

## Chemical Safety Data Sheet MSDS / SDS

**1,2-PROPANEDIOL DINITRATE**Revision Date:2024-12-21 Revision Number:1

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****Product identifier**

Product name : 1,2-PROPANEDIOL DINITRATE  
CBnumber : CB9697694  
CAS : 6423-43-4  
EINECS Number : 229-180-0  
Synonyms : 1,2-Propylene glycol dinitrate, 1,2-PROPANEDIOL DINITRATE

**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 : 400-158-6606

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**SECTION 2: Hazards identification****Classification of the substance or mixture**

no data available

**Label elements****Pictogram(s)**

Signal word : no data available

**Hazard statement(s)**

no data available

**Precautionary statement(s)****Prevention**

no data available

**Response**

no data available

**Storage**

no data available

**Disposal**

no data available

#### Other hazards

no data available

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## SECTION 3: Composition/information on ingredients

### Substance

Product name	: 1,2-PROPANEDIOL DINITRATE
Synonyms	: 1,2-Propylene glycol dinitrate, 1,2-PROPANEDIOL DINITRATE
CAS	: 6423-43-4
EC number	: 229-180-0
MF	: C <sub>3</sub> H <sub>6</sub> N <sub>2</sub> O <sub>6</sub>
MW	: 166.09

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## SECTION 4: First aid measures

### Description of first aid measures

#### If inhaled

Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.

#### Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention .

#### Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

#### Following ingestion

Rinse mouth. Refer for medical attention .

### Most important symptoms and effects, both acute and delayed

Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact Symptoms: Irritation eyes; conjunctivitis; methemoglobinemia; headache, impaired balance, visual disturbance Target Organs: Eyes, central nervous system, blood, liver, kidneys (NIOSH, 2016)

### Indication of any immediate medical attention and special treatment needed

Maintain an open airway and assist ventilation if necessary. administer supplemental oxygen. Treat hypotension with supine positioning, crystalloid intravenous fluids, and low-dose pressors if needed. Monitor vital signs and ECG for 4-6 hours. Symptomatic methemoglobinemia may be treated with methylene blue. Administer activated charcoal if available. Nitrates and Nitrites

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## SECTION 5: Firefighting measures

### Extinguishing media

To Fight fire use/ powder, water spray, foam, carbon dioxide.

## Specific Hazards Arising from the Chemical

Gives off irritating or toxic fumes (or gases) in a fire. Risk of fire and explosion. Explosive.

### Advice for firefighters

Use water spray, powder, foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

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## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus.

Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

### Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus.

Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

### Methods and materials for containment and cleaning up

Evacuate danger area! Consult an expert! Remove all ignition sources. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent and remove to safe place. (Extra personal protection: complete protective clothing including self-contained breathing apparatus.)

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## SECTION 7: Handling and storage

### Precautions for safe handling

NO open flames, NO sparks and NO smoking. Do NOT expose to friction or shock. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

### Conditions for safe storage, including any incompatibilities

Fireproof.

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## SECTION 8: Exposure controls/personal protection

### Control parameters

#### Occupational Exposure limit values

TLV: 0.05 ppm as TWA; (skin); BEI issued. MAK: 0.069 mg/m<sup>3</sup>, 0.01 ppm; peak limitation category: II(1); skin absorption (H); pregnancy risk group: C

#### Biological limit values

no data available

## Exposure controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

## Individual protection measures

### Eye/face protection

Wear face shield or eye protection in combination with breathing protection.

### Skin protection

Protective gloves. Protective clothing.

### Respiratory protection

Use ventilation, local exhaust or breathing protection.

### Thermal hazards

no data available

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## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

Physical state	Red-orange or colorless liquid with a disagreeable odor.
Colour	Red-orange liquid
Odour	no data available
Melting point/freezing point	18° F (NIOSH, 2016)
Boiling point or initial boiling point and boiling range	206.7°C at 760 mmHg
Flammability	Combustible Liquid
Lower and upper explosion limit/flammability limit	no data available
Flash point	98.5°C
Auto-ignition temperature	no data available
Decomposition temperature	121°C
pH	no data available
Kinematic viscosity	no data available
Solubility	0.1 % (NIOSH, 2016)
Partition coefficient n-octanol/water	log Kow = 1.59 /Estimated/
Vapour pressure	0.07 mm Hg at 72° F (NIOSH, 2016)
Density and/or relative density	1.423g/cm3
Relative vapour density	(air = 1): 5.73
Particle characteristics	no data available

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## SECTION 10: Stability and reactivity

## Reactivity

Heating may cause violent combustion or explosion. May decompose explosively on shock, friction or concussion. On combustion, forms toxic and corrosive gases.

