

DuPont 5740A — Au Co-fire Conductor

DuPont™ GreenTape™ System

EUROPEAN TECHNICAL DATASHEET

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

DuPont 5740A is a co-fire inner and top layer gold conductor, which is applied by screen printing. It has been developed to be compatible with DuPont 951 Low Temperature Co-fired Dielectric Tape.

Product Benefits :

- Co-fire processing
- Au wire bondable
- High reliability
- High yield
- High circuit density

Design Notes

Properties are based on laboratory data using recommended processing procedures for manufacturing test vehicles.

To achieve the required fired thickness screen mesh counts of 200-400 mesh stainless steel have been found to be suitable.

Recommended processing procedures for Tape are detailed in the 951 Low-Temperature Co fire Dielectric Tape Technical Datasheet. (L-11590)

Processing Summary

- **Screen Type**
325 mesh stainless steel screen. (30µm ø wire; 12µm emulsion build up)
- **Drying**
Allow prints to level for 5 – 10 minutes at room temperature, then dry for 5 minutes at 120°C
- **Firing**
Consult 951 Technical Datasheet

Compatibility

Whilst DuPont has tested this composition with the materials specified above and the recommended processing conditions,

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

TABLE 1. TYPICAL PHYSICAL PROPERTIES

Viscosity (Pa.s.) (Brookfield HBT, 10rpm, SC4-14/6R utility cup and spindle, 25°C±0.2°C)	150 - 260
Thinner	8250
Shelf Life (months)	6

Storage and Shelf Life

Containers may be stored in a clean, stable environment at room temperature (between 5°C – 30°C) with their lids tightly sealed. Storage in high temperature (<30°C) or in freezers (temperature <0°C) is NOT recommended as this could cause irreversible changes in the material. The shelf life of compositions in factory-sealed (unopened) containers between (5°C – 30°C) is 6 months from date of shipment.

Thinner

5740A composition is optimized for screen printing and thinning is not normally required. Use the DuPont recommended thinner for slight adjustments to viscosity or to replace evaporation losses. 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. Please refer to table 1. Typical Physical Properties'



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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 about 1-2 minutes. Care must be taken to avoid air entrapment. Printing should be performed in a 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 are generally achieved in the room temperature range of 20°C-23°C. It is therefore important that the material, in its container, is at the temperature prior to commencement of printing. Class 10,000 printing area is recommended for building complex hybrids and multilayer circuits, otherwise severe yield losses could occur. Refer to 'Processing Summary'.

Drying

Allow prints to level at room temperature, then dry in a well ventilated oven or conveyor dryer. Refer to 'Processing Summary'.

Firing

Consult 951 Low Temperature Co-fire Dielectric Tape Technical Datasheet (L-11590) for firing details.

Fire in well ventilated belt, conveyor furnace or static furnace. Air flows and extraction rates should be optimized to ensure that oxidizing conditions exist within the muffle and that no exhaust gases enter the room. Full information on requirements for firing is contained in DuPont Technical Guide EUT 7.4 'Process Guide-Firing'. Refer to 'Processing Summary'.

General

Performance will depend to a large degree on care exercised in screen printing. Scrupulous care should be taken to keep the composition, printing screens and other tools free of metal contamination. Dust, lint and other particulate matter may also contribute to poor yields.

Safety and Handling

DuPont thick film 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 product MSDS and to the DuPont Safety Guide EUT 7.1 'Practical Safe Handling of Thick Film Compositions'.

TABLE 2. TYPICAL FIRED PROPERTIES¹

Line/Space resolution(μm)	125
Fired Thickness (μm)	4 - 8
Resistivity [$\text{m}\Omega/\square$] (@ 5μm fired thickness)	≤ 5
Loop pull tested value	11
[25 μm Au wire (g)]	

¹ Typical properties are based on laboratory data using recommended processing procedures.

The information provided herein corresponds to our knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relate only to the specific material designated; these data may not be valid for such material used in combination with any other materials or additives or in any process, unless expressly indicated otherwise. The data provided should not be used to establish specification limits or used alone as the basis of design; they are not intended to substitute for any testing you may need to conduct to determine for yourself the suitability of a specific material for your particular purposes. Since DuPont cannot anticipate all variations in actual end-use conditions DuPont makes no warranties and assumes no liability in connection with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent rights.

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