

## Chemical Safety Data Sheet MSDS / SDS

## DIETHYL ETHYLPHOSPHONATE

Revision Date:2026-05-31 Revision Number:1

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

## Product identifier

Product name : DIETHYL ETHYLPHOSPHONATE  
CBnumber : CB7760277  
CAS : 78-38-6  
EINECS Number : 201-111-9  
Synonyms : diethyl ethylphosphonate,ethylphosphonic acid diethyl ester

## Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses : For R&D use only. Not for medicinal, household or other use.  
Uses advised against : none

## Company Identification

Company : Chemicalbook  
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing  
Telephone : 010-86108875

## SECTION 2: Hazards identification

## GHS Label elements, including precautionary statements

Symbol(GHS)



Signal word

Danger

## Precautionary statements

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continuerinsing.

P264 Wash skin thoroughly after handling.

P337+P313 IF eye irritation persists: Get medical advice/attention.

## Hazard statements

H313 May be harmful in contact with skin

H319 Causes serious eye irritation

H401 Toxic to aquatic life

H302 Harmful if swallowed

H318 Causes serious eye damage

H411 Toxic to aquatic life with long lasting effects

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## SECTION 3: Composition/information on ingredients

### Substance

Product name	: DIETHYL ETHYLPHOSPHONATE
Synonyms	: diethyl ethylphosphonate,ethylphosphonic acid diethyl ester
CAS	: 78-38-6
EC number	: 201-111-9
MF	: C6H15O3P
MW	: 166.16

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## SECTION 4: First aid measures

### Eye Contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

### Skin Contact

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention.

### Inhalation

Remove from exposure, lie down. Remove to fresh air. If not breathing, give artificial respiration.

### Ingestion

Clean mouth with water. Get medical attention.

### Most important symptoms and effects

Difficulty in breathing. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

### Self-Protection of the First Aider

Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

### Notes to Physician

Treat symptomatically. Symptoms may be delayed.

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## SECTION 5: Firefighting measures

### Suitable Extinguishing Media

Water spray. Carbon dioxide (CO<sub>2</sub>). Dry chemical. Chemical foam.

## Extinguishing media which must not be used for safety reasons

No information available.

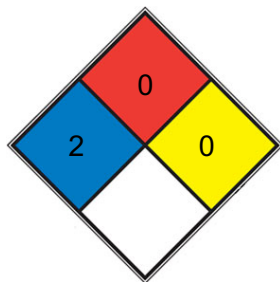
## Specific Hazards Arising from the Chemical

Thermal decomposition can lead to release of irritating gases and vapors.

## Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

## NFPA 704



HEALTH 2 Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury (e.g. [diethyl ether](#), ammonium phosphate, iodine)

FIRE 0 Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand. Materials that will not burn in air when exposed to a temperature of 820 °C (1,500 °F) for a period of 5 minutes.(e.g. Carbon tetrachloride)

REACT 0 Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium,[N2](#))

SPEC.

HAZ.

## SECTION 6: Accidental release measures

### desc\_info

Personal Precautions																			
Ensure adequate ventilation.																			
Environmental Precautions																			
See Section 12 for additional	Ecological Information.																		
Methods for Containment and Clean Up																			
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.																			
Refer to protective measures listed in Sections 8 and 13.																			

## SECTION 7: Handling and storage

## Handling

Avoid contact with skin and eyes. Do not breathe mist/vapors/spray.

## Storage

Keep in a dry, cool and well-ventilated place. Keep container tightly closed.

## Specific Use(s)

Use in laboratories

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## SECTION 8: Exposure controls/personal protection

### Control Parameters

### Monitoring methods

BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents. MDHS70 General methods for sampling airborne gases and vapours MDHS 88

Volatile organic compounds in air. Laboratory method using diffusive samplers, solvent desorption and gas chromatography MDHS 96 Volatile organic compounds in air - Laboratory method using pumped solid sorbent tubes, solvent desorption and gas chromatography

### Exposure Controls

### Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source.

### Personal protective equipment

#### Eye Protection

Goggles (European standard - EN 166)

#### Hand Protection

Protective gloves

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Nitrile rubber	See manufacturers	-	EN 374	(minimum requirement)

#### Viton (R)

recommendations

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves.

(Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g.

sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

**Skin and body protection**

Wear appropriate protective gloves and clothing to prevent skin exposure

**Respiratory Protection**

No protective equipment is needed under normal use conditions.

**Large scale/emergency use**

Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced

**Small scale/Laboratory use**

Maintain adequate ventilation

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls**

No information available.

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## SECTION 9: Physical and chemical properties

**Information on basic physicochemical properties**

Colorless

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**Physical State**

Liquid

**Odor**

No information available

**Odor Threshold**

No data available

**pH**

No data available

**Melting Point/Range**

No data available

**Softening Point**

No data available

**Boiling Point/Range**

82 - 83 °C / 179.6 - 181.4 °F @ 11 mmHg

**Flash Point**

No information available

Method - No information available

**Evaporation Rate**

No data available

**Flammability (solid,gas)**

Not applicable Liquid

**Explosion Limits**

No data available

**Vapor Pressure**

7.2hPa at 20°C

**Vapor Density**

No data available (Air = 1.0)

**Specific Gravity / Density**

1.024 g/mL at 20 °C(lit.)

**Bulk Density**

Not applicable Liquid

**Solubility**

Chloroform (Soluble), Dichloromethane, Ethyl Acetate (Slightly)

No information av

**Colour**

Clear colorless

No information av

**Viscosity**

1.628mm<sup>2</sup>/s

No data available

**Water solubility**

Miscible with alcohol, ether and organic solvents. Slightly miscible with water.

log Pow

Phosphonic acid, ethyl-, diethyl ester 3.2

**Dielectric constant**

9.9 (45°C)

No data available

**Decomposition Temperature**

No data available

**Viscosity**

1.628mm<sup>2</sup>/s

### Explosive Properties

No information av

### Oxidizing Properties

No information av

### Molecular Formula

C<sub>6</sub> H<sub>15</sub> O<sub>3</sub> P

### Molecular Weight

166.16

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## SECTION 10: Stability and reactivity

### Stability

Stable under normal conditions.

