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

1.1 Product identifier

Trade name	**Phosphorous pentoxide**
Chemical Name	Diphosphorus pentoxide/ Phosphoric anhydride
CAS Number	1314-56-3
EC Number	215-236-1
Pre-Registration number (REACH)	05-2114672531-50-0000

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

Relevant identified uses	As a dehydrating agent; In manufacture of Phosphoric acid; As an intermediate for phosphate esters, which are used as surfactants, hydraulic fluids and plasticizers. As an important raw material to manufacture pigments and pharmaceuticals.
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)

Skin Corrosion	Category 1A	H314	Causes severe skin burns and eye damage.
Eye Damage	Category 1	H318	Causes serious 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
	H318	Causes serious 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.

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 (%)
Phosphorous pentoxide / PPO	1314-56-3	215-236-1	98 min

Additional information:

Molecular Formula	P_2O_5
Molecular Weight	141.94

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	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	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	Corrosive. Fumes and airborne powder cause eye irritation. Contact with substance can cause severe eye burns and permanent damage.
After swallowing	Corrosive. 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.
4.2 Most important symptoms and effects, both acute and delayed	Inflammation of the eye is characterized by redness, watering, and itching Inflammation is characterized by itching, scaling, reddening, or blistering.
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	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.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures	Use personal protective equipment. Avoid dust formation. Avoid breathing dust or gas during processing. Ensure adequate ventilation. Evacuate personnel to safe areas.
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

Advice on protection against fire and explosion
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.
Reacts violently with water.
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
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	white solid
Odour	pungent, sharp, irritating odor
Odour threshold	no data available
pH	1.5 at 10 g/l at 20°C
Melting point	340-360°C
Boiling point	sublimes at >572°C
Flash point	no data available
Evaporation rate	not applicable
Flammability (solid, gas)	Not flammable
Flammability limits	no data available
Vapour pressure	1mmHg at 384°C
Vapour density	not determined
Relative density	2.39 g/cm^3
Solubility in water	not applicable; Reacts to form water and phosphoric acid
Partition coefficient	not applicable
Ignition temperature	no data available
Decomposition temperature	no data available
Viscosity at 100 °C	not applicable

	Explosive properties	no explosive properties, but reaction with water can be extremely violent
	Oxidizing properties	no oxidizing properties
9.2	**Other information**	
	Heat of Combustion	not combustible
	Heat of Vaporization	22kcal/mol

SECTION 10: Stability and reactivity

10.1	**Reactivity**	Reacts violently with water to evolve heat, dangerous fire risk.
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 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	harmful
LD50	dermal	no data available		

Skin irritation	Irritating; strong caustic effect
Serious eye irritation	Irritating; strong caustic effect
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

Toxicity to fish	LC50	24h	>100mg/L	*Danio rerio*
Toxicity to aquatic invertebrates	EC50	48h	70.7mg/L	*Daphnia magna*
Toxicity to aquatic algae and cyanobacteria	EC50	72h	66.5mg/l	*Desmodesmus subspicatus*
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 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.

◆ 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**	environmentally hazardous, marine pollutant		
14.6	**Special precautions for the user**			
	EmS Number	F-A S-B		
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

◆ 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 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/15395
CDC	https://www.cdc.gov/niosh/ipcsneng/neng0