

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name : PUMA[®] 2150
Common Chemical Name : 2,2-dimorpholinodiethylether (DMDEE)
Supplier : ExpoMix Corporation
 1099 Brown Street, Unit 203
 Wauconda, IL 60084
 USA
 Ph: (847) 487-0730
 Fx: (847) 487-0217
Emergency Telephone : 800-424-9300 - CHEMTREC

SECTION 2 - INGREDIENTS

Chemical Name	CAS	EINECS	Amount
2,2-dimorpholinodiethylether	6425-39-4	229-194-7	99%
Chemical Family	: Tertiary Amine		
Empirical Formula	: C12 H24 N2 O3		
Intended Use	: Catalyst		

Occupational Exposure Limit(s), if available, are listed in section 8.

SECTION 3 - HEALTH HAZARDS

HMIS HEALTH **3** **FLAMMABILITY** **1** **REACTIVITY** **0**

Hazards : Corrosive to eyes. Corrosive to respiratory system. Corrosive to skin. Severe eye irritant. Severe respiratory tract irritant. Severe skin irritant.
Routes of Exposure : Eye, Skin, Respiratory system.
Exposure Standards : Exposure limits not established by OSHA (ACGIH). Maintain air contaminant concentrations in the workplace at the lowest possible levels.

SECTION 3 - HEALTH HAZARDS (CONT.)

Human Health Hazards

: Product vapor in low concentrations can cause lacrimation, conjunctivitis and corneal edema when absorbed into the tissue of the eye from the atmosphere. Corneal edema may give rise to a perception of "blue haze" or "fog" around lights. Contact with undiluted product with the eyes or skin quickly causes severe irritation and pain and may cause burns, necrosis and permanent injury. Inhalation of vapors may severely damage contacted tissue and produce scarring. Inhalation of aerosols and mists may severely damage contacted tissue and produce scarring.

Repeated and/or prolonged exposures may result in: adverse respiratory effects (such as cough, tightness of chest or shortness of breath), adverse eye effects (such as conjunctivitis or corneal damage), and adverse skin effects (such as rash, irritation or corrosion).

**Medical Conditions
Generally Aggravated by
Exposure
Carcinogens Under OSHA
ACGIH, NTP, IARC, Other**

: Asthma, chronic respiratory disease (e.g. Bronchitis, Emphysema), eye disease, skin disorders and allergies.

: This product contains no carcinogens in concentrations of 0.1 percent or greater.

SECTION 4 - FIRST AID

Effects and Symptoms

Ingestion

: If swallowed call a physician immediately. Administer 3-4 glasses of milk or water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Do NOT apply mouth-to-mouth respiration.

Inhalation

: Move patient to fresh air. If breathing has stopped or is labored give assisted respiration. Supplemental oxygen may be indicated. Seek medical advice. Prevent aspiration of vomit. Turn victim's head to the side.

Skin Contact

: Remove contaminated clothing and shoes. Remove product and immediately flush affected area with water for at least 15 minutes. Destroy contaminated leather apparel. Cover the affected area with a sterile dressing or clean sheeting and transport victim for medical care. Do not apply greases and ointments. Control shock, if present. Launder contaminated clothing prior to use.

SECTION 4 - FIRST AID (CONT.)

Eye Contact : Hold eye lids apart and immediately flush eyes with plenty of water for at least 15 minutes. Seek medical advice.

SECTION 5 - FIRE AND EXPLOSION DATA

Extinguishing Media : Ignition will give rise to a Class B fire. In case of large fire use: alcohol foam, water spray. In case of small fire use: carbon dioxide (CO₂), dry chemical, dry sand or limestone.

Protection of Fire-Fighters : Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Sudden reaction and fire may result if product is mixed with an oxidizing agent. May generate toxic or irritating combustion products. Vapor may form explosive mixtures with air. Contact of liquid with skin must be prevented. Sudden reaction and fire may result if product is mixed with an oxidizing agent. May generate carbon monoxide gas, nitrogen oxide gases and ammonia gas. Retain expended liquids from fire fighting for later disposal.