### Hazardous Reactions

No information available.

### Hazardous Polymerization

No information available.

### Conditions to Avoid

Incompatible products.

### Materials to avoid

Oxidizing agent.

### Hazardous Decomposition Products

Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Oxides of phosphorus.

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## SECTION 11: Toxicological information

### Product Information

#### (a) acute toxicity;

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Phosphonic acid, ethyl-, diethyl ester	LD50 = 2330 mg/kg ( Rat )	LD50 > 2000 mg/kg ( Rat )	

#### (b) skin corrosion/irritation;

Category 2

**(c) serious eye damage/irritation;**

Category 2

**(d) respiratory or skin sensitization;**

**Respiratory**

No data available

**Skin**

No data available

**(e) germ cell mutagenicity;**

No data available

**(f) carcinogenicity;**

No data available

There are no known carcinogenic chemicals in this product

**(g) reproductive toxicity;**

No data available

**(h) STOT-single exposure;**

Category 3

**Results / Target organs**

Respiratory system

**(i) STOT-repeated exposure;**

No data available

**Target Organs**

No information available.

**(j) aspiration hazard;**

No data available

**Other Adverse Effects**

The toxicological properties have not been fully investigated.

**Symptoms / effects,both acute and delayed**

Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

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## SECTION 12: Ecological information

**Ecotoxicity effects**

Contains no substances known to be hazardous to the environment or that are not degradable in waste water treatment plants.

## Persistence and Degradability

No information available

### Persistence

Persistence is unlikely, based on information available.

### Bioaccumulative Potential

Bioaccumulation is unlikely

Component	log Pow	Bioconcentration factor (BCF)
Phosphonic acid, ethyl-, diethyl ester	3.2	No data available

### Mobility in soil

The product contains volatile organic compounds (VOC) which will evaporate easily from all surfaces. Will likely be mobile in the environment due to its volatility. Disperses rapidly in air.

### Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors.

### Persistent Organic Pollutant

This product does not contain any known or suspected substance.

### Ozone Depletion Potential

This product does not contain any known or suspected substance.

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## SECTION 13: Disposal considerations

### Waste from Residues/Unused Products

Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

### Contaminated Packaging

Dispose of this container to hazardous or special waste collection point.

### Other Information

Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains.

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## SECTION 14: Transport information

### desc\_info

Road and Rail Transport Not Regulated

IMDG/IMO Not regulated

IATA Not regulated

## Special Precautions for User

No special precautions required

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## SECTION 15: Regulatory information

### International Inventories

X = listed, China (IECSC), Europe (EINECS/ELINCS/NLP), U.S.A. (TSCA), Canada (DSL/NDSL), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), Korea (KECL).

Component	The Inventory of Hazardous Chemicals (2015 Edition)	List of dangerous goods GB 12268 - 2012	TCS	I	IECSC	E	EINECS	T	SCADSL	P	PICCS	E	ENCS	I	ISHL	A	AICS	K	KECL
Phosphonic acid, ethyl-, diethyl ester	-	-	X	X		201-111-9	X	-	X	X	X	X	X	X	X				2005-3-3447

### National Regulations

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## SECTION 16: Other information

### Prepared By

Health, Safety and Environmental Department

### Revision Date

17-Sep-2025

### Revision Summary

Not applicable.

### Training Advice

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene. Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

Chemical incident response training.

### Legend

#### CAS

Chemical Abstracts Service

**TSCA**

United States Toxic Substances Control Act Section 8(b)

Inventory

**EINECS/ELINCS**

European Inventory of Existing Commercial Chemical

Substances/EU List of Notified Chemical Substances

**DSL/NDSL**

Canadian Domestic Substances List/Non-Domestic

Substances List

**PICCS**

Philippines Inventory of Chemicals and Chemical Substances

**ENCS**

Japanese Existing and New Chemical Substances

**IECSC**

Chinese Inventory of Existing Chemical Substances

**AICS**

Australian Inventory of Chemical Substances

**KECL**

Korean Existing and Evaluated Chemical Substances

**NZIoC**

New Zealand Inventory of Chemicals

**WEL**

Workplace Exposure Limit

**TWA**

Time Weighted Average

**ACGIH**

American Conference of Governmental Industrial Hygienists

**IARC**

International Agency for Research on Cancer

**DNEL**

Derived No Effect Level

**PNEC**

Predicted No Effect Concentration

**RPE**

Respiratory Protective Equipment

**LD50**

Lethal Dose 50%

**LC50**

Lethal Concentration 50%

**EC50**

Effective Concentration 50%

**NOEC**

No Observed Effect Concentration

**POW**

Partition coefficient Octanol:Water

**PBT**

Persistent, Bioaccumulative, Toxic

**vPvB**

very Persistent, very Bioaccumulative

**ICAO/IATA**

International Civil Aviation Organization/International Air  
Transport Association

**IMO/IMDG**

International Maritime Organization/International Maritime  
Dangerous Goods Code

**ADR**

European Agreement Concerning the International Carriage of  
Dangerous Goods by Road

**MARPOL**

International Convention for the Prevention of Pollution from  
Ships

**OECD**

Organisation for Economic Co-operation and Development

**ATE**

Acute Toxicity Estimate

**BCF**

Bioconcentration factor

**VOC**

(Volatile Organic Compound)

**Key literature references and sources for data**

<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

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