**Product Description**
DuPont LF151 is a filled, crystallizable screen-printed thick film dielectric composition and is an integral element of System LF. It is a versatile dielectric intended for use in both high reliability and low cost MCM (Multi-Chip Module) and hybrid interconnect applications.

**Product Benefits**
- Lead, Cadmium, Chromium and Nickel Free*
- Broad conductor compatibility (gold, silver and mixed metal)
- Compatible with cofirable conductors
- Highly resistant to EMF (electro-motive force) blistering and shorting
- Robust electrical and mechanical properties
- Dense, hermetic microstructure

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

**Design Note**
The fired thickness of the dielectric layer should be at least 30 mm between the conducting layers this can be achieved with 2 prints of the dielectric. Each printed dielectric layer should be separately fired. Co-firing is not recommended.

**Processing Conditions**

**Printing**
230 to 280 stainless steel screen, at a print speed of 15cm/sec (see design note).

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

**Typical Physical Properties**

<table>
<thead>
<tr>
<th>Test</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity (Pa.s) [Brookfield HBT, UC&amp;SP, 50 rpm, 25°C]</td>
<td>70-110</td>
</tr>
<tr>
<td>Coverage (cm²/g) [Based on average fired thickness of 14mm]</td>
<td>110-130</td>
</tr>
<tr>
<td>Thinner</td>
<td>DuPont 4553</td>
</tr>
<tr>
<td>Total Fired Thickness (mm)</td>
<td>&gt; 30</td>
</tr>
<tr>
<td>Dielectric Constant (@1MHZ)</td>
<td>8-10</td>
</tr>
<tr>
<td>Dissipation Factor (@1MHZ)</td>
<td>&lt;0.5%</td>
</tr>
<tr>
<td>Leakage Current [µA/cm²]</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Insulation Resistance [30µm]</td>
<td>&gt;10⁻¹² @ 100VDC</td>
</tr>
<tr>
<td>Mean Breakdown Voltage [30µm]</td>
<td>&gt;1.6kv</td>
</tr>
<tr>
<td>Via Resolution (µm)</td>
<td>250 - 300</td>
</tr>
</tbody>
</table>

This table shows anticipated typical physical properties for DuPont LF151 based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

**Firing**
850°C peak held for 10 minutes on 30 minutes cycle in an air atmosphere.
Recommended Processing Procedure

Substrates
Substrates of different compositions and from various manufacturers may result in variation in performance properties.

Thinner
This composition is optimized for screen-printing, 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 behavior of the material and its printing characteristics. Refer to table 1.

Printing
The composition should be thoroughly mixed before use. This is best achieved by slow, gently, hand stirring with a clean burr-free spatula (flexible plastic) for 1-2 minutes. Care must be taken to avoid air entrapment. Printing should be performed in a clean and well-ventilated area. 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 this temperature prior to commencement of printing.

Drying
Allow prints to level at room temperature, and then dry in a well-ventilated oven or conveyor dryer.

Firing
Fire in a well ventilated belt, conveyor furnace, or static furnace. Airflows and extraction rates should be optimized to ensure that oxidizing conditions exist within the muffle.
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).