



Product Information (203) 740-3471 / Emergency Assistance CHEMTREC 1-800-424-9300

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# MATERIAL SAFETY DATA SHEETS

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## DIETHYL MALEATE (DEM)

### Section 1 - Product and Company Information

Product Name DIETHYL MALEATE (DEM)

### Section 2 - Composition/Information on Ingredient

Substance Name CAS # SARA 313

DIETHYL MALEATE 141-05-9 No

Formula C<sub>8</sub>H<sub>12</sub>O<sub>4</sub>

Synonyms 2-Butenedioic acid (Z)-, diethyl ester \*

Diethylester kyseliny maleinove (Czech) \* Diethyl

maleate \* Ethyl maleate

RTECS Number: ON1225000

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Irritant. Irritating to eyes. May cause sensitization by skin contact.

Combustible.

HMIS RATING

HEALTH: 3

FLAMMABILITY: 2

REACTIVITY: 0

## NFPA RATING

HEALTH: 3

FLAMMABILITY: 2

REACTIVITY: 0

For additional information on toxicity, please refer to Section 11.

### **Section 4 - First Aid Measures**

#### ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

#### INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

#### DERMAL EXPOSURE

In case of contact, immediately wash skin with soap and copious amounts of water.

#### EYE EXPOSURE

In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes.

### **Section 5 - Fire Fighting Measures**

#### FLAMMABLE HAZARDS

Flammable Hazards: Yes

FLASH POINT: 199.4 °F 93 °C Method: closed cup

AUTOIGNITION TEMP: 350 °C

FLAMMABILITY: N/A

#### EXTINGUISHING MEDIA

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

#### FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Specific Hazard(s): Emits toxic fumes under fire conditions.

Combustible liquid.

### **Section 6 - Accidental Release Measures**

#### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves.

#### METHODS FOR CLEANING UP

Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

### **Section 7 - Handling and Storage**

#### HANDLING

User Exposure: Do not breathe vapor. Avoid contact with eyes, skin, and clothing.

Avoid prolonged or repeated exposure.

#### STORAGE

Suitable: Keep tightly closed. Keep away from heat and open flame.

### **Section 8 - Exposure Controls / PPE**

#### ENGINEERING CONTROLS

Mechanical exhaust required. Safety shower and eye bath.

#### PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Government approved respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES Wash thoroughly after handling.

#### Section 9 - Physical/Chemical Properties

Appearance Physical State: Clear liquid

Color: Colorless

Property Value At Temperature or Pressure

Molecular Weight 172.18 AMU

pH N/A

BP/BP Range 220 - 223 °C

MP/MP Range -10 °C

Freezing Point N/A

Vapor Pressure 1 mmHg 14 °C

Vapor Density 5.93 g/l

Saturated Vapor Conc. N/A

SG/Density 1.067 g/cm<sup>3</sup>

Bulk Density N/A

Odor Threshold N/A

Volatile% N/A

VOC Content N/A

Water Content N/A

Solvent Content N/A

Evaporation Rate N/A

Viscosity N/A

Surface Tension N/A

Partition Coefficient Log Kow: 1.483

Decomposition Temp. N/A

Flash Point 199.4 °F 93 °C Method: closed cup

Explosion Limits N/A

Flammability N/A

Autoignition Temp 350 °C

Refractive Index 1.441

Optical Rotation N/A

Miscellaneous Data N/A

Solubility N/A

N/A = not available

#### Section 10 - Stability and Reactivity

##### STABILITY

Stable: Stable.

Materials to Avoid: Acids, Bases, Oxidizing agents, Reducing agents.

##### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

##### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

## **Section 11 - Toxicological Information**

### **ROUTE OF EXPOSURE**

Skin Contact: May cause skin irritation.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: Causes eye irritation.

Inhalation: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Ingestion: May be harmful if swallowed.

### **SENSITIZATION**

Skin: May cause allergic skin reaction.

### **SIGNS AND SYMPTOMS OF EXPOSURE**

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

### **TOXICITY DATA**

Oral: Rat, 2,800 mg/kg; LD50

Oral: Rat, 3200 mg/kg; LD50

Skin: Rat, 5000 mg/kg; LD50

Intraperitoneal: Rat, 3070 MG/KG; LD50

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and

Taste):Eye:Lacrimation. Gastrointestinal:Changes in structure or function of salivary glands. Gastrointestinal:Hypermotility, diarrhea.

Skin: Rabbit, 4 ML/KG; LD50

### **IRRITATION DATA**

Eyes: Rabbit

Remarks: Moderate irritation effect

Skin: Rabbit 530 mg;

Remarks: Mild irritation effect

### **CHRONIC EXPOSURE - MUTAGEN**

Species: Mouse

Dose: 225 UMOL/L

Cell Type: lymphocyte

Mutation test: Mutation in mammalian somatic cells.

Species: Hamster

Dose: 8700 NMOL/L

Cell Type: lung

Mutation test: SLN

## **Section 12 - Ecological Information**

No data available.

### **ACUTE ECOTOXICITY TESTS**

Test Type: LC50 Fish

Species: Pimephales promelas (Fathead minnow)

Time: 96 h

Value: 40 mg/l

## **Section 13 - Disposal Considerations**

### **APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION**

Contact a licensed professional waste disposal service to dispose of this material. This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

#### **Section 14 - Transport Information**

DOT

Proper Shipping Name: Combustible liquid, n.o.s.

UN#: NA1993

Class: COMBUSTIBLE LIQUID

Packing Group: Packing Group III

Hazard Label: None

PIH: Not PIH

IATA

Non-Hazardous for Air Transport: Non-hazardous for air transport.

#### **Section 15 - Regulatory Information**

EU ADDITIONAL CLASSIFICATION

Symbol of Danger: Xi

Indication of Danger: Irritant.

R: 43 36

Risk Statements: May cause sensitization by skin contact.

Irritating to eyes.

S: 26 36/37

Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing and gloves.

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Irritant.

Risk Statements: Irritating to eyes. May cause sensitization by skin contact.

Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing and gloves.

US Statements: Combustible.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: No

TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

#### **Section 16 - Other Information**

The information contained herein is based on data considered to be accurate based on the material as packaged. However, no warranty is expressed regarding the accuracy of these data or the results to be obtained from the use thereof. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It is the user's obligation to determine the conditions of safe use of the product. While this MSDS is

based on technical data judged to be reliable, PHARMCO-AAPER assumes not responsibility for the completeness or accuracy of the information contained herein.