

DuPont QM21R

SILVER/PALLADIUM CONDUCTOR

Technical Data Sheet

Product Description

DuPont QM21R silver/palladium Conductor is part of the DuPont QM System, a silver-based system for low cost multilayers. DuPont QM21R silver/palladium is recommended as a top conductor for component attach, as resistor terminations and large aluminum wire bond pads.

Product Benefits

- Phthalate, cadmium, and nickel oxide free*
- Excellent solderability on both alumina and DuPont QM42 dielectric.
- Bondable with thick (250µm) aluminum wire
- Optimized for 30-minute firing, 850°C profiles.

*Phthalate, cadmium, and nickel oxide "free" as used herein means that these are not intentionally added to the referenced product. Trace amounts however may be present.

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

Screen-print with a 200-mesh stainless steel screen with a 12 µm emulsion thickness.

Drying

Allow prints to level for 5-10 minutes at room temperature. Then dry for 10-15 minutes at 150°C.

Firing

Fire in a well ventilated moving conveyor furnace, in air with a 30-minute cycle, to a peak temperature of 850°C.

To retain good aged adhesion on top of DuPont QM42 dielectrics, limit number of re-firing of DuPont QM21R silver/palladium to 2 and have fired thickness of 12 µm or greater.

Typical Fired Properties

Test	Properties
Resistivity (mΩ/sq) (@ 14 µm fired thickness)	15 - 30
Fired thickness (µm) (200-mesh) large pad	14 - 20 12 - 15
Line resolution (200-mesh) on alumina (lines/spaces)[µm] on QM42 (lines/spaces)[µm]	175 200
Solder Acceptance ² 62Sn/36Pb/2Ag @ 220°C on alumina (%) on QM42 (%)	≥ 98 ≥ 95
Solder Leach Resistance 62Sn/36Pb/2Ag @ 230°C (No. of 10s dips) on alumina (cycles) on QM42 (cycles)	8 - 10 7 - 10
Adhesion ³ on alumina: Initial (N) Aged 48h at 150°C[N] on QM42: Initial (N) Aged 48h at 150°C [N]	20 - 30 20 - 30 20 - 30 15 - 27

Composition Properties

Viscosity (Pa.s) Brookfield HAT, UC&SP, 10 rpm, 25°C±0.2°C	150-230
Thinner	DuPont 4553
Coverage(cm ² /g) (Based on fired thickness of 14 µm)	75 - 85

² Percentage of defect free 2 mm x 2 mm squares. Alpha 611 flux.

³ See the DuPont wire peel test procedure

Table 1 shows anticipated typical physical properties for DuPont QM21R 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 the Material Safety Data Sheet (MSDS).

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