Fire Hazard Classification (OSHA/NFPA) : Class IIIB

SECTION 6 - ACCIDENTAL RELEASE MEASURES

- Containment Techniques** : Stop the leak, if possible. Ventilate the space involved. Reduce vapor spreading with a water spray. Shut off and remove all ignition sources. Construct a dike to prevent spreading. Protect workers with water spray.
- Personal Precautions** : Evacuate all personnel downwind from the spill. Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves. Evacuate the area.
- Environmental Precautions** : Do NOT release product to drain. Observe all Federal, State and local environmental regulations for appropriate product disposal.
- Methods for Cleaning up** : If recovery is not feasible, absorb product with dry soil, sand or non-reactive absorbent and place it in an appropriate waste chemical container for disposal. Flush area with water spray. Transfer to containers by suction. Place in metal containers for recovery and disposal.
Ventilate area and wash spill site after material pickup is complete. Clean-up personnel must be equipped with self contained breathing apparatus and butyl rubber protective clothing. For large spills, recover spilled material with a vacuum truck.

SECTION 7 - HANDLING AND STORAGE

- Handling** : Avoid contact with skin or eyes. Avoid breathing of vapors. Handle product in a well ventilated work space and do not eat or drink. Keep containers closed when empty. Smoking in area is prohibited.
- Storage** : Keep product away from acids, oxidants, heat, flames and sparks. Keep in cool, dry ventilated storage and in closed containers. Ground all containers during transfer. Store in steel containers. Do not store in reactive metal containers. Recommended suitable container materials include plastic, stainless and carbon steels.
- Other Precautions** : Emergency showers and eye wash stations should be readily accessible. Adhere to work practice rules established by government regulations (OSHA).

SECTION 8 - PERSONAL PROTECTION AND EXPOSURE CONTROLS

Engineering Measures	: No specific controls needed.
Hygienic Measures	: Provide readily accessible eye wash stations and safety showers. Wash at the end of each workshift and before eating, smoking or using the bathroom. Promptly remove clothing that becomes contaminated. Discard contaminated leather articles. Launder or discard contaminated clothing.
Occupational Exposure Limits	: No Data.
Personal Protective Equipment	
Respiratory System	: Not required under normal conditions in a well-ventilated workplace. Use appropriate NIOSH/MSHA-respirator approved for organic vapors during repair and cleaning of equipment, during transfer or discharge of the product and during emergencies.
Skin and Body	: Impervious clothing. Slicker suit. Rubber boots. Full rubber suit (rain gear). Butyl or latex.
Hands	: Neoprene rubber gloves. Impermeable gloves. Cuffed butyl rubber gloves. The breakthrough time of the selected glove(s) must be greater than the intended use period.
Eyes	: Full face shield with goggles underneath.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Guaranteed Values

2,2-dimorpholinodiethylether	: 99% min.
Water	: 0.5% max.

Typical Values

Physical State	: Liquid at processing temperature
Color	: Straw yellow at processing temperature
Odor	: Fishy
PH	: 11.70
Boiling Point	: >320 °C (>608 °F) @ 760 mmHg
Specific Gravity (Water = 1)	: 1.06
Solubility in Water	: Completely (100%)
Flash Point (Closed Cup)	: 146 °C (295 °F)
Vapor Pressure	: 5.17 mmHg @ 21 °C (70 °F)

