

Safety data sheet as per Commission Regulation (EU) 2020/878

Product: Phosphorous pentoxide



SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Trade name	Phosphorous pentoxide
Chemical Name	Diphosphorus pentaoxide/ Phosphoric anhydride
CAS Number	1314-56-3
EC Number	215-236-1
Nanoform	No nanoforms

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

Relevant identified uses	Industrial use: In the manufacture of glass and glass products, downstream use of absorbents and catalyst, used as an intermediate, monomer, spin finisher, drying agent Professional use: as a drying agent, in manufacture of polyphosphates, other phosphoric compounds, as a laboratory chemical, Consumer use: no consumer uses defined
Uses identified against	Food additive, medicinal products, cosmetic products

1.3 Details of the supplier of the safety data sheet:

Manufacturer	Prasol Chemicals Limited (Formerly known as Prasol Chemicals Private Limited) Prasol House, Plot No.A-17/2/3, T.T.C. Industrial Area, Khairme M.I.D.C., Navi Mumbai - 400 710. Maharashtra, India.
Telephone	+91-22-27782555/ 61952500
Telefax	+91-22-61952577
e-mail address	sales@prasolchem.com; inquiry@prasolchem.com

1.4 Emergency telephone number

Telephone	+91-22- 27782555/ 61952500
Language	English

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

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

Skin Corrosion	Category 1A	H314	Causes severe skin burns and eye damage
		EUH014	Reacts violently with water

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



GHS05

Signal word	Danger
Hazard statements	H314 Causes severe skin burns and eye damage EUH014 Reacts violently with water

Precautionary statements

General	P103	Read label before use.
Prevention	P260	Do not breathe dusts or mists.
	P264	Wash hands thoroughly after handling.
	P280	Use protective gloves and eye protection.
Response	P301+P330+ P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
	P303+P361+ P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with 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
	P310	Immediately call a doctor.
	P321	Specific treatment: wash with plenty of water.
	P363	Wash contaminated clothing before reuse.
	P370 + P378	In case of fire: Use dry chemical, carbon dioxide, sand to extinguish.
	P391	Collect spillage
Storage	P405	Store locked up.

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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 Annex XIII to REACH regulation

Not having endocrine disruptive properties as per criteria of Delegated Regulations (EC) 2017/2100 or (EC) 2018/605

◆ SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Name	Phosphorous pentoxide
CAS Number	1314-56-3
EC Number	215-236-1
Molecular Formula	P ₂ O ₅
Molecular Weight	141.94

Ingredient	Classification	Concentration (%)	SCL, M-factor, ATE
Phosphorous pentoxide	Skin Corr 1A; H314, EUH014	98 - 100	Not assigned

3.2 Mixtures not applicable

None of the ingredients present are classified as skin sensitisers 1A, respiratory sensitisers 1A, aspiration hazards and endocrine disruptors.

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	If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If unconscious, evaluate the need for artificial respiration. Get immediate medical attention.
After skin contact	Corrosive. Contact can cause severe irritation, burns, redness, and pain. Burns usually penetrate the skin with sharply defined edges, and heal slowly with the formation of scar tissue.
After eye contact	Rinse thoroughly with plenty of water and seek medical advice.
After swallowing	When swallowed, allow water to be drunk. Drink Aluminium oxide suspension.

4.2 Most important

**symptoms and effects,
both acute and delayed**

After inhalation	Damages the mucous membranes and upper respiratory tract. Symptoms may include irritation of the nose and throat, and labored breathing. May cause lung edema, a medical emergency.
After skin contact	Contact can cause severe irritation, burns, redness, and pain. Burns usually penetrate the skin with sharply defined edges, and heal slowly with the formation of scar tissue.
After eye contact	Fumes and airborne powder cause eye irritation. Contact with substance can cause severe eye burns and permanent damage. Inflammation of the eye is characterized by redness, watering, and itching.
After swallowing	Releases heat on contact with moisture and will burn mucous surfaces. Sore throat, abdominal pain, nausea, vomiting, and diarrhea may result. Brown or yellow stains will be found around the mouth. Suffocation may occur from swelling of the tongue. Aspiration into the lungs can cause chemical pneumonitis. Ingestion of this material has caused human fatalities.

