Ultralane 781A/B
Polyurethane Encapsulation System

Ultralane 781A/B is a room temperature curing polyurethane system, formulated for potting and encapsulating electrical and electronic components requiring flexibility and flame retardancy. Typical applications for this system include encapsulation of transformers, filters, capacitors and pressure sensitive devices.

Properties

- No TDI or MOCA®
- High elongation
- Excellent insulation properties
- Flame retardant, UL 94 V-O

Benefits

Ultralane 781A/B provides the end-user with a black, flexible, flame retardant encapsulant. The low viscosity of this system facilitates air release, and superior impregnation. Its processing characteristics allow the end-user many options when handling the system.
### Ultralane® 781A

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit</th>
<th>ASTM Method</th>
<th>Temperature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity, cP</td>
<td></td>
<td>D-2393</td>
<td>25°C</td>
<td>200</td>
</tr>
<tr>
<td>Density, g/cm³</td>
<td></td>
<td>D-792</td>
<td>25°C</td>
<td>1.24</td>
</tr>
<tr>
<td>Flash point, °C</td>
<td></td>
<td>D-92</td>
<td></td>
<td>&gt;200</td>
</tr>
</tbody>
</table>

As-supplied form: translucent liquid
Shelf life, months: 6
Disposal: Regular procedures approved by national and/or local authorities

### Ultralane® 781B

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit</th>
<th>ASTM Method</th>
<th>Temperature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity, cP</td>
<td></td>
<td>D-2393</td>
<td>25°C</td>
<td>3,800</td>
</tr>
<tr>
<td>Density, g/cm³</td>
<td></td>
<td>D-792</td>
<td>25°C</td>
<td>1.33</td>
</tr>
<tr>
<td>Flash point, °C</td>
<td></td>
<td>D-92</td>
<td></td>
<td>&gt;130</td>
</tr>
</tbody>
</table>

As-supplied form: black liquid
Shelf life, months: 6
Disposal: Regular procedures approved by national and/or local authorities

### Storage

The products described in this instruction sheet should be stored at 60-90°F. They are moisture sensitive and packaged under a blanket of dry nitrogen. Maintain factory seal after use blanket with dry nitrogen and tightly reseal. Under these conditions their shelf lives will be six months from date of shipping.
System preparation

Mix using meter-mix dispensing equipment, or manually, as follows:

Weigh the desired amount of hardener into a mixing container with resin. Mix thoroughly by means of mechanical mixer or manual stirring. Be sure to scrape the side and walls of the mixing container during mixing. Check for uniform color as a sign of complete mixing.

Vacuum deairing is recommended to remove any entrapped air from the mixing procedure. To deair most products, 1-2 minutes under full vacuum is recommended for each quart of volume of mixed material. Quickly dispense potting material into cavity or channel to be sealed; be certain not to trap air bubbles as viscosity builds.

To reduce the cure time, the casting is often allowed to gel at room temperature and then post-cured 2-6 hours at 60-80°C. Small castings can be processed and directly cured at slightly higher temperatures (40-60°C.)

<table>
<thead>
<tr>
<th>Mix ratios</th>
<th>System</th>
<th>parts by weight</th>
<th>parts by volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultralane® 781A</td>
<td>23</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Ultralane® 781B</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

| Processing data     | System         |                |                |
|---------------------|----------------|----------------|
| (average values)    |                |                |
| Initial viscosity, cP | ASTM D-2393   | at 25°C       | 2,000          |
| Pot life, minutes   | OC-WL-001      | at 25°C       | 60             |
| Recommended cure time, hours | at 25°C | 24*           |
| Gel Time, 10 grams  |                |                |
| minutes             | at 25°C       | 156            |
| minutes             | at 60°C       | 25             |

* Cure schedule results in approximately 90% of final properties, additional room temperature or elevated temperature curing is required for 100% properties.
### Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not for specification purposes</td>
<td></td>
</tr>
</tbody>
</table>

#### Typical physical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density, g/cm³</td>
<td>1.31</td>
</tr>
<tr>
<td>Hardness, Shore A</td>
<td>82</td>
</tr>
<tr>
<td>Elongation at break, %</td>
<td>50</td>
</tr>
<tr>
<td>Tensile strength at break, psi</td>
<td>630</td>
</tr>
<tr>
<td>Tg, °C</td>
<td>Perkin Elmer Application Case #20</td>
</tr>
<tr>
<td>Coefficient of thermal expansion, mm/mm/°C</td>
<td>Alpha 1 (&lt;5°C) 81 x 10⁻⁶</td>
</tr>
<tr>
<td></td>
<td>Alpha 2 (-5–125°C) 194 x 10⁻⁶</td>
</tr>
<tr>
<td>Water absorption, % by weight, 24 hours at 25°C</td>
<td>0.12</td>
</tr>
<tr>
<td>Thermal conductivity, cal/sec·cm·°C</td>
<td>9.6 x 10⁻⁴</td>
</tr>
<tr>
<td>Flame retardant</td>
<td>UL 94 VO</td>
</tr>
</tbody>
</table>

#### Typical electrical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume resistivity, Ω·cm</td>
<td>1.8 x 10¹⁶</td>
</tr>
<tr>
<td>Dielectric strength, V/mil</td>
<td>565</td>
</tr>
<tr>
<td>Dielectric constant 60 Hz</td>
<td>4.5</td>
</tr>
<tr>
<td>Dissipation factor 60 Hz</td>
<td>0.11</td>
</tr>
</tbody>
</table>
Handling precautions

Mandatory and recommended industrial hygiene procedures should be followed whenever these products are being handled and processed. For additional information please consult the corresponding material safety data sheets.

Personal hygiene

**Ultralane® 781A**

**Warning!** Harmful if inhaled. Causes skin and eye irritation. Causes allergic skin and respiratory reaction. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Avoid prolonged or repeated contact with skin. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

**Ultralane® 781B**

**Caution!** In accord with good industrial practice, handle with due care. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

First aid

In case of contact:

**Skin:** Immediately wash with soap and water. Remove contaminated clothing and launder before reuse. Destroy contaminated shoes.

**Eyes:** Immediately flush with water for at least 15 minutes. Call a physician.

**Ingestion:** If conscious, give plenty of water to drink. Do not induce vomiting. Call a physician.

**Inhalation:** Remove to fresh air. Administer oxygen or artificial respiration if necessary. Call a physician.

**Other:** Referral to physician is recommended if there is any question about the seriousness of any injury.

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