DuPont Electronic Materials

5036 Heat Seal/Encapsulant

Polymer Thick Film Composition

All values reported here are results of experiments in our laboratories intended to illustrate product performance potential with a given experimental design. They are not intended to represent the product's specifications, details of which are available upon demand.

Product Description

Polymeric composition 5036 is a solvent-based screen-printable ink used for heat-sealing circuitry and encapsulant applications. It offers the advantages of rapid curing while maintaining adhesion to both polyester and/or conductors. Heat sealing conditions will vary depending on equipment used. A general recommendation would be to cure as directed below followed by heat-sealing at 120-125°C.at a pressure 50-100 psi.

Processing

- **Screen Printing Equipment**
  Semi-automatic and manual
- **Substrates**
  Polyester, polyimide,epoxy-glass
- **Ink residence Time on Screen**
  >2 hours
- **Screen Types**
  Polyester, Stainless steel (SS) mesh
- **Measured Cure Conditions**
  120-130°C / 5 mins
- **Measured Thickness (after cure) Printed With 200-325 Mesh SS Screen**
  12.5 - 25µm
- **Clean Up Solvent**
  Acetone, or 50/50 Ethylene Diacetate Axarel 2200

Compatibility

Whilst DuPont has tested this composition with specified materials and under the recommended processing conditions, it is impossible or impractical to cover every combination of materials, customer processing conditions and circuit layout. It is therefore essential that customers thoroughly evaluate this material in their specific situations, in order to completely satisfy themselves as to the overall quality and suitability of the composition for its intended application(s).

Table 1
Exemplary Physical and Electrical Properties on Polyester Film

Adhesion Crosshatch (ASTM D3359-78, Scotch Tape #600)	
Dielectric to Polyester	No transfer
Conductor to Dielectric	No transfer
Abrasion Resistance, Pencil Hardness (ASTM D3363-74)	≥1H
Operating Use Temperature	≤ 90 °C
Flexibility (180° crease over 5007E)	No opens
Breakdown Voltage (ASTM D150)	500 V / 25µm DC
Dielectric Constant (ASTMD150)	< 5 at 1kHz
Insulation Resistance	> 10 GΩ

Table 2
Composition Properties

Viscosity (Pa.s) (Brookfield RVT, 10 rpm, UC&S (SC4-14/6R), @ 25°C)	30-50
% Solids	30-32
Thinner	3610
Density (g/cm^3)	1.08
Colour	Colourless
Odour	Slight, pleasant

Thinner

5036 is optimised for screen printing and thinning is not normally required. DuPont Electronics Composition Thinner 3610 may be used sparingly for slight adjustments to viscosity or to replace evaporation losses. However, the use of too much thinner or the use of a non-recommended thinner may affect the rheological behaviour of the material and its printing characteristics.

Storage

Containers of 5036 may be stored in a clean, stable environment at room temperature (<25°C), with their lids tightly sealed. Storage in freezers (temperature <0°C) is NOT recommended, as this could cause irreversible changes in the material. Jar rolling is unnecessary and is NOT recommended, as this could change the rheology of the material.

Shelf life

Heat Seal/Encapsulant 5036 has a shelf life of 6 months from date of shipment, for factory-sealed (unopened) containers, stored under room temperature conditions.

Printing

Heat Seal/Encapsulant 5036 should be thoroughly mixed before use. This is best achieved by slow, gentle hand stirring with a clean, burr-free spatula (flexible plastic or stainless steel) for 1-2 minutes.

Printing should be carried out in a clean, well-ventilated area. Additional information on requirements for printing areas is contained in DuPont Technical Guide, EUT 7.3 “Processing-Screen Printing Rooms”, available on request.

Note: optimum printing characteristics of 5036 are generally achieved in the temperature range 20°C-23°C. It is therefore important that the material, in its container, is at this temperature prior to commencement of printing.

General

Yields and performances will depend to a large degree on the care exercised during processing, particularly in screen printing. Scrupulous care should be taken to keep the heat seal/encapsulant, printing screens and other tools free of metal contamination. Dust, lint and other particulate matter may also contribute to poor yields.

Health/Safety considerations

DuPont polymer compositions are intended for use in an industrial environment by trained personnel. All appropriate health/safety regulations regarding storage, handling and processing of such materials should be complied with.

For information on health/safety regulations, please refer to the specific MSDS for 5036 and to the DuPont Safety Guide EUT 7.1 “Practical Safe Handling of Thick Film Compositions”.

DuPont Electronic Materials in Europe

Sales Offices

Deutschland & Export
Du Pont de Nemours (Deutschland) GmbH
DuPont Electronic Materials
DuPont Straße 1
P.O. Box 1365
D-61343 Bad Homburg
Tel.: (+49-6172) 87-0
Fax: (+49-6172) 87 15 00

France
Du Pont de Nemours (France) S.A.
DuPont Electronic Materials
Z.A. de Courtabœuf
2 Av. du Pacifique – B.P. 85
F-91943 Les Ulis Cedex
Tel.: (+33-1) 69 82 54 32
Fax: (+33-1) 69 82 52 00

U.K./Eire/Scandinavia/Benelux
Du Pont (U.K.) Limited
DuPont Electronic Materials
Coldharbour Lane, Frenchay
Bristol,
U.K. BS16 1QD
Tel.: (+44-117) 931 3191
Fax: (+44-117) 931 3131

Technical Centre
Europe
Du Pont (U.K.) Ltd.
DuPont Electronic Materials
Coldharbour Lane, Frenchay
Bristol,
U.K. BS16 1QD
Tel.: (+44-117) 931 1444
Fax: (+44-117) 931 3001

España/Portugal
Du Pont Ibérica S.A.
DuPont Electronic Materials
Avda. Diagonal 561,
08029 Barcelona
SPAIN
Tel.: (+34-3) 227 60 00
Fax: (+34-3) 227 62 14

Italia
Du Pont de Nemours (Italiana) S.p.A.
DuPont Electronic Materials
16, Via A. Volta
I-20093 Cologno Monzese
Tel.: (+39-2) 25 30 21
Fax: (+39-2) 254 77 65

All other countries
Du Pont de Nemours International S.A.
DuPont Electronic Materials
P.O. Box 50
2, Chemin du Pavillon
CH-1218 Le Grand-Saconnex
Geneva, Switzerland
Tel.: (+41-22) 717 55 36/55 25
Fax: (+41-22) 717 6280

DuPont Electronic Materials outside Europe

Regional offices

Japan
Du Pont Japan Ltd.
DuPont Kubushiki Kaisha
Technical Center
4997 Shin-Yoshida-cho
Kohoku-ku, Yokohama-shi
Kanagawa 223
Japan
Tel.: (+81-45) 593 4876

Singapore
Du Pont Far East Inc.
DuPont Electronic Materials
1, Maritime Square
07-01 World Trade Centre
Singapore 0409
Republic of Singapore
Tel.: (+65) 272 2244
Fax: (+65) 272 7494

U.S.A.
E.I. du Pont de Nemours & Co
DuPont Electronic Materials
Electronics Technology Center
14 T.W. Alexander Drive
Research Triangle Park
NC 27709
Tel.: (+1-800) 237 43 57
Fax: (+1-302) 992 39 15

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