Starting Formulation

SF 7015

Epoxy Mass Casting Binder
EPON™ Resin 828 / EPIKURE™ Curing Agent 3061

Introduction

This epoxy system is formulated for use as a binder in casting compounds capable of application and cure in unusually large mass sizes with minimal exotherm and shrinkage. Typical of such applications is the casting of large tooling parts, flotation devices and the filling/sealing of large downhole excavations.

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

Features

- When filled with selected low specific heat inerts, such as metallic powder or tabular alumina, resulting compounds are characterized by the following performance highlights:
  - Cured at 23 °C
  - Peak exotherm of <65 °C
  - Minimal shrinkage
  - Demold capability after 24 hours cure

Formula

<table>
<thead>
<tr>
<th>Material</th>
<th>Supplier</th>
<th>Pounds</th>
<th>Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin Portion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPON Resin 828</td>
<td>Hexion</td>
<td>100.0</td>
<td>10.36</td>
</tr>
<tr>
<td>Converter Portion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPIKURE Curing Agent 3061</td>
<td>Hexion</td>
<td>55.0</td>
<td>7.00</td>
</tr>
<tr>
<td>Nonylphenol</td>
<td>Borg-Warner Chemicals</td>
<td>27.0</td>
<td>3.36</td>
</tr>
</tbody>
</table>

Typical Handling Properties

<table>
<thead>
<tr>
<th>Properties</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin/Converter Combining Ratio</td>
<td>by weight</td>
<td>100 : 82</td>
</tr>
<tr>
<td></td>
<td>by volume</td>
<td>1 : 1</td>
</tr>
<tr>
<td>Gel Time at 23 °C, one pint mass</td>
<td>hrs</td>
<td>2</td>
</tr>
<tr>
<td>Peak Exotherm, one pint mass</td>
<td>°C</td>
<td>115</td>
</tr>
</tbody>
</table>

Typical Cured State Properties

<table>
<thead>
<tr>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
</table>

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Heat Deflection Temperature °C 54
Tensile Strength psi 5900
Tensile Elongation % 2.7
Flexural Strength psi 9850

Compressive Strength, Ultimate psi 17200
Compressive Strength, Yield psi 8300
Izod Impact, notch ft•lb/in 0.24
Water Absorption, 96 hours at 23 °C 1 0.42
Water Absorption, 96 hours at 44 °C 2 0.24

Compounding Mix the resin and converter portions and blend to a homogeneous state with proper agitation equipment prior to mixing with selected filler (sand, iron powder, or -8 mesh tabular alumina). Filler contents should be maximized when casting extraordinarily large masses. The peak exotherm is inversely proportional to the amount of filler used, but a peak exotherm temperature of 40-65 °C is necessary to ensure proper cure development and minimal shrinkage.

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

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