Starting Formulation

SF 7005

Epoxy Casting Compound: Room Temperature Cure
EPON™ Resin 828 / HELOXY™ Modifier 505 / EPIKURE™ Curing Agents 3046 and 3234

Introduction
This unfilled casting compound illustrates the use of stress relieving epoxy resins in formulating a room temperature curing system to provide a hard, polishable surface compound with high resilience and impact resistance. Sections up to 1-inch thick can be cast and cured at room temperature. Thicker sections can be cast when mineral fillers are incorporated. Potential end uses include bowling balls and cast tooling.

Suggested Uses
- Molded parts such as sand-core boxes for foundry work, pipe fitting, cases, and housings
- Electrical insulation such as transformer bushings for interior service

<table>
<thead>
<tr>
<th>Formula</th>
<th>Material</th>
<th>Supplier</th>
<th>Pounds</th>
<th>Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin Portion</td>
<td>EPON Resin 828</td>
<td>Hexion</td>
<td>85.5</td>
<td>9.00</td>
</tr>
<tr>
<td></td>
<td>HELOXY Modifier 505</td>
<td>Hexion</td>
<td>14.5</td>
<td>1.71</td>
</tr>
<tr>
<td></td>
<td>DC-200 Fluid, 100 centistoke grade</td>
<td>Dow-Corning Corp.</td>
<td>0.005</td>
<td>0.0006</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100.005</td>
<td>10.7106</td>
</tr>
<tr>
<td>Converter Portion</td>
<td>EPIKURE 3046 Curing Agent</td>
<td>Hexion</td>
<td>25</td>
<td>3.20</td>
</tr>
<tr>
<td></td>
<td>EPIKURE 3234 Curing Agent</td>
<td>Hexion</td>
<td>5</td>
<td>0.61</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>3.81</td>
</tr>
</tbody>
</table>

Compounding
Resin Portion
Weigh all the components into a mixing vessel and blend under low to moderate speed agitation until homogeneous. Although the addition of DC-200 Fluid may result in a slight haze in the compounded resin, this air release agent remains uniformly dispersed during storage.

Converter Portion
Weigh the EPIKURE 3046 Curing Agent and EPIKURE 3234 Curing Agent into a mixing tank and blend until homogeneous. Store the compounded curing agent in tightly sealed metal or polyolefin plastic containers.

Typical Handling

Table 1 / Handling Properties

<table>
<thead>
<tr>
<th>Properties</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin Portion</td>
<td>pbw</td>
<td>100</td>
</tr>
<tr>
<td>Converter Portion</td>
<td>pbw</td>
<td>30</td>
</tr>
</tbody>
</table>
Gel Time at 25 °C

<table>
<thead>
<tr>
<th>Section Description</th>
<th>Min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-inch thick section</td>
<td>80</td>
</tr>
<tr>
<td>1 1/2-inch thick section</td>
<td>65</td>
</tr>
</tbody>
</table>

Gallon quantity

<table>
<thead>
<tr>
<th>Description</th>
<th>Min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-inch thick section</td>
<td>45</td>
</tr>
<tr>
<td>1 1/2-inch thick section</td>
<td>65</td>
</tr>
</tbody>
</table>

Density

<table>
<thead>
<tr>
<th>Portion</th>
<th>lbs/gal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin Portion</td>
<td>9.34</td>
</tr>
<tr>
<td>Converter Portion</td>
<td>7.87</td>
</tr>
<tr>
<td>Combined System</td>
<td>9.03</td>
</tr>
</tbody>
</table>

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>8,500</td>
</tr>
<tr>
<td>Tensile Modulus, Initial</td>
<td>ksi</td>
<td>380</td>
</tr>
<tr>
<td>Tensile Elongation</td>
<td>%</td>
<td>6.0</td>
</tr>
<tr>
<td>Flexural Strength, Ultimate</td>
<td>psi</td>
<td>14,800</td>
</tr>
<tr>
<td>Flexural Modulus, Initial</td>
<td>ksi</td>
<td>390</td>
</tr>
<tr>
<td>Flexural Deflection at failure</td>
<td>in</td>
<td>0.50</td>
</tr>
<tr>
<td>Compressive Strength, Ultimate</td>
<td>psi</td>
<td>27,800</td>
</tr>
<tr>
<td>Compressive Strength, Yield</td>
<td>psi</td>
<td>10,800</td>
</tr>
<tr>
<td>Deflection at failure</td>
<td>inch</td>
<td>0.53</td>
</tr>
<tr>
<td>Izod Impact, notched</td>
<td>ft•lb/in.</td>
<td>0.56</td>
</tr>
<tr>
<td>Izod Impact, unnotched</td>
<td>ft•lb/in.</td>
<td>4.87</td>
</tr>
</tbody>
</table>

Hardness

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Shore D</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 °C</td>
<td>81</td>
</tr>
<tr>
<td>52 °C</td>
<td>80</td>
</tr>
<tr>
<td>66 °C</td>
<td>75</td>
</tr>
</tbody>
</table>

1 All specimens were cured for 16 hours at 25 °C followed by 1 hour at 93 °C.

Mixing
Mix the resin and converter portions in a 100:30 weight ratio just prior to use and blend thoroughly. When practical, the mixture should be vacuum deaerated before pouring into molds treated with release agent. Fillers such as aluminum powder, aluminum granules, silica, calcium carbonate, clay or talc should be incorporated when sections thicker than 1-inch are to be cast.

To obtain maximum mold turnover, preheat the molds, or heat after filling, to between 50 and 66 °C. This will not cause thermal degradation due to excessive exothermic temperature rise.

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

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