SECTION 10 - STABILITY AND REACTIVITY

Stability	: Stable
Conditions to Avoid(if instable)	: Not Applicable
Materials to Avoid	: Mineral acids(i.e. sulfuric, phosphoric, etc.). Organic acids(i.e. acetic, citric etc.). Oxidizing agents (i.e. perchlorates, nitrates etc.) Sodium or Calcium Hypochlorite. Product slowly corrodes copper, aluminum, zinc and galvanized surfaces. Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion. A reaction accompanied by large heat release occurs when the product is mixed with acids. Heat generated may be sufficient to cause vigorous boiling creating a hazard due to splashing or spattering of hot material.
Hazardous Decomposition Products	: Nitrogen Oxide can react with water vapor to form nitric acid (TLV = 2ppm). Carbon Monoxide, Carbon Dioxide, and Nitrogen Oxides in a fire. Ammonia when heated. Irritating and toxic fumes at elevated temperatures. Nitric acid in a fire. The oxides of nitrogen gases (except nitrous oxide) emitted on decomposition are highly toxic.
Hazardous Polymerization	: Will not occur.

SECTION 11 - TOXICOLOGICAL PROPERTIES

Acute Toxicity

Oral (Rat)	LD50: 2025 mg/kg
Skin (Rabbit)	LD50: 3038 mg/kg

Target Organs

Eye
Skin
Respiratory System

Irritation Effects Data

Corrosive to the eyes of a rabbit. Severe irritant to the skin of a rabbit.

Chronic/Subchronic Data

No delayed, subchronic or chronic test data are shown.

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity Effects

No Data

Other Ecological Information

No Data

SECTION 13 - DISPOSAL CONSIDERATIONS

Methods of Disposal

: Comply with all federal, state and local environmental regulations. Almost all disposal methods are subject to regulation under RCRA. In particular, review RCRA Land Disposal Restrictions. Under some conditions, material contaminated with this product may be land filled at appropriately permitted facilities.

Please refer to the relevant EU regulations, in particular the guidelines / decisions of the Council regarding handling of wastes (e.g. 75/442/EEC, 91/689/EEC, 94/67/EC, 94/904/EC) as implemented in National regulations.

Must be disposed of by special means, e.g. suitable incineration, in accordance with local regulations.

SECTION 14 - TRANSPORT INFORMATION

- DOT Non-Bulk Shipping Name** : Amines, liquid, corrosive, n.o.s.
(2,2-dimophorlinodiethylether) // 8 // UN2735 // PG III // NAERG Guide No. 153
- DOT Bulk Shipping** : Refer to Bill of Lading
- IMO Shipping Data** : Refer to Bill of Lading
- ICAO/IATA Shipping Data** : Amines, liquid, corrosive, n.o.s.
(2,2-dimophorlinodiethylether) // 8 // UN2735 // PG III // Shipment per 49 CFR 171.11 // NAERG Guide No. 153

SECTION 15 - REGULATORY INFORMATION

US Federal Regulations**Toxic Substances Control Act (TSCA)**

All components are included in the EPA TSCA Chemical Substance Inventory.

Toxic Substances Control Act (TSCA) 12(b) Component(s)

None

OSHA Hazard Communication Standard (29 CFR1910.1200) hazard class(es)

Corrosive.

EPA SARA Title III Section 312 (40CFR370) hazard class

Immediate Health Hazard.

EPA SARA Title III Section 313 (40CFR372) toxic chemicals above "de minimis" level

None

State Regulations

Proposition 65 Substances (component(s) known to the State of California to cause cancer and/or reproductive toxicity and subject to warning and discharge requirements under the "Safe Drinking Water and Toxic Enforcement Act of 1986")

None

New Jersey Trade Secret Registry Number(s)

None

EC Regulations

SECTION 16 - OTHER INFORMATION

The environmental, health and safety information contained herein is given in compliance with statutory obligations and relates only to the substance/preparation described in this material safety data sheet. This data sheet and the information it contains are not intended to supersede any terms and conditions of sale and does not constitute a specification, promise, representation, or warranty, whether express or implied, except to the extent required by applicable law. The environmental, health and safety information contained herein is believed to be accurate based on our current knowledge. It remains the responsibility of the customer to provide a safe workplace and to comply with all applicable laws and regulations. Nothing contained herein is to be construed as a recommendation for use in violation of any patents or of applicable laws or regulations.