

# DuPont QM42

DIELECTRIC

## Technical Data Sheet

### Product Description

DuPont QM42 dielectric is part of the DuPont QM System, a silver-based system for low cost multilayer. QM42 has been designed to give outstanding electrical properties when combined with silver conductors and also enables silver/palladium and gold to be used on top of the dielectric for soldered component attachment and wire bonding.

### Product Benefits

- Dense, hermetic dielectric.
- High resistance to E.M.F. (electro-motive force) effects.
- High yields with silver conductors.
- Ability to mix conductor metallurgies on the same circuit.
- Designed for trimming of top resistors.
- Fireable in 30-minute profile.

### 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. Print individual layers with a 200-325 (recommended) mesh stainless steel screen.

The total thickness of the fired dielectric should be at least 35µm between conducting layers. This can generally be achieved with 2 prints of the dielectric (if 325-mesh screens are used then 3 prints will be necessary. Use of double wet pass (print/print mode) of the squeegee may help to minimize pinholes when printing the dielectric, although at the expense of via resolution.

### Typical Fired Properties

Test	Properties
Fired thickness (µm) [between conducting layers]	≥ 35
Dielectric Constant (K)	9 - 11
Dissipation Factor (%)	≤ 0.5
Insulation Resistance (ohm) [@100 VDC recommended thickness]	≥ 10 <sup>11</sup>
Breakdown Voltage (VDC @ 35 µm)	≥ 1500
Resistance to Battery Effects Number of refires without blistering (Configuration: DuPont QM21 silver/palladium top conductors/DuPont QM42 dielectric/DuPont QM14 silver bottom conductor)	≥ 20 @ 35µm
Composition Properties	
Viscosity (Pa.s) Brookfield HAT, UC&SP,[SC4—14/16R],10 rpm, 25°C±0.2°C	200 - 270
Thinner	DuPont 9179
Coverage(cm <sup>2</sup> /g) (Based on fired thickness of 17.5 µm)	110 - 130

This table shows anticipated typical physical properties for DuPont QM42 based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

## Drying

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

## Firing

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

## 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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