical properties

Surface resistivity 15 - 30^[6] mOhm per square

[6]: On Alumina. In the case of on Micromax™ 5704, 23 - 28 mΩ/sq. Normalized to fired thickness of 12 μm.

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

Design & compatibility

- **Compatibility**

- When processed under recommended conditions, Micromax™ 7484R is compatible with most Micromax™ Resistors systems. Compatible with Micromax™ 5704 and Micromax™ QM44 Dielectrics when separately fired. Micromax™ 7484R is not suitable for cofiring on top of Micromax™ 5704 and Micromax™ QM44 Dielectrics.

Processing

- **Substrates**

- Properties are based on test on 96% alumina substrates. Substrates of other compositions and from various manufacturers may result in variations in performance properties, as may different lots of substrates, and any subsequent processing of substrates (e.g., laser scribing/drilling) prior to printing.

- **Printing**

- Conductor compositions Micromax™ 7484R should be thoroughly mixed before use. This is best achieved by slow, gentle, hand stirring with a clean, burr-free spatula (flexible plastic) for 30 seconds. Care must be taken on avoid air-bubble entrapment. Printing should be carried out in a clean, well-ventilated area.
- Note : Optimum printing characteristics of Micromax™ 7484R are generally achieved in the temperature range 20-23°C. It is therefore important that the material, in its container, is at this temperature prior to printing. A 325-mesh stainless steel screen with a 10-12μm emulsion thickness is normally suggested. 200 mesh screens, can be used but will result in greater fired thickness. Print speeds of up to 25 cm/s may be used.
- Fine Line Printing : To achieve the optimum print resolution the

Micromax™ 7484R

Microcircuit and Component Materials

following printing parameters are suggested: 325-mesh stainless steel screen with a tension of 30N/cm, emulsion thickness of 12µm, a print speed of 12.5 cm/s with a 70-80 durometer shore hardness squeegee at an angle of 45°, snap-off of 1.0 mm for a 10 x 8 inch screen.

- **Drying**
 - Allow prints to level at room temperature, in a clean. Environment, followed by drying in a well-ventilated oven or conveyor dryer.
- **Firing**
 - Fire in a well ventilated belt or conveyor furnace, in air with 30-60 minutes cycle to a peak temperature of 850°C. 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 also essential that the air supply to the furnace is clean, dry and free of contamination.

Properties

Typical Fired Properties

Test	On Alumina	On Micromax™ 5704
Print Resolution (µm) [lines and space]	≥150	-
Resistivity* ¹ (mΩ/sq)	15 - 30	23 - 28
Solder Acceptance* ^{2*3} (%)	>96	>96
Solder Leach Resistance* ^{3*4} (#of dips)	7 - 9	7 - 9
Adhesion* ^{3*5} Initial (N)	>20	>20
Adhesion* ^{3*5} Aged (N)	>20	>20
250 µm Al WireBond Adhesion* ⁶ Initial (g)	>500	>500
250 µm Al WireBond Adhesion* ⁶ Aged @150°C, 48 hrs(g)	>500	>500

Micromax™ 7484R

Microcircuit and Component Materials

- *1 Normalized to fired thickness of 12 µm
- *2 Percentage of defect free 2 x 2 mm pads, Alpha 611 RMA flux, 5 sec dips in 62Sn/36Pb/2Ag solder at 220 °C
- *3 Firing 1,3 or 5 firing 30 or 60 minute profile
- *4 Number of 10 sec dips on 62Sn/36Pb/2Ag solder at 230 °C, 500 µm lines
- *5 See Micromax™ peel adhesion test procedure
- *6 250 µm wire bonding, Orthodyne Model 20, heavy Al Bonder, First bond setting: force 500 gms, Time setting 5 (approx. 250 ms), Power setting for first and second bonds 3.0

Information in this datasheet shows anticipated typical physical properties for Micromax™ 7484R 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 (<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).