**Product Description**
High temperature glass encapsulant composition DuPont 9615 is intended for use as a final encapsulant to provide hermetic protection for screen printed capacitors. DuPont 9615 is applied to ceramic substrate by screen printing and fired in an air (oxidizing) atmosphere.

**Product Benefits**
- Cadmium free
- Red color dried film, colorless fired film.
- Coefficient of thermal expansion 6.3 x 10-6 in/in/ºC (0-300ºC)
- Hermetic fired film with excellent chemical durability
- Fired at a peak temperature of 850ºC

**Processing**

**Printing**
Encapsulant composition DuPont 9615 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-bubble entrapment. Printing should be carried out in a clean, well-ventilated area.

Note: optimum printing characteristics of DuPont 9615 are generally achieved in the temperature range 20ºC-23ºC. It is therefore important that the material, in its container, is at this temperature prior to commencement of printing.

Screen printed with a 200 mesh stainless steel screen to obtain a fired thickness of 12µm. Two layers separately fired are recommended for maximum hermetic.

**Drying**
Allow prints to level for 5-10 minutes at room temperature in a clean, draught-free environment, followed by drying for 10-15 minutes at 150ºC in a well ventilated oven or conveyor dryer.

**Firing**
Fire in a well ventilated belt or conveyor furnace in air with a 30-60 minute cycle with a peak of 850ºC held for 10 minutes. See Figure 1 & Figure 2. Care must be taken to ensure that any gases/vapors from other chemicals/materials (e.g. halogenated solvents) do not enter the furnace muffle. It is also essential that the air supply to the furnace is clean, dry and free of contaminants. Air flows and extraction rates should be optimized to ensure that oxidizing conditions exist within the muffle, and that no furnace exhaust gases enter the room.

**General**
Yield and performance will depend to a large degree on the care exercised during processing, particularly in screen printing. Scrupulous care should be taken to keep the encapsulant composition, printing screens and other tools free of metal contaminations. Dust, lint and other particulate matter may also contribute to poor yields.

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**Table 1**

**Composition Properties**

<table>
<thead>
<tr>
<th>Test</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity (Pa.s) (Brookfield HBF, spindle#5, 10 rpm, 25ºC)</td>
<td>170 - 230</td>
</tr>
<tr>
<td>Coverage (cm²/gm)</td>
<td>83</td>
</tr>
<tr>
<td>Thinner</td>
<td>DuPont 9180</td>
</tr>
</tbody>
</table>
**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).
For more information on DuPont 9615 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