Chemical Safety Data Sheet MSDS / SDS

Diphosphorus pentasulphide SDS

Revision Date:2024-04-25 Revision Number:1

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

Product identifier

Product name: Diphosphorus pentasulphide

CAS: 1314-80-3

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.in

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SECTION 2: Hazards identification

Classification of the substance or mixture

Flammable solids, Category 1
Substances and mixtures, which in contact with water, emit flammable gases, Category 1

Acute toxicity - Category 4, Oral
Acute toxicity - Category 4, Inhalation
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H228 Flammable solid
H260 In contact with water releases flammable gases which may ignite spontaneously
H302 Harmful if swallowed
H332 Harmful if inhaled
H400 Very toxic to aquatic life

Precautionary statement(s)

Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240 Ground and bond container and receiving equipment.
P241 Use explosion-proof [electrical/ventilating/lighting/...] equipment.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P223 Do not allow contact with water.
P231+P232 Handle and store contents under inert gas/....Protect from moisture.
P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.

Response

P370+P378 In case of fire: Use ... to extinguish.
P302+P335+P334 IF ON SKIN: Brush off loose particles from skin. Immerse in cool water [or wrap in wet bandages].
P301+P317 IF SWALLOWED: Get medical help.
P330 Rinse mouth.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P317 Get medical help.
P391 Collect spillage.

Storage

P402+P404 Store in a dry place. Store in a closed container.

Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Diphosphorus pentasulphide
Common names and synonyms:	Diphosphorus pentasulphide
CAS number:	1314-80-3
EC number:	215-242-4
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Half-upright position. 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/effects, acute and delayed

Hydrogen sulfide gas formed by reaction with moisture can cause death by respiratory failure. The gas also irritates eyes and respiratory system. The solid irritates skin and eyes; the symptoms may be delayed several hours. (USCG, 1999)

Indication of immediate medical attention and special treatment needed, if necessary

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Phosphorus and related compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

If material on fire or involved in fire: Do not use water. Use dry chemical or carbon dioxide.

Specific hazards arising from the chemical

Special Hazards of Combustion Products: Products of combustion include sulfur dioxide and phosphorus pentoxide, which are irritating, toxic and corrosive. (USCG, 1999)

Special protective actions for fire-fighters

Use dry powder, carbon dioxide, dry sand. NO water.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Remove all ignition

sources. Sweep spilled substance into covered dry, sealable containers. Do NOT let this chemical enter the environment.

Environmental precautions

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Remove all ignition sources. Sweep spilled substance into covered dry, sealable containers. Do NOT let this chemical enter the environment.

Methods and materials for containment and cleaning up

SRP: Wastewater from contaminant suppression, cleaning of protective clothing/equipment, or contaminated sites should be contained and evaluated for subject chemical or decomposition product concentrations. Concentrations shall be lower than applicable environmental discharge or disposal criteria. Alternatively, pretreatment and/or discharge to a permitted wastewater treatment facility is acceptable only after review by the governing authority and assurance that "pass through" violations will not occur. Due consideration shall be given to remediation worker exposure (inhalation, dermal and ingestion) as well as fate during treatment, transfer and disposal. If it is not practicable to manage the chemical in this fashion, it must be evaluated in accordance with EPA 40 CFR Part 261, specifically Subpart B, in order to determine the appropriate local, state and federal requirements for disposal.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames, NO sparks and NO smoking. NO contact with acids or water. Do NOT expose to friction or shock. Closed system, dust explosion-proof electrical equipment and lighting. Prevent deposition of dust. Use non-sparking handtools. 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

Separated from incompatible materials. See Chemical Dangers. Dry. Well closed. Keep in a well-ventilated room.Store in tightly closed containers in a cool, well ventilated area away from moisture, water, alcohols, strong oxidizers, acids, alkalies. Where possible, automatically transfer material from drums or other storage containers to process containers. Sources of ignition such as smoking and open flames are prohibited where this chemical is handled, used, or stored. Metal containers involving the transfer of this chemical should be grounded and bonded. Wherever this chemical is used, handled, manufactured, or stored, use explosion-proof electrical equipment and fittings.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 1 mg/m3, as TWA; 3 mg/m3 as STEL.EU-OEL: 1 mg/m3 as TWA

Biological limit values

no data available

Appropriate engineering 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, such as personal protective equipment (PPE)

Eye/face protection

Wear safety goggles.

Skin protection

Protective gloves.

Respiratory protection

Use local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Phosphorus pentasulfide, free from yellow and white phosphorus is a greenish yellow solid with an odor of rotten eggs that may paralyze the sense of smell at hazardous concentrations in air. Density 2.04 g / cm3. It is used for making lube oil additives, insecticides, flotation agents, safety matches, blown asphalt, and other products and chemicals.
Colour:	Gray to yellow-green crystals
Odour:	Odor of rotten eggs

Melting point/freezing point:	286-290°C
Boiling point or initial boiling point and boiling range:	514°C
Flammability:	Flammable Solid, which may SPONTANEOUSLY ignite in presence of moisture.
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	no data available
Auto-ignition temperature:	288° F (USCG, 1999)
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	no data available
Solubility:	Reacts with water (NIOSH, 2016)
Partition coefficient n-octanol/water:	no data available
Vapour pressure:	1 mm Hg at 572° F (NIOSH, 2016)
Density and/or relative density:	2.08
Relative vapour density:	no data available
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Reacts with bases, organic compounds and strong oxidants. Reacts violently with water and acids. This produces hydrogen sulfide (see ICSC 0165) and phosphoric acid (see ICSC 1008). This generates fire and explosion hazard. May decompose explosively on shock, friction or concussion.

Chemical stability

no data available

Possibility of hazardous reactions

Combustible solid. Evolves hydrogen sulfide and may ignite on contact with water, acids ... May heat and ignite spontaneously.Dust explosion possible if in powder or granular form, mixed with air.PHOSPHORUS PENTASULFIDE reacts vigorously with strong oxidants. Exothermically violent decomposition reaction with water, steam or acids to produce irritating fumes of phosphorus pentaoxide and highly toxic hydrogen sulfide gas. May ignite in contact with limited amounts of water [Haz. Chem. Data, 1975, p. 239]. Can be ignited by sparks or friction and its dust presents an explosion hazard in air at sufficient concentrations. Hydrogen sulfide gas evolved from reactions with water may also form explosive mixtures with air.

Conditions to avoid

no data available

Incompatible materials

Readily liberates toxic hydrogen sulfide and phosphorus pentoxide and evolves heat on contact with moisture ... Reacts with water, steam, or acids to produce toxic flammable vapors; can react vigorously with oxidizing materials.

Hazardous decomposition products

Decomp on contact with water to phosphoric acid, sulfur dioxide, and hydrogen sulfide.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Mouse oral 750 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 corrosive to the eyes. The substance is severely irritating to the skin and respiratory tract.

STOT-repeated exposure

no data available

Aspiration hazard

A harmful concentration of airborne particles can be reached quickly when dispersed.

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

no data available

Bioaccumulative potential

no data available

Mobility in soil

no data available

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: UN1340 (For reference only, please check.)
IMDG: UN1340 (For reference only, please check.)
IATA: UN1340 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: PHOSPHORUS PENTASULPHIDE, free from yellow and white phosphorus (For reference only, please check.)
IMDG: PHOSPHORUS PENTASULPHIDE, free from yellow and white phosphorus (For reference only, please check.)
IATA: PHOSPHORUS PENTASULPHIDE, free from yellow and white phosphorus (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 4.3 (For reference only, please check.)
IMDG: 4.3 (For reference only, please check.)
IATA: 4.3 (For reference only, please check.)

Packing group, if applicable

ADR/RID: II (For reference only, please check.)
IMDG: II (For reference only, please check.)
IATA: II (For reference only, please check.)

Environmental hazards

ADR/RID: Yes
IMDG: Yes
IATA: Yes

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

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

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/