ChemicalBook

Chemical Safety Data Sheet MSDS / SDS

1,2-PROPANEDIOL DINITRATE

Revision Date:2023-12-02 Revision Number:1

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	: PGDN,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

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

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no data available

Other hazards

no data available

SECTION 3: Composition/information on ingredients

Substance

Product name	: 1,2-PROPANEDIOL DINITRATE
Synonyms	: PGDN,1,2-propanediol dinitrate
CAS	: 6423-43-4
EC number	: 229-180-0
MF	: C3H6N2O6
MW	: 166.09

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.

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.)

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.

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/m3, 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

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

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_2H, P, NaCN, $SnCl_2$, 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: LD50 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.

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

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.

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

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.

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?pageID=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.