

# Technical Bulletin

## HUNTSMAN

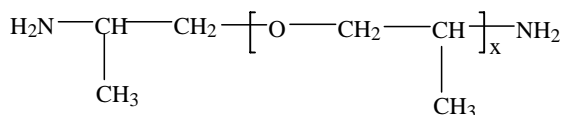
### JEFFAMINE® D-2000 amine

#### PRODUCT DESCRIPTION

**JEFFAMINE® D-2000 polyoxypropylenediamine** is a member of a family of polyamines having repeat oxypropylene units in the backbone. As shown by the above structure, JEFFAMINE® D-2000 polyoxypropylenediamine is a difunctional primary amine with an average molecular weight of approximately 2000. Its amine groups are located on secondary carbon atoms at the ends of an aliphatic polyether chain.

JEFFAMINE® D-2000 polyoxypropylenediamine is light in color and low in viscosity. Its vapor pressure is extremely low. JEFFAMINE® D-2000 polyoxypropylenediamine is completely miscible in a wide variety of solvents. It is, however, only slightly soluble in water.

#### STRUCTURE



$$X = 33.1$$

#### SALES SPECIFICATIONS

<u>Property</u>	<u>Specifications</u>	<u>Test Method*</u>
Appearance	Light yellow liquid with slight haze permitted	ST-30.1
Color, Pt-Co	75 max.	ST-30.12
Primary amine, % of total amine	97 min.	ST-5.34
Total acetylatables, meq/g	0.98 min. – 1.1 max.	ST-31.39
Total amine, meq/g	0.96 min. – 1.05 max.	ST-5.22
Water, wt%	0.25 max.	ST-31.53,6

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

#### TYPICAL PROPERTIES

##### Regulatory Information

DOT/TDG Classification	Corrosive, liquids, N.O.S. (polyoxypropylene diamine)
HMIS Code	3-1-0
Canadian WHMIS Classification	Class D, Div 1, Subdiv B: Toxic, Class E: Corrosive
CAS Number	9046-10-0
US, TSCA	Listed
Canada, DSL	Listed
European Union, EINECS/ELINCS	Listed
Australia, AICS	Listed
Japan, ENCS	Listed

##### Typical Physical Properties

Brookfield viscosity, cp, 25°C (77°F)	247
Specific gravity, 20/20°C	0.9964
Density, lb/gal, 20°C	8.3
Equivalent weight with epoxies ("Amine hydrogen equivalent weight," or AHEW)	514
Flash point, PMCC, °C (°F)	185 (365)
pH, 5% aqueous solution	10.5
Refractive index, n <sub>D</sub> <sup>20</sup>	1.4514
Vapor pressure, mm Hg/°C	0.93/235 4.95/254

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## APPLICATIONS

JEFFAMINE<sup>®</sup> D-2000 polyoxypropylenediamine undergoes reactions typical of primary amines. Because of its unique structure, JEFFAMINE<sup>®</sup> D-2000 polyoxypropylenediamine has found wide use in polyurethane and polyurea applications due to its fast reacting nature with isocyanates. In addition, it has found application as a co-reactant in epoxy systems, contributing flexibility and toughness. Specific to adhesives applications and in conjunction with other JEFFAMINE<sup>®</sup> polyamines, JEFFAMINE<sup>®</sup> D-2000 formulated systems exhibit enhanced peel strengths.

An intriguing application for JEFFAMINE<sup>®</sup> D-2000 polyoxypropylenediamine is in epoxy systems for metal priming via cathodic electrodeposition.

Other non-urethane and non-epoxy applications include oil recovery chemicals and polyamide fibers. Salts of JEFFAMINE<sup>®</sup> D-2000 polyoxypropylenediamine can be used as premium cutting and metal working fluids.

## 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

Tanks	Carbon steel
Lines, valves	Carbon steel
Pumps	Carbon steel
Heat exchange Surfaces	Stainless steel
Hoses	Stainless steel, polyethylene, polypropylene, TEFLON <sup>®1</sup> PTFE.
Gaskets, packing	Polypropylene or Teflon — elastomers such as neoprene, Buna N, and Viton <sup>1</sup> should be avoided
Atmosphere	Nitrogen or dry air

#### At temperatures above 100°F

Tanks	Stainless steel or aluminum
Lines, Valves	Stainless steel
Pumps	Stainless steel or Carpenter 20 equivalent
Atmosphere	Nitrogen

<sup>1</sup> Trademark of E. I. DU PONT DE NEMOURS AND COMPANY CORPORATION

<sup>2</sup> Trademark of DUPONT DOW ELASTOMERS L.L.C. CORPORATION

While JEFFAMINE<sup>®</sup> D-2000 amine may be stored under air at ambient temperatures for extended periods, a nitrogen blanket is suggested for all storage in case of accidental high temperatures. It should be noted that pronounced discoloration is likely to occur at temperatures above 140°F, whatever the gaseous pad.

Cleanout of lines and equipment containing JEFFAMINE<sup>®</sup> D-2000 amine is easy. Warm water and steam is all that is required. 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<sup>®</sup> D-2000 polyoxypropylenediamine is available in tank cars, tank wagons, 55-gallon drums of 440 pounds net weight, and 5-gallon cans. Samples are available from any Huntsman Corporation sales office.