# DuPont LL507

Co-fired, wire bondable gold conductor

## Technical Data Sheet

## Product Description

DuPont LL507 is an external, wire bondable gold signal line and external ground plane conductor for the DuPont™ GreenTape™ 9K7 low temperature co-fired ceramic (LTCC) material system. The material is a cadmium and lead-free* composition with 1 mil and 2 mil gold wire bonding capabilities. DuPont LL507 should not be used as an internal conductor.

## Product Benefits

When incorporated into the GreenTape™ 9K7 LTCC system. DuPont LL507 provides the following benefits:

- High circuit density
- Co-fire processing
- 1 mil and 2 mil Au wire bond versatility
- High yields and reliability
- Cadmium and lead free*

*Cadmium and Lead "free" as used herein means that lead are not an intentional ingredients in and are not intentionally added to the referenced product. Trace amounts however may be present.

## Processing

For detailed recommendations on the use of DuPont LL507 and the GreenTape™ 9K7 system, refer to the system's material data sheets and the DuPont™ GreenTape™ LTCC Design Guide. For a list of compatible co-fired and post fired conductor compositions, reference the GreenTape™ 9K7 Product Selector Guide.

### Printing

The composition should be thoroughly stirred prior to use. This is best achieved by mixing slowly by hand for 1 to 2 minutes using a clean, burr-free spatula (flexible plastic or stainless steel). Care must be taken to avoid air entrapment.

## Typical Properties

| Property | Value |
|---|---|
| Viscosity, (Pa.s, 10 rpm, 25° C)[1] | 180 - 280 |
| Solids, (%)[2] | 79.0 - 82.0 |
| Coverage, ($cm^2$/gram) | 80 - 90 |
| Clean-up solvent | 1-Propoxy-2-Proponal |
| Thinner | 8250 |
| Line/space resolution, (um, dried) | 125 / 125 |
| Dry print thickness, (um) | 12 - 18 |
| Fired print thickness, (um) | 7 - 9 |
| Resistivity, (mOhms/sq)[3] | </= 5 |
| Wire bond adhesion, (g, 1 mil Au) | ≥ 7 |
| Wire bond adhesion, (g, 2 mil Au) | ≥ 35 |

[1] Brookfield 2xHAT, SC4-14 / 6R spindle and utility cup
[2] 750° C
[3] Normalized to 15 um dry thickness

The above table shows the anticipated typical physical and electrical properties for DuPont LL507 based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

DuPont LL507 is printed directly on preconditioned GreenTape™ 9K7 green sheets using appropriate thick film screen printing methods and a vacuum stone or other support structure which uniformly distributes a vacuum to secure the green sheet to the printer's stage plate. Printing is typically performed using a 325 mesh, stainless steel screen with a 10 to 12 micron emulsion thickness.

Printing should be performed in a clean, well ventilated area. Optimum printing characteristics are generally achieved when the room and paste container temperatures are in the 20 to 23°C range.

## Drying

Allow the conductor prints to level for 5 to 10 minutes at room temperature and then dry in a well ventilated oven or conveyor dryer for 5 minutes at 100°C. Do not over-dry.

## Lamination

Collate, stack and laminate multiple sheets of the printed circuit patterns according to the recommended processing parameters detailed in the DuPont™ GreenTape™ LTCC Design Guide.

Typical lamination parameters are 3000 psi at 70°C for 10 minutes. Lamination pressures may vary slightly based upon part design and the individual tape lot shrinkage factors.

## Firing

Fire in a well ventilated conveyor 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.

GreenTape™ 9K7 requires the use of dedicated, specially coated setters in order to prevent parts from sticking during firing.

Reference the DuPont™ GreenTape™ 9K7 low temperature co-fired ceramic (LTCC) system data sheets and DuPont™ GreenTape™ LTCC Design Guide for additional details.

For further information regarding firing profiles, furnace recommendations and setter tile choices, please contact your local DuPont™ Technical Service Representative.

## 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 jars 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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