

# DuPont LF131

## SILVER CONDUCTOR

### Technical Data Sheet

#### Product Description

DuPont LF131 silver conductor composition is intended to be applied to ceramic substrates by screen printing and firing in a conveyor furnace in an air (oxidizing) atmosphere. It has been developed to form interconnection tracks and pads for component and lead attachment, in hybrid microcircuits and networks.

#### Product Benefits

- Excellent fine line resolution
- Lead, cadmium and nickel free\*
- Excellent solderability with SnPb, SnAg and SAC solders.
- Excellent green-strength
- Compatible, sequentially or co-fired, with DuPont LF151 dielectric as a crossover or inner layer conductor

\*Cadmium, lead and nickel "free" as used herein means that these are not intentionally added to the referenced product. Trace amounts however may be present.

#### Processing Conditions

##### Printing

200 - 325 mesh stainless steel, 0.3 - 0.5 mil emulsion. Print speeds up to 20 cm/s.

##### Drying

Allow prints to level for 5 - 10 minutes at room temperature, then dry for 10 - 15 minutes at 150°C.

##### Firing

850°C peak held for 10 minutes on 30 minutes cycle in air (oxidizing) atmosphere.

#### Typical Composition Properties

Test	Properties
Viscosity (Pa.s) Brookfield HBT, UC&SP @10 rpm, 25°C]	83 - 145
Thinner	4553

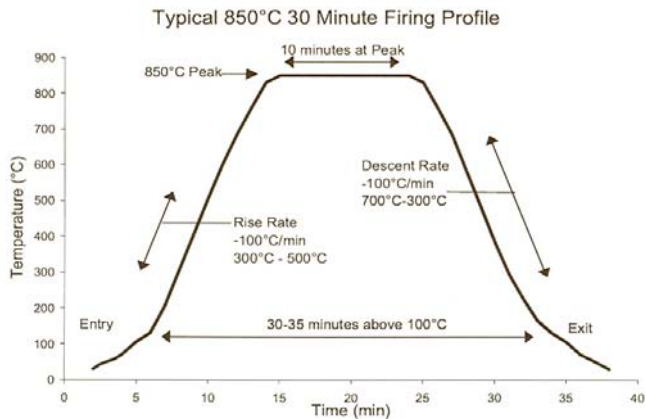
#### Typical Fired Properties

Shrinkage (dried to fired) [%]	56 - 62
Mean fired thickness: (using 200 mesh) [µm]	13 - 19, typical 16µm
Coverage @ 16µm fired (cm <sup>2</sup> /g)	67 - 72
Resistivity (mΩ/sq @ 16µm)	< 2.0
Soldered Adhesion <sup>1</sup>	
Initial (N)	> 20
Aged (1000hrs@ 150°C)[N]	≥ 18

<sup>1</sup> 90° wire peel test on 2mm x 2mm pad soldered with 95.5Sn/3.8Ag/0.7Cu Solder using mildly activated flux, Alpha 611 on both Alumina. DuPont LF131 is recommended for use on dielectric only for crossover and inner layer applications

This table shows anticipated typical physical properties for DuPont LF131 based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

## Typical 30-minutes fire profile



## 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).

Copyright © 2009 DuPont. All rights reserved. The DuPont Oval, DuPont™, The miracles of science™, Green Tape™ and all products or words denoted with ® or ™ are registered trademarks or trademarks of E. I. du Pont de Nemours and Company or its affiliates ("DuPont").  
NO PART OF THIS MATERIAL MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM OR TRANSMITTED IN ANY FORM OR BY ANY MEANS ELECTRONIC, MECHANICAL, PHOTOCOPYING, RECORDING OR OTHERWISE WITHOUT THE PRIOR WRITTEN PERMISSION OF DUPONT. Z

Caution: Do not use in medical applications involving implantation in the human body or contact with internal body fluids or tissue unless the product is provided by DuPont under a formal written contract consistent with the DuPont Policy Regarding Medical Applications of DuPont Materials H-50103-2 ("Medical Applications Policy") and which expressly acknowledges the contemplated use. For additional information, please request a copy of DuPont Medical Caution Statement H-50102-2 and the DuPont Medical Applications Policy.

The information provided herein is offered for the product user's consideration and examination. While the information is based on data believed to be reliable, DuPont makes no warranties, expressed or implied as to the data's accuracy or reliability and assumes no liability arising out of its use. The data shown are the result of DuPont laboratory experiments and are intended to illustrate potential product performance within a given experimental design under specific, controlled laboratory conditions. While the data provided herein falls within anticipated normal range of product properties based on such experiments, it should not be used to establish specification limits or used alone as the basis of design. It is the product user's responsibility to satisfy itself that the product is suitable for the user's intended use. Because DuPont neither controls nor can anticipate the many different end-uses and end-use and processing conditions under which this information and/or the product described herein may be used, DuPont does not guarantee the usefulness of the information or the suitability of its products in any given application. Users should conduct their own tests to determine the appropriateness of the products for their particular purpose.

The product user must decide what measures are necessary to safely use the product, either alone or in combination with other products, also taking into consideration the conditions of its facilities, processes, operations, and its environmental, health and safety compliance obligations under any applicable laws.

This information may be subject to revision as new knowledge and experience become available. This publication is not to be taken as a license to operate under, or recommendation to infringe any patent.

For more information on DuPont LF131 or other DuPont Microcircuit Materials products, please contact your local representative:

### Americas

DuPont Microcircuit Materials  
14 T.W. Alexander Drive  
Research Triangle Park, NC 27709  
Tel.: 800-284-3382

### Europe

Du Pont (U.K.) Limited  
Coldharbour Lane  
Bristol BS16 1QD  
U.K.  
Tel.: 44-117-931-3191

### Asia

DuPont Kabushiki Kaisha  
Sanno Park Tower, 11-1  
Nagata-cho 2-chome  
Chiyoda-ku, Tokyo 100-611  
Japan  
Tel.: 81-3-5521-8650

DuPont Taiwan Ltd  
45, Hsing-Pont Road,  
Taoyuan, Taiwan 330  
Tel.: 886-3-377-3616

DuPont China Holding Co. Ltd  
Bldg 11, 399 Keyuan Rd., Zhangji Hi-Tech Park,  
Pudong New District, Shanghai 201203, China  
Tel.: 86-21-6386-6366 ext.2202

DuPont Korea Inc.  
3~5th Floor, Asia tower #726,  
Yeoksam-dong, Gangnam-gu  
Seoul 135-719, Korea  
Tel.: 82-10-6385-5399

E. I. DuPont India Private Limited  
7th Floor, Tower C, DLF Cyber Greens,  
Sector-25A, DLF City, Phase-III,  
Gurgaon 122 002 Haryana, India  
Tel.: 91-124-4091818

Du Pont Company (Singapore) Pte Ltd  
1 HarbourFront Place, #11-01  
HarbourFront Tower One,  
Singapore 098633  
Tel.: 65-6586-3022

<http://mcm.dupont.com>



The miracles of science™

MCMLF131 (3/2010)