Starting Formulation

SF 7012
General Purpose Electrical Potting Compound
EPON™ Resin 828

Introduction
This general purpose electrical potting compound provides good mechanical, thermal and electrical properties while curing at moderate temperatures, 90-150 °C. Polyethylene glycol is used to impart a degree of thermal shock resistance to the cured system.

Formula

<table>
<thead>
<tr>
<th>Material</th>
<th>Supplier</th>
<th>Pounds</th>
<th>Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Resin Portion</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPON Resin 828</td>
<td>Hexion</td>
<td>75.0</td>
<td>7.74</td>
</tr>
<tr>
<td>Carbowax 600</td>
<td>Union Carbide Corp.</td>
<td>25.0</td>
<td>2.67</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>100.0</td>
<td>10.41</td>
</tr>
</tbody>
</table>

| **Converter Portion**         |                              |        |         |
| Hexahydrophthalic Anhydride   | Anhydrides & Chemicals, Inc. | 51.5   | 4.50    |
| Chlorendic Anhydride           | Jonas Chemical Corp.         | 51.5   | 3.46    |
| DMP-10                        | Rohm & Haas Co.              | 2.0    | 0.24    |
| **Total**                     |                              | 105.0  | 8.20    |

Typical Handling Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin/Converter Combining Ratio</td>
<td>by weight</td>
<td>0.95 : 1</td>
</tr>
<tr>
<td></td>
<td>by volume</td>
<td>1.27 : 1</td>
</tr>
<tr>
<td>Viscosity at 23 °C</td>
<td>cP</td>
<td>24,000</td>
</tr>
<tr>
<td>Density</td>
<td>lbs/gal</td>
<td>11.0</td>
</tr>
<tr>
<td>Pot Life at 23 °C</td>
<td>hrs</td>
<td>8-10</td>
</tr>
</tbody>
</table>

Compounding Procedure
Combine the hexahydrophthalic anhydride (HHPA) and chlorendic anhydride using agitation. Sparge with dry inert gas, if possible, so that hydrolysis of anhydride is minimized. During agitation, heat the mixture to 90 °C. Add DMP-10 and hold the converter blend until a clear solution is attained. Cool the converter to 40 °C or less and then add it to a thoroughly mixed blend of EPON Resin 828 and Carbowax 600. Continue agitation until the resin and the converter are thoroughly mixed.

This potting compound is useable for 8 to 10 hours if it is stored at room temperature. Filler loadings of 100 to 200 parts per hundred resin can be incorporated if the formula is to be used at elevated temperatures. Suitable fillers include silicas, aluminas, talcs and calcium carbonate.
Application

The unit to be potted is placed in the mold and heated to 90-120 °C. The compound is poured into the mold. If necessary, entrapped air is removed by vacuum.

This formulation may be cured overnight at 90 °C, in 3-4 hours at 120 °C, or 1 hour at 150 °C. Large castings should be cured at the lowest temperature. Silicone mold releases, such as Dow-Corning Compound Number 7 are the most effective.

Typical Cured State Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength, Ultimate</td>
<td>psi</td>
<td>10,600</td>
</tr>
<tr>
<td>Tensile Elongation at Break</td>
<td>%</td>
<td>5.25</td>
</tr>
<tr>
<td>Flexural Strength, Ultimate</td>
<td>psi</td>
<td>19,100</td>
</tr>
<tr>
<td>Compressive Strength, Ultimate</td>
<td>psi</td>
<td>16,500</td>
</tr>
<tr>
<td>IZOD Impact, notched</td>
<td>ft•lbs/inch</td>
<td>0.473</td>
</tr>
<tr>
<td>Hardness</td>
<td>Rockwell M</td>
<td>104</td>
</tr>
<tr>
<td>Water Absorption, 24 hours</td>
<td>%</td>
<td>0.18</td>
</tr>
<tr>
<td>Weight Loss, 24 hours at 150 °C</td>
<td>%</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Electrical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dielectric Constant, at 10^6 Hertz</td>
<td></td>
<td>3.56</td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td>volts/mil</td>
<td>479</td>
</tr>
</tbody>
</table>

Storage

Recommendations regarding storage conditions can be obtained by visiting our web site at www.hexion.com

General Information

These are starting formulations and are not proven in the user’s particular application but are simply meant to demonstrate the efficacy of the products and to assist in the development of the user’s own formulation. It is the user’s responsibility to fully-test and qualify the formulation, along with the ingredients, methods, applications or equipment identified herein (“Information”), by the user’s knowledgeable formulator or scientist, and to determine the appropriate use conditions and legal restrictions, prior to use of any Information.

Safety, Storage & Handling

Please refer to the MSDS for the most current Safety and Handling information.

Exposure to these materials should be minimized and avoided, if feasible, through the observance of proper precautions, use of appropriate engineering controls and proper personal protective clothing and equipment, and adherence to proper handling procedures. None of these materials should be used, stored, or transported until the handling precautions and recommendations as stated in the Material Safety Data Sheet (MSDS) for these and all other products being used are understood by all persons who will work with them. Questions and requests for information on Hexion Inc. ("Hexion") products should be directed to your Hexion sales representative, or the nearest Hexion sales office. Information and MSDSs on non-Hexion products should be obtained from the respective manufacturer.

Contact Information

For product prices, availability, or order placement, please contact customer service:
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