**Technical Bulletin**

**XTJ-568**

**XTJ-568** is a polyetherdiamine of approximately 219 molecular weight. It is designed to be a slower epoxy curing agent than conventional polyetheramines for applications such as fabrication of large composite parts where longer pot life is desirable. In laboratory testing (200g sample at room temperature), a formulation containing XTJ-568 and IPDA exhibited lower exotherm during cure than a similar formulation containing a conventional low molecular weight polyetheramine.

**APPLICATIONS**
- Epoxy curing

**BENEFITS**
- Longer pot life than most other polyetheramine curing agents
- Lower exotherm than other low molecular weight polyetheramines
- Good cured resin mechanical properties
- Relatively high glass transition temperature

### SALES SPECIFICATIONS

<table>
<thead>
<tr>
<th>Property</th>
<th>Specifications</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Colorless to light yellow with slight haze</td>
<td>ST-30.1</td>
</tr>
<tr>
<td>Color, Pt-Co</td>
<td>75 max.</td>
<td>ST-30.12</td>
</tr>
<tr>
<td>Primary amine, % of total amine</td>
<td>93 min.</td>
<td>ST-5.34</td>
</tr>
<tr>
<td>Total acetylable, meq/g</td>
<td>9.0 – 9.5</td>
<td>ST-31.39</td>
</tr>
<tr>
<td>Total amine, meq/g</td>
<td>8.6 min</td>
<td>ST-5.35</td>
</tr>
<tr>
<td>Water, wt%</td>
<td>0.25 max.</td>
<td>ST-31.53, 6</td>
</tr>
</tbody>
</table>

*Methods of Test are available from Huntsman Corporation upon request.

### ADDITIONAL INFORMATION

**Regulatory Information**
- DOT/TDG Classification: Amines, liquid, corrosive, N.O.S. (aliphatic polyetheramine)
- HMIS Code: 3-1-0
- CAS Number: Proprietary
- US, TSCA: Listed
- Canadian WHMIS Classification: E
- Canada, DSL: Listed
- European Union, EINECS/ELINCS: Notified
- Australia, AICS: Not Listed
- Japan, ENCS: Not Listed
- Korea, ECL: Not Listed
- China, IECSC: Not Listed

**Typical Physical Properties**
- Amine hydrogen equivalent weight, g/eq: 55
- Density, g/ml, 25°C: 0.943
- Density, lb/US gallon, 25°C: 7.87
- Flash point, PMCC, °C / °F: 121 / 250
- Viscosity, cP, 25°C: 7
EPOXY CURING WITH XTJ-568

XTJ-568 should be mixed thoroughly with the resin (29 phr with a standard liquid resin). The initial mix viscosity is approximately 600 cP; Figure 1 compares viscosity development with XTJ-568 and with JEFFAMINE® D-230 polyetheramine. Typical cured resin properties for a liquid epoxy resin cured with XTJ-568 are as follows (heat cure, 2 hr 80°C + 3 hr 125°C):

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass transition temperature, °C</td>
<td>96</td>
</tr>
<tr>
<td>Flexural strength, psi (MPa)</td>
<td>16,200 (112)</td>
</tr>
<tr>
<td>Flexural modulus, psi (MPa)</td>
<td>409,000 (2820)</td>
</tr>
<tr>
<td>Tensile strength, psi (MPa)</td>
<td>9,400 (65)</td>
</tr>
<tr>
<td>Elongation to break, %</td>
<td>8.8</td>
</tr>
<tr>
<td>Hardness, Shore D</td>
<td>84</td>
</tr>
</tbody>
</table>

Figure 1: Viscosity Development Comparison with Single Curing Agent (200-gram mass)

EPOXY CURING WITH FORMULATED HARDENER SYSTEMS

Tests have also been conducted with formulated hardener systems designed for WTG applications. Figures 2 – 4 illustrate and compare cure characteristics (viscosity build and exotherm) of two conventional hardener systems and a blend of XTJ-568 with isophorone diamine (IPDA) with a low viscosity diluted resin.
Figure 2: Viscosity Development Comparison with Formulated Curing Agent at 40°C (200-gram mass)

**Viscosity Build: 40°C Cure (200-g mass)**

- Conventional II (3-component)
- Conventional I (2-component)
- XTJ-568 / IPDA (70/30 wt%)

All formulations use a 1:1 amine hydrogen to epoxide stoichiometry.

Figure 3: Viscosity Development Comparison with Formulated Curing Agent at Room Temperature (200-gram mass)

**Viscosity Build: Room Temperature Cure (200-g mass)**

- Conventional II (3-component)
- Conventional I (2-component)
- XTJ-568 / IPDA (70/30 wt%)

Latency behavior
Figure 4: Exotherm During Room Temperature Cure Using Formulated Hardener Systems

Temperature Rise During Gel Time Testing
(200-g mass at room temperature)

All formulations use a 1:1 amine hydrogen to epoxide stoichiometry.

Conventional II (3-component)
XTJ-568 / IPDA (70/30 wt%)

Conventional I (2-component)
Low exotherm

TOXICITY AND SAFETY
For additional information on the toxicity and safe handling of this product, consult the Material Safety Data Sheet (Safety Data Sheet in Europe) prior to use of this product.

HANDLING AND STORAGE
Materials of Construction
At temperatures of 75-100°F (34-38°C)
- Tanks: Carbon steel
- Lines, valves: Carbon steel
- Pumps: Carbon steel
- Heat exchange Surfaces: Stainless steel
- Hoses: Stainless steel, polyethylene, polypropylene, and TEFLON®
- Gaskets, packing: Polypropylene or TEFLON® (elastomers such as neoprene, Buna N, and VITON® should be avoided)
- Atmosphere: Nitrogen or dry air

At temperatures above 100°F (38°C)
- Tanks: Stainless steel or aluminum
- Lines, Valves: Stainless steel
- Pumps: Stainless steel or Carpenter 20 equivalent
- Atmosphere: Nitrogen

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XTJ-568 may be stored under air at ambient temperatures for extended periods. A nitrogen blanket is suggested for all storage, however, to reduce the effect of accidental exposure to high temperatures and to reduce the absorption of atmospheric moisture and carbon dioxide. It should be noted that pronounced discoloration is likely to occur at temperatures above 140°F (60°C), whatever the gaseous pad.

Cleanout of lines and equipment containing XTJ-568 can be accomplished using warm water and steam. In the event of spillage of this product, the area may be flushed with water. The proper method for disposal of waste material is by incineration with strict observance of all federal, state, and local regulations.

**AVAILABILITY**

Samples are available in North America and Asia by contacting our sample department at 1-800-662-0924. Samples in other locations, including Europe, are available by contacting any Huntsman Corporation sales office.