

DuPont™ ME603

Silver Conductor

Product Description

DuPont™ ME603 is part of the DuPont suite of materials developed for In Mold Electronic applications. ME603 is a stretchable silver conductor capable of withstanding thermoforming and overmolding temperatures. This composition can be used for Capacitive Switch applications and interconnecting circuitry enabling fully integrated 3-dimensional functional electronic devices.



Product Benefits

- Higher conductivity silver for In Mold Electronics
- Minimal/no silver show-through on graphics layer
- Excellent adhesion directly on polycarbonate and graphic inks
- Excellent performance after thermoforming and injection molding

Processing Conditions

Substrates

Polycarbonate

Screen Printing Equipment

Reel-to-reel, semi-automatic or manual

Screens

Stainless steel mesh - 325-230 wire/inch (SD 50/30-SD 75/36)

Polyester mesh - 90-40 to 61-64 thread/cm

Ink Residence Time on Screen

>1 Hour

Screen Types

Polyester, stainless steel

Typical Drying Conditions

Box oven: 120°C for 20 minutes

Reel-to-reel: 120°C for 4 minutes

Typical Circuit Line Thickness

8 – 12 Microns

Printed with SD 56/36 (280mesh) stainless steel or 77 – 48 PET Screen

Clean-Up Solvent

Ethylene glycol diacetate

Table 1 - Composition Properties

Test	Properties
Solids (%) @ 150°C	53.5 – 57.0
Viscosity (Pa.s) [Brookfield 0.5 x RVT, #14 Spindle 10 RPM, 25°C]	25 – 50
Thinner	DuPont™ 3610
Shelf Life (months)	6

Table 2 - Typical Physical Properties

Test	Properties
Resistivity (mΩ/sq/mil)	≤35
Resistivity after Thermoforming (mΩ/sq/mil)	≤300*
Coverage (cm ² /g) [using screen type 325 mesh polyester]	200
Abrasion Resistance (H) [ASTM pencil hardness]	≥H
Adhesion (B) [ASTM x-hatch, no material removal]	5

*Results can vary some depending upon the degree of elongation after thermoforming.

Tables 1 and 2 show anticipated typical physical properties for DuPont™ ME603 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

Drying is a critical processing step and in order to achieve optimum performance, sufficient temperature/time should be allowed to ensure complete removal of solvent.

Dry in a well-ventilated box oven or belt/conveyor furnace. Air flow and extraction rates should be optimized to ensure complete removal of solvent from the paste. A strong air flow may help to reduce the drying temperature combination. It will also aid in achieving the lowest as-printed resistance.

Thermoforming

Thermoforming performance of ME603 can vary depending on the build structure, processing conditions, thermoforming technique, and equipment used. As such, parameters need to be assessed and optimized.

If more precision is needed with printed symbols and structures, high pressure forming has shown to give more accuracy as it ensures more even stretch. Forming temperatures around 160°C can be used. Stretchability >50% can be achieved.

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.

Safety and Handling

For Safety and Handling information pertaining to this product, read the Material Safety Data Sheet (MSDS).



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For more information on DuPont™ ME603 or other DuPont products, please visit our website.

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