

DuPont 5018

UV CURABLE DIELECTRIC

Technical Data Sheet

Product Description

DuPont 5018 is a UV curable, solvent less, screen printable composition used in encapsulant and crossover applications for both rigid and flexible circuit manufacture. It offers the advantages of rapid cure and excellent processing latitude while maintaining excellent electrical and physical properties after cure, including excellent crosshatch adhesion to print-treated and good adhesion to non-print-treated PET substrate and conductor. It is fully compatible with DuPont's 5000's Series conductor compositions.

Product Benefits

- Fast UV cure
- Zero VOC when properly cured

Processing

- **Screen Printing Equipment**
Semiautomatic and manual
- **Substrates**
Polyester, polyimide, epoxy glass
- **Ink Residence Time on Screen**
> 2 hours
- **Screen Types**
Polyester, stainless steel
- **Optimum Cure Conditions for Flexibility**
40 ft/min in air¹
500 - 1500 mJ/cm*
- **Typical Thickness (after cure per print)**
Printed with 200 - 280 mesh stainless steel screen
1- 1.2 mil

Two prints of dielectric are strongly recommended to achieve maximum circuit reliability.

¹RPC Industries "QC" Processor Model 1202 AN, with the 200 W/in medium-pressure mercury vapor lamps. Since cure conditions govern characteristics, customers should establish the cure rate required to produce optimum combination of flexibility and hardness.

*0.500 - 1.500, joules using International Light IL.390B Light Bug or UV Process Supply Con-Trol-Cure® Compact Radiometer, or 0.100 - 0.300 joules, using Electronic Instrumentation & Technology Inc. UR 365 CHI Radiometer

Table 1
Typical Physical Properties and Electrical Properties on Polyester Film

Test	Properties
Adhesion Crosshatch (ASTM D3359-78) Dielectric to Polyester Scotch Tape#600	No Transfer (5B)
Conductor to Dielectric	No transfer
Abrasion Resistance, Pencil Hardness (ASTM D3363-74) [H]	≥ 1
Operating Use Temperature (°C)	At least 70
Flexibility (180° crease over DuPont 5007)	No opens
Breakdown Voltage (ASTM D150)[V/mil DC]	≥ 500
Dielectric Constant (ASTM D150)[@ 1KHz]	4.4
Insulation Resistance [GΩ/sq/mil]	> 10
Change in Physical Properties after Environmental Tests*	Insignificant
Change in Electrical Properties after Environmental Tests*	May drop up to one order of magnitude
* Environmental Tests	
• Thermal Shock (+85°C to -40°C, 30 min. each, 5 cycles)	
• Dry Heat (+85°C, 10 days)	
• Humidity (+40°C, 95% RH, 10 days) [MIL Std 202E, method 103, cond. A]	
• Salt Spray (+35°C, 5% salt, 10 days) [ASTM B117]	

Table 1 & 2 show anticipated typical physical properties for DuPont 5018 based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

**Table 2
Composition Properties**

Test	Properties
Viscosity (Pa.s) [Brookfield 0.5RVT, 10 rpm, #14 spindle, 25°C]	15 - 30
Solids (150°C)[%]	100
Coverage (cm ² /g) (Dependent on print thickness):	
0.45 mil coating given by 280-mesh polyester	500
0.6 mil coating given by 230-mesh polyester	375
1.0 mil coating given by 280-mesh stainless steel	290
1.1 mil coating given by 200-mesh stainless steel	240
Thinner	Not recommended
Density, g/cm ³	1.28
Color	Blue
Odor	Slight, pleasant

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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