Chronic symptoms

No further information

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically and supportively
In case of lung irritation, treat first with Pulmicort-dosing aerosol

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	CO ₂ , dry powder, sand
Unsuitable extinguishing media	water and foam

5.2 Special hazards arising from the substance or mixture

May form toxic carbon oxides if burning. Fumes from fires are irritating to respiratory passages, eyes and skin. Fumes may contain phosphoric acid and carbon oxides.

5.3 Advice for firefighters

Wear self-contained breathing apparatus. Prevent skin contact.

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SECTION 6: ACCIDENTAL RELEASE MEASURES

- 6.1 Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation. Evacuate personnel to safe areas.
- For non-emergency personnel**
Protective equipment: Gloves, Face shield, Protective clothing.
Emergency procedures: Mark the danger area. No naked flames. Wash contaminated clothes.
- For emergency responders**
Protective equipment: Equip cleanup crew with proper protection.
Emergency procedures: Ventilate area.
- 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**
Protective measures
Avoid contact with skin and eyes. Avoid formation of dust. Avoid inhalation of dust.
Measures to prevent fire: Keep away from naked flames/heat. Use spark-/explosion proof appliances.
Measures to prevent aerosol and dust generation: Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Thoroughly clean/dry the installation before use.
Measures to protect the environment: Keep container tightly closed. If possible, use material transfer, metering and blending plants that are closed.
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
- Advice on general occupational hygiene**
- 7.2 Conditions for safe storage, including any incompatibilities**
Technical measures and storage conditions
Keep only in the original container in a cool, well ventilated place away from ignition sources and incompatible materials. Keep container closed when not in use
Follow normal measures for preventive fire protection.
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.
Iron drums with LDPE liner
Acids, water, alcohols, strong oxidizers, acid, alkali
Store in a cool place. Protect against heat. Keep only in the original container in a cool, well-ventilated place. Reacts violently with water. Keep container tightly closed in a dry and well-ventilated place. Protect against atmospheric moisture. Store and handle under nitrogen.
- Packaging material**
Incompatibility
Storage conditions
- Advice on common storage**
Storage stability
Observe prohibition against storing together!
Maximum Storage Temperature: 45°C
- Storage class**
8A: Combustible, corrosive hazardous materials
- 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
Exposure time > 3 min < 60 Min; Observation time < 14 days
- DNEL/DMEL (Workers)**
Acute - local effects, inhalation 1 mg/m³
Long-term - systemic effects, dermal 68.7 mg/kg bodyweight/day
Long-term - systemic effects, inhalation 1 mg/m³
Long-term - local effects, inhalation 1 mg/m³
- DNEL/DMEL (General population)**
Acute - local effects, inhalation 1 mg/m³
Long-term - systemic effects, oral 68.7 mg/kg bodyweight/day

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Long-term - systemic effects, inhalation	1 mg/m ³
Long-term - systemic effects, dermal	68.7 mg/kg bodyweight/day
Long-term - local effects, inhalation	1 mg/m ³

PNEC (Water)

PNEC aqua (freshwater)	66.5 µg/l
PNEC aqua (marine water)	6.65 µg/l

PNEC (Sediment)

PNEC sediment (freshwater)	249 µmg/kg dwt
PNEC sediment (marine water)	24.9 µg/kg dwt

PNEC (Soil)

PNEC soil	10.7 µg/kg dwt
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PNEC (STP)

PNEC sewage treatment plant	10 mg/l
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8.2 Exposure controls

Appropriate engineering controls If possible, use material transfer, metering and blending plants that are closed

Personal protective equipment

For eye/ face protection closed goggles, face shield

For 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

For respiratory protection Full-face respirator. Avoid inhaling vapours.

Thermal hazards Possibility of decomposition on excess heating

For Environmental exposure 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

Physical state	Solid
Color	White
Odour	pungent, sharp, irritating odor
Odour threshold	no data available
Melting point	340-360°C
Boiling point	sublimes at >572°C
Flammability (solid, gas)	Not flammable
Flammability limits	no data available
Flash point	no data available
Ignition temperature	no data available
Decomposition temperature	no data available
pH	1.5 at 10 g/l at 20°C
Viscosity at 100 °C	not applicable
Relative density	2.39 g/cm ³
Solubility in water	not applicable; Reacts to form phosphoric acid
Partition coefficient	not applicable
Vapour pressure	1mmHg at 384°C
Vapour density	not determined
Particle characteristics	Not a nanomaterial/ nanoform

9.2 Other information

Explosive properties	no explosive properties based on chemical structure
Oxidizing properties	no oxidizing properties based on chemical structure
Evaporation rate	not applicable
Heat of Combustion	not combustible
Heat of Vaporization	22kcal/mol

