

# DuPont 6146

SILVER/PALLADIUM COFIREABLE SOLDERABLE CONDUCTOR

## Technical Data Sheet

### Product Description

DuPont 6146 is an external solderable cofireable silver/palladium conductor compatible with DuPont™ GreenTape™ 951 low temperature co-fired ceramic system. DuPont 6146 is ideally suited applications requiring excellent solder acceptance.

### Product Benefits

When used with GreenTape™ 951 and compatible via fill pastes, DuPont 6146 offers the following benefits:

- High reliability
- High yields
- High circuit density
- Superior solder acceptance
- Cofire processing

### Processing Design

For detailed recommendations on use of GreenTape™ 951 and conductors such as DuPont 6146, see the GreenTape™ 951 Product Data Sheet. For compatible thick film compositions and their recommended use see the GreenTape™ 951 Product Selector Guide.

### Thinning

Thinning thick film compositions is not recommended as material is supplied formulated for optimal performance. Improper thinning may affect printing characteristics. Thinner may be added to replenish solvent lost during normal usage but care should be taken to not over-thin.

### Composition Properties

Test	Properties
Clean-up Solvent	1-Proxy-2-Propanol
Recommended Thinner	DuPont 8250
Coverage <sup>1</sup> , cm <sup>2</sup> /g	60 - 70
Solids (1050°C)[%]	66.3 - 67.8
Viscosity (Pa.S) [Brookfield HBT, utility cup & spindle, 10rpm @25°C]	130 - 230

### Typical Properties

Dried Line Resolution (µm) lines/space	125/125
Dried Thickness (µm)	12 - 15
Fired Thickness (µm)	8 - 12
Fired Resistivity <sup>2</sup> (mΩ/sq)	< 60
Solder Acceptance (%)	99
Leach Resistance <sup>3</sup> (cycles)	≥ 5
Adhesion Strength <sup>4</sup> Initial (N) Aged (N)	> 25 > 20

<sup>1</sup>Calculated at a wet thickness of 25 µm

<sup>2</sup>At 13 µm dried film thickness

<sup>3</sup>Cycle consists of dip in mildly-activated flux (Alpha 611), 10 second dip in 63/37 Sn/Pb solder at 240°C followed by washing of flux residue.

<sup>4</sup>Aging consists of 240 hours at 150°C.

Table 1 & 2 show anticipated typical physical properties for DuPont 6146 based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

## Printing

The composition 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. Care must be taken to avoid air entrapment.

Printing should be performed in a clean and well-ventilated area. Optimum printing characteristics are generally achieved in the room temperature range of 20-23°C. Viscosity, and therefore printability, of thick film compositions can be affected by ambient temperatures.

Print DuPont 6146 directly onto unfired DuPont™ GreenTape™ 951 low temperature co-fired ceramic system using thick film printing methods and a vacuum stone or other support structure that uniformly distributes vacuum. A 325 mesh stainless steel screen with 12 µm emulsion is standard.

## Drying

Dry in air in a well-ventilated oven or conveyor dryer for 5 minutes at 120°C. Do not over-dry.

## Lamination and Firing

Laminate multiple sheets of GreenTape™ 951 onto which DuPont 6146 has been printed according to processing parameters detailed in the GreenTape™ 951 Design Guide and on the GreenTape™ 951 Product Data Sheet. Consult these documents as well for details of the recommended GreenTape™ 951 firing profile for belt or box air furnaces.

## 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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