

Technical Bulletin**JEFFAMINE[®] RFD-270 Amine**

JEFFAMINE[®] RFD-270 amine, having an average formula weight of about 270, is a novel aliphatic amine containing both rigid (cycloaliphatic) and flexible (polyetheramine) segments in the same molecule. "RFD" stands for "Rigiflex diamine" offering a unique formulating option for composites, coatings, and adhesives. When used for epoxy resin curing, this product can provide synergistic processing and cured resin performance advantages relative to simple mixtures of polyetheramines (PEAs) and cycloaliphatic amines.

- APPLICATIONS**
- Epoxy Curing Agents – used in composite applications such as wind turbine rotor blades, coatings, and other applications
 - Polyamides – used in adhesives and sealants
 - Polyureas - used in molded plastics and elastomeric coatings
- EPOXY CURING BENEFITS:**
- Higher glass transition temperature (T_g) capability, up to 20°C, than the highest performing PEA curatives. The T_g appears relatively insensitive to mix ratio.
 - Faster curing and property development, allowing reduction of accelerator usage
 - Low viscosity, color and vapor pressure
 - Lower blushing or carbamation (reaction with atmospheric carbon dioxide) compared to cycloaliphatic amines
 - Faster strength development than PEA curatives and excellent mechanical properties
 - Potential cost savings when formulated with JEFFSOL[®] PC carbonate-diluted resin vs. aliphatic epoxy-diluted resin
 - Improved chemical resistance to typical acids and bases in coating applications

SALES SPECIFICATIONS

| <u>Property</u> | <u>Specifications</u> | <u>Test Method*</u> |
|----------------------------|---|---------------------|
| Appearance: | Colorless to pale yellow liquid, free of foreign material, slight haze permitted. | ST-30.1 |
| Color, Pt-Co | 200 max. | ST-30.12 |
| Total acetylatables, meq/g | 7.9 – 8.5 | ST-31.39 |
| Total amine, meq/g | 7.3 – 8.0 | ST-5.35 |
| Water, wt% | 0.5 max. | ST-31.53, 6 |

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

ADDITIONAL INFORMATION**Regulatory Information**

| | |
|------------------------|---|
| DOT/TDG Classification | Corrosive liquid, toxic, n.o.s. (Amine terminated cycloaliphatic propoxylate) |
| HMIS Code | 3-1-0 |
| CAS Number | 1220986-58-2 |
| US, TSCA | Not Listed |
| WHMIS Classification | D1B, E |
| Canada, DSL | Not Listed |

Typical Physical Properties

| | |
|--|----------------------|
| AHEW (Amine hydrogen equivalent wt.), g/eq | 67 |
| Density, g/ml (lb/gal), 25°C (77°F) | 0.96 |
| Viscosity, cSt, 25°C (77°F) | 67.6 |
| Flash point, PMCC, °C (°F) | >149 (>300) |
| pH, 5% aqueous solution | 10.5 |
| Vapor pressure, mm Hg, 100°C | 1.4×10^{-3} |

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 ^{®1} fluoropolymers |
| Gaskets, packing | Polypropylene or TEFLON [®] fluoropolymers (Elastomers such as neoprene, Buna N, and VITON ^{®1} fluoroelastomers 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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JEFFAMINE[®] RFD-270 amine may be stored under air at ambient temperatures for short 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.

Cleaning of line and equipment containing JEFFAMINE[®] RFD-270 amine 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

JEFFAMINE[®] RFD-270 amine is available in 55-gallon (208 L) drums of 430 pounds (195 kg) net weight. 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.

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