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SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity	Reacts violently with water to evolve heat, dangerous fire risk. Water reactivity EUH014
10.2 Chemical stability	Under storage at normal ambient temperatures (-40°C to +45°C), the product is stable. Forms meta-poly or orthophosphoric acid in contact with moisture depending upon condition of absorption.
10.3 Possibility of hazardous reactions	Undergoes hazardous reactions with formic acid, inorganic bases, iodides, methyl hydroperoxide, 3-propynol. Calcium oxide or sodium hydroxide reacts with phosphorus pentoxide extremely violently when initiated by local heating.
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. Metals, bases, ammonia, calcium oxide, chlorine trifluoride, oxygen difluoride, sodium carbonate, sodium hydroxide, potassium, sodium, sulfides (inorganic, e.g. ferric sulfide, lead sulfide, sodium sulfide), may react with copper, rubber, and plastic, bromine pentafluoride, perchloric acid, iodides.
10.6 Hazardous decomposition products	Oxides of phosphorus, phosphorous fumes. When heated to decomposition, it emits highly toxic fumes of phosphorus oxides. Reacts extremely violently on contact with water to form phosphoric acid.

◆ SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects	
Acute toxicity	
LD50 oral	no data available
LD50 inhalation	rat 1217mg/kg bw
LD50 dermal	no data available
Skin irritation	Irritating; strong caustic effect Skin Corr. 1A H314
Serious eye irritation	Irritating; strong caustic effect Eye Damage 1 H318
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
11.2 Information on other hazards	
Endocrine disrupting properties	No endocrine disrupting properties
Other information	No further information

◆ SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity	
Aquatic toxicity	
Toxicity to fish	LC50 24h >100mg/L <i>Danio rerio</i>
Toxicity to aquatic invertebrates	EC50 48h 70.7mg/L <i>Daphnia magna</i>
Toxicity to aquatic algae and cyanobacteria	EC50 72h 66.5mg/l <i>Desmodesmus subspicatus</i>
Toxicity to microorganisms	EC50 3h 215mg activated sludge
12.2 Persistence and degradability	
Biodegradation	no data available
12.3 Bioaccumulative potential	Decomposes in presence of moisture with the development of phosphoric acid; 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 Endocrine disrupting properties	No endocrine disrupting properties
12.7 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 national, state and local environmental regulations.
Product disposal	Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
Packaging disposal	Clean container with water. Recover waste water for processing later. Destroy packaging by incineration at an approved waste disposal site.

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Sewage disposal

Do not dispose in sewage.

SECTION 14: TRANSPORT INFORMATION

	ADR/RID	IMDG	ICAO/IATA
14.1 UN Number	1807	1807	1807
14.2 UN proper shipping name		Phosphorus pentoxide	
14.3 Transport hazard class	8	8	8
14.4 Packaging group	II	II	II
14.5 Environmental hazards	Not environmentally hazardous, not a marine pollutant		
14.6 Special precautions for the user	Corrosive		
EmS Number	F-A S-B		
14.7 Transport in bulk according to Annex II of MARPOL/73/78 and the IBC Code	Not applicable, packaged goods		

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 (Tracking No. 83089)
Canada (DSL)	listed
Australia (AICS)	listed
Japan (MITI)	Listed
Korea (KECL)	Listed (KE No. 12129)
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

SECTION 16: OTHER INFORMATION

◆ **Indication of changes:** Sections in which changes have been made since the last version are marked with a diamond ◆ in the left hand margin.

Abbreviations and acronyms:

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
AICS	Australian Inventory of Chemical Substances
ATE	Acute Toxicity Estimate
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CLP	Classification for Labeling and Packaging
DMEL	Derived minimal effect level
DNEL	Derived No-Effect Level
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
M-factor	Multiplication Factor
MITI	Ministry of International Trade and Industry

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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
PNEC	Predicted No-Effect Concentration
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
SCL	Specific concentration limit
STOT	Specific target organ toxicity
TSCA	Toxic Substances Control Act
UN	United Nations
vPVB	(very) Persistent, (very) Bioaccumulative

Key literature references and sources for data

Commission Regulation (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

ECHA <https://echa.europa.eu/registration-dossier/-/registered-dossier/15395>

chemidplus <https://chem.nlm.nih.gov/chemidplus/rn/1314-56-3>

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End of safety data sheet