## Chemical stability

It is unstable under ordinary conditions, but it is stabilized by small additions of 2-nitrodiphenylamine and di-n-butyl sebacate.

## Possibility of hazardous reactions

PROPYLENE GLYCOL DINITRATE is explosive. Acts as a strong oxidizing agent. Heating may cause a violent combustion or explosion producing toxic fumes (nitrogen oxides). May also decompose explosively from shock, friction or from a build-up of electrostatic charge that sparks suddenly to ground. Can begin a vigorous reaction that culminates in an explosion if mixed with reducing agents including hydrides, sulfides, and nitrides and numerous ordinary combustible materials. Reacts violently with Al, BP, cyanides, esters, PN<sub>2</sub>H, P, NaCN, SnCl<sub>2</sub>, sodium hypophosphite, and thiocyanates. Reacts with acids and with alkalis, including ammonia and amines. Must be stored in a cool, ventilated place, away from acute fire hazards and easily oxidized materials.

## Conditions to avoid

no data available

## Incompatible materials

Ammonia compounds, amines, oxidizers, reducing agents, combustible materials ... Similar to ethylene glycol dinitrate in explosion potential.

## Hazardous decomposition products

When heated to decomposition it emits toxic fumes of nitrogen oxide

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# SECTION 11: Toxicological information

## Acute toxicity

- Oral: LD<sub>50</sub> Rat oral 250 mg/kg
- Inhalation: no data available
- Dermal: no data available

## Skin corrosion/irritation

no data available

## Serious eye damage/irritation

no data available

## Respiratory or skin sensitization

no data available

## Germ cell mutagenicity

no data available

## Carcinogenicity

no data available

### **Reproductive toxicity**

no data available

### **STOT-single exposure**

The substance is mildly irritating to the eyes. The substance may cause effects on the blood. This may result in the formation of methaemoglobin. Medical observation is indicated. See Notes.

### **STOT-repeated exposure**

no data available

### **Aspiration hazard**

A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.

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## **SECTION 12: Ecological information**

### **Toxicity**

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

### **Persistence and degradability**

Using Otto fuel II (76% 1,2-propanediol dinitrate, 22.5% dibutyl sebacate, and 1.5% 2-nitrodiphenylamine) as substrate, 1,2-propanediol dinitrate was shown to be poorly biodegraded using an activated sewage sludge, a pure culture of *Pseudomonas aeruginosa*, and a commercially available inoculum employed for the degradation of nitrogen containing wastes(1).

### **Bioaccumulative potential**

An estimated BCF of 3 was calculated for 1,2-propanediol dinitrate(SRC), using an estimated log Kow of 1.6(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

### **Mobility in soil**

Using a structure estimation method based on molecular connectivity indices(1), the Koc for 1,2-propanediol dinitrate can be estimated to be 68(SRC). According to a classification scheme(2), this estimated Koc value suggests that 1,2-Propanediol dinitrate is expected to have high mobility in soil(SRC).

### **Other adverse effects**

no data available

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## **SECTION 13: Disposal considerations**

### **Disposal methods**

**Product**

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

**Contaminated packaging**

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

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## SECTION 14: Transport information

**UN Number**

ADR/RID: no data available

IMDG: no data available

IATA: no data available

**UN Proper Shipping Name**

ADR/RID: no data available

IMDG: no data available

IATA: no data available

**Transport hazard class(es)**

ADR/RID: no data available

IMDG: no data available

IATA: no data available

**Packing group, if applicable**

ADR/RID: no data available

IMDG: no data available

IATA: no data available

**Environmental hazards**

ADR/RID: No

IMDG: No

IATA: No

**Special precautions for user**

no data available

**Transport in bulk according to IMO instruments**

no data available

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## SECTION 15: Regulatory information

## **Safety, health and environmental regulations specific for the product in question**

### **European Inventory of Existing Commercial Chemical Substances (EINECS)**

Listed.

### **EC Inventory**

Listed.

### **United States Toxic Substances Control Act (TSCA) Inventory**

Listed.

### **China Catalog of Hazardous chemicals 2015**

Not Listed.

### **New Zealand Inventory of Chemicals (NZIoC)**

Listed.

### **PICCS**

Not Listed.

### **Vietnam National Chemical Inventory**

Not Listed.

### **IECSC**

Not Listed.

### **Korea Existing Chemicals List (KECL)**

Listed.

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## **SECTION 16: Other information**

### **Abbreviations and acronyms**

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

### **References**

IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>

HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>

IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: [http://www.echemportal.org/echemportal/index?pagelD=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pagelD=0&request_locale=en)

CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>

ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>



Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>

ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

### **Other Information**

Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available. Do NOT take working clothes home.

#### **Disclaimer:**

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.