

Safety data sheet as per Commission Regulation (EU) 2015/830

Product: Diphosphorous pentasulphide



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

1.1 Product identifier

Trade name	Diphosphorous pentasulphide/ PPS
Chemical Name	Phosphorous pentasulphide
CAS Number	1314-80-3
EC Number	215-242-4
Pre-Registration number (REACH)	05-2114672550-50-0000

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

Relevant identified uses Manufacture of lubricating oil additives and pesticides, safety matches, ignition compounds, and for introducing sulfur into organic compounds; used as a desiccating agent.

Uses identified against Food additive, medicinal products, cosmetic products

1.3 Details of the supplier of the safety data sheet:

Manufacturer	Prasol Chemicals Pvt. Ltd., Prasol House, Plot No.A-17/2/3, T.T.C. Indl. Area, Khairne M.I.D.C., Navi Mumbai - 400 710. Maharashtra, India.
Telephone	+91-22-27782555
Telefax	+91-22-27782430
e-mail address	sales@prasolchem.com; inquiry@prasolchem.com

1.4 Emergency telephone number

Telephone	+91-22- 27782555
Language	English

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)

Flammable Solid	Category 1	H228	Flammable solid
Water reactivity	Category 1	H260	In contact with water releases flammable gases which may ignite spontaneously
Acute Toxicity 4	Category 4	H302	Harmful if swallowed.
Skin Mild Irritation	Category 3	H316	Causes mild skin irritation
Eye Irritation	Category 2B	H320	Causes eye irritation
Acute Toxicity	Category 4	H332	Harmful if inhaled
Aquatic Acute	Category 1	H400	Very toxic to aquatic life
		EUH029	Contact with water liberates toxic gas

Information concerning particular hazards for human and environment: No further information

2.2 Label elements

Labeling according to Regulation (EC) No 1272/2008 (CLP)

Hazard pictograms



GHS02



GHS07



GHS09

Signal word Danger

Hazard statements	H228	Flammable solid
	H260	In contact with water releases flammable gases which may ignite spontaneously
	H302	Harmful if swallowed.
	H316	Causes mild skin irritation
	H320	Causes eye irritation
	H332	Harmful if inhaled
	H400	Very toxic to aquatic life
	EUH029	Contact with water liberates toxic gas

Precautionary statements

General	P103	Read label before use.
Prevention	P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
	P223	Do not allow contact with water.
	P231 + P232	Handle and store contents under inert gas. Protect from moisture.

Safety data sheet as per Commission Regulation (EU) 2015/830
Product: Diphosphorous pentasulphide



	P240	Ground and bond container and receiving equipment.
	P241	Use explosion-proof electrical, ventilating and lighting equipment
	P261	Avoid breathing dust or gas.
	P264	Wash hands thoroughly after handling.
	P270	Do not eat, drink or smoke when using this product.
	P271	Use only outdoors or in a well-ventilated area.
	P273	Avoid release to the environment.
	P280	Use protective gloves and eye protection.
Response	P301 + P312	IF SWALLOWED: Call a doctor if you feel unwell.
	P302+P335 + 334	IF ON SKIN: Brush off loose particles from skin and immerse in cool water.
	P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
	P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
		Call a doctor if you feel unwell.
	P312	Call a doctor if you feel unwell.
	P330	Rinse mouth.
	P332 + P313	If skin irritation occurs: Get medical attention.
	P337 + P313	If eye irritation persists: Get medical attention.
	P370 + P378	In case of fire: Use dry chemical, carbon dioxide, sand to extinguish.
	P391	Collect spillage
Storage	P402 + P404	Store in a dry place. Store in a closed container.
Disposal	P501	Dispose of contents and container in accordance with national regulations

2.3 Other hazards

Not a PBT, vPVB substance according to the criteria of REACH regulation

◆ **SECTION 3: Composition/information on ingredients**

3.1 Substances

Ingredient	CAS No.	EC No.	Concentration (%)
Diphosphorous pentasulphide/ PPS	1314-80-3	215-242-4	98 min

Additional information:

Molecular Formula	P ₂ S ₅
Molecular Weight	222.27

◆ **SECTION 4: First aid measures**

4.1 Description of first aid measures

General information

Remove from exposure, lie down. Never give anything by mouth to an unconscious person.

After inhalation

Remove the patient to fresh air at once.

After skin contact

Take off all contaminated clothing immediately. If skin irritation persists, call a doctor. Wash off immediately with soap and plenty of water.

After eye contact

Irrigate each eye continuously with water or 0.9% saline (NS) and seek medical advice.

After swallowing

Rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patient can swallow. Do not induce vomiting and seek medical advice immediately.

4.2 Most important symptoms and effects, both acute and delayed

Apnea, coma, and convulsions; conjunctival pain, lacrimation, photophobia, kerato-conjunctivitis, and corneal vasculature; dizziness; headache; fatigue; irritability, insomnia; gastro intestinal disturbance

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically and supportively

◆ **SECTION 5: Firefighting measures**

5.1 Extinguishing media

Suitable extinguishing media

CO₂, dry powder, sand

Unsuitable extinguishing media

water and foam

5.2 Special hazards arising from the substance or mixture

May form toxic sulfur dioxide and carbon oxides if burning.

Flammable solid

Fumes from fires are irritating to respiratory passages, eyes and skin.

Safety data sheet as per Commission Regulation (EU) 2015/830
Product: Diphosphorous pentasulphide



5.3 Advice for firefighters Fumes may contain hydrogen sulfide, phosphine, sulfur dioxide, phosphorus pentoxide, phosphoric acid.
 Wear self-contained breathing apparatus.

◆ **SECTION 6: Accidental release measures**

- 6.1 Personal precautions, protective equipment and emergency procedures** Use personal protective equipment.
 Avoid breathing dust or gas during processing.
 Ensure adequate ventilation
- 6.2 Environmental precautions** Do not allow to enter sewers, surface or ground water.
- 6.3 Methods and material for containment and cleaning up** Soak up with inert absorbent material and dispose of as hazardous waste.
 Keep in suitable, closed containers for disposal.
 Do not flush with water.
 Suitable binder: sand
- 6.4 Reference to other sections** Section 8 for information on personal protection equipment.
 Section 13 for disposal information

◆ **SECTION 7: Handling and storage**

- 7.1 Precautions for safe handling** If possible, use material transfer and blending plants that are closed.
 Avoid contact with skin and eyes.
 Avoid formation of dust. Avoid inhalation of dust.
- 7.2 Conditions for safe storage, including any incompatibilities** Ensure good ventilation when handling large amounts. Take precautionary measures against build-up of electrostatic charge. Avoid impact, friction and build-up of electrostatic charge; risk of ignition! Earth tanks and plant properly.
 Use anti-statically treated equipment.
Storage Store in a cool place. Protect against heat.
 Keep only in the original container in a cool, well-ventilated place.
 Incompatible materials: Acids, water, alcohols, strong oxidizers, acid, alkali.
 Keep container tightly closed in a dry and well-ventilated place.
 Protect against atmospheric moisture. Store and handle under nitrogen.
Advice on common storage Observe prohibition against storing together!
Storage stability Maximum Storage Temperature: 45°C
- 7.3 Specific end use(s)** No further relevant information available

◆ **SECTION 8: Exposure controls/personal protection**

- 8.1 Control parameters**
 Occupational Exposure Limit 1 mg/m3 TWA
- 8.2 Exposure controls**
Appropriate engineering controls If possible, use material transfer, metering and blending plants that are closed
- Personal protective equipment**
Eye/ face protection closed goggles, face shield
- Skin protection**

Hand protection	Type of material	Thickness	Breakthrough time
	Butyl-rubber	0.5 mm	> 480 min
	Polychloroprene (PCP)	0.5 mm	110 min
Body protection	Boots, body suit		
- Respiratory protection** Full-face respirator. Avoid inhaling vapours.
- Thermal hazards** Flammable solid, possibility of decomposition on excess heating
- Industrial hygiene** Avoid contact with skin and eyes.
 Remove immediately all contaminated clothing.
 Keep working clothes separately.
 Smoking, eating and drinking should be prohibited in the application area.

◆ **SECTION 9: Physical and chemical properties**

- 9.1 Information on basic physical and chemical properties**
Appearance Green/ yellow hygroscopic crystalline solid
Odour Odor of rotten eggs

Safety data sheet as per Commission Regulation (EU) 2015/830

Product: Diphosphorous pentasulphide



Odour threshold	0.13 ppm (H ₂ S)
pH	no data available
Melting point	285°C
Boiling point	515°C
Flash point	no data available
Evaporation rate	not applicable
Flammability (solid, gas)	Flammable Category 1
Flammability limits	no data available
Vapour pressure	1mmHg at 300°C
Vapour density	not determined
Relative density	2.03 g/cm ³
Solubility in water	not applicable
Partition coefficient	not applicable
Ignition temperature	142°C
Decomposition temperature	no data available
Viscosity at 100 °C	not applicable
Explosive properties	There is a danger of dust explosions, particularly when grinding or on filling or discharging the material. Dust-air mixtures containing >3% oxygen and >50 g/m ³ P ₄ S ₁₀ (particle size <0.07 mm) are explosive.
Oxidizing properties	no oxidizing properties
9.2 Other information	
Heat of Combustion	-10,890 Btu/lb = -6,050 cal/g = -253.3 X 10 ⁵ J/kg
Heat of Vaporization	178 kJ/mol

◆ SECTION 10: Stability and reactivity

10.1 Reactivity	Contact with water or acid liberates poisonous and flammable hydrogen sulfide.
10.2 Chemical stability	Under storage at normal ambient temperatures (-40°C to +45°C), the product is stable.
10.3 Possibility of hazardous reactions	Shock sensitive. Take precautionary measures against build-up of electrostatic charge.
10.4 Conditions to avoid	Extremes of temperature and direct sunlight. Keep away from ignition sources, heat and naked flame. Keep material out of water sources and sewers. Keep material dry.
10.5 Incompatible materials	Acids, water, alcohols, strong oxidizers, acid, alkali.
10.6 Hazardous decomposition products	When heated to decomposition, it emits highly toxic fumes of sulphur and phosphorus oxides. Decomposes on contact with water to phosphoric acid, sulfur dioxide, and hydrogen sulfide.

◆ SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

LD50	oral	rat	791 mg/kg bw	harmful
LC50	inhalation		no data available	
LD50	Dermal	rabbit	3160 g/kg bw	not classified

Skin irritation

Irritating Category 3

Serious eye irritation

Irritating Category 2B

Respiratory or skin sensitization

skin sensitizer

Germ cell mutagenicity

non mutagenic (Ames test)

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

irritating to eye and skin

STOT-repeated exposure

not classified as specific target organ toxicant

◆ SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity

Based on H₂S generated

Toxicity to fish

no data available

Safety data sheet as per Commission Regulation (EU) 2015/830
Product: Diphosphorous pentasulphide



Toxicity to aquatic invertebrates	LC50	48h	0.1224mg/L	<i>Daphnia magna</i>
Toxicity to aquatic algae and cyanobacteria	EC50	24h	1.87 mg/l	<i>Scenedesmus vacuolatus</i>
Toxicity to microorganisms	EC50	30min	12.4mg	<i>Vibrio fisheri</i>
12.2 Persistence and degradability				
Biodegradation	no data available			
12.3 Bioaccumulative potential	Decomposes in presence of moisture with the development of phosphoric acid and hydrogen sulphide; very low potential for bioaccumulation			
12.4 Mobility in soil	Not applicable			
12.5 Results of PBT and vPvB assessment	Not a PBT, vPvB substance according to the REACH regulation			
12.6 Other adverse effects	Harmful to aquatic organisms The material is harmful to the environment			

SECTION 13: Disposal considerations

13.1 Waste treatment methods	Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Exert extra care in igniting as this material is highly flammable. Do not dispose in sewage.
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◆ **SECTION 14: Transport information**

	ADR/RID	IMDG	ICAO/IATA
14.1 UN Number	1340	1340	1340
14.2 UN proper shipping name	Phosphorus pentasulphide		
14.3 Transport hazard class	4.3+4.1	4.3+4.1	4.3+4.1
14.4 Packaging group	II	II	II
14.5 Environmental hazards	environmentally hazardous, marine pollutant		
14.6 Special precautions for the user			
Danger code (Kemler)	423		
Tunnel restriction code	D/E		
EmS Number	F-G,S-N		
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	See regulatory information for transport approval		

◆ **SECTION 15: Regulatory information**

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture		
Major accident hazard	Seveso III	no

International Chemical Inventory Status

USA (TSCA)	listed
Canada (DSL)	listed
Australia (AICS)	listed
Japan (MITI)	listed
Korea (KECL)	listed
Philippines (PICCS)	listed
China	listed
New Zealand	listed
Taiwan	listed

15.2 Chemical safety assessment	A Chemical Safety Assessment will be carried out at the time of REACH registration
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◆ **SECTION 16: Other information**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Further information:

Sections in which changes have been made since the last version are marked with a diamond ◆ in the left hand

Safety data sheet as per Commission Regulation (EU) 2015/830

Product: Diphosphorous pentasulphide



margin.

Abbreviations and acronyms in English language:

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
AICS	Australian Inventory of Chemical Substances
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CLP	Classification for Labeling and Packaging
DSL	Domestic Substances List
EC	European Commission
EC50	Half maximal effective concentration
EINECS	European Inventory of Existing Commercial Chemical Substances
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
IATA	International Air Transport Association
IBC	International Bulk Chemical
ICAO	International Civil Aviation Organization
IMDG	International Maritime Code for Dangerous Goods
KECL	Korea Existing Chemicals List
KOC	Soil adsorption coefficient
KOW	Partition Coefficient octanol-water
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
MARPOL	International Convention for the Prevention of Pollution from Ships
MITI	Ministry of International Trade and Industry
NOAEC	No Observed Adverse Effect Concentration
NOAEL	No Observed Adverse Effect Level
NOEC	No Observed Effect Concentration
PBT	Persistent, bioaccumulative and toxic substances
PICCS	Philippine Inventory of Chemicals and Chemical Substances
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
STOT	Specific target organ toxicity
TSCA	Toxic Substances Control Act
UN	United Nations
vPVB	(very) Persistent, (very) Bioaccumulative

Sources

Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

ECHA <https://echa.europa.eu/registration-dossier/-/registered-dossier/13413/1>

CDC <https://www.cdc.gov/niosh/npg/npgd0510.html>

HSDB <https://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+1251>
