

DuPont Microcircuit Materials

THICK FILM COMPOSITION

5000 Silver Conductor

Product Description

Silver conductor 5000 is used to fabricate low-voltage circuitry, especially on flexible thick film silver-containing conductor for use on both print-treated and non-print-treated polyester. Using a unique combination of flake silver and resin technology, 5000 possesses excellent conductivity, abrasion resistance, and printability. 5000 is fully compatible with 7102 (overcoat carbon) and 5018 UV dielectric. It can be used with reel-to-reel, semiautomatic, and manual printers, and offers excellent residence time on the screen.

Product Benefits

- Thinner printing, fast drying, vinyl resin

Processing

- **Screen Printing Equipment**
Reel-to-reel, Semi-automatic, manual
- **Substrates**
Polyester, paper epoxy glass, etc.
- **Ink Residence Time on Screen**
>2 hours
- **Screen Types**
Polyester, stainless steel
- **Typical Cure Conditions**
Box Oven: 120°C for 8-10 minutes
Reel-to-reel: 140°C for 1-1.5 minutes
IR Belt Furnace: 130°C for 2-4 minutes
- **Typical Circuit Line Thickness Printed with:**
280 Stainless: 8-9 microns
195 Polyester: 8-9 microns
- **Clean up Solvent**
Ethylene diacetate or methyl propasol acetate

Typical Physical Properties

Sheet Resistivity (mΩ/sq/mil)	≤ 15
Resistivity after Flex (mΩ/sq/mil) 15 sec after test	
Crease (180°C, 1 cycle, mΩ/sq/mil)	≤18
Adhesion/Tape Pull (3M Scotch Tape #810)	No Material Removal
Abrasion Resistance, Pencil Hardness (H) (ASTM D3363-74)	> 4 H
Operating Use Temperature (°C)	≤ 70
Solderability	Not Recommended

Table 1 shows typical physical properties for 5000

Composition Properties

Viscosity (Pa.s) (Brookfield ½ RVT, 10 rpm #14 spindle, 25°C)	3.5 - 16.0
Solids (150°C) (%)	58 - 62
Coverage (Dependent on screen size and material)	475 sqf/mil/gal
Thinner (if required)	8260

Table 2 shows composition properties for 5000

Dry

Dry and cure in a well ventilated oven or conveyor dryer where the exhaust meets environmental regulations. See Safety & Handling section for additional information.

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

The following precautions should be exercised when handling 5000:

- Use with adequate ventilation
- Avoid prolonged contact with skin
- If contact with skin occurs, wash affected area immediately with soap and water
- Avoid prolonged breathing of vapor
- Dangerous if swallowed - DO NOT CONSUME
- Refer to MSDS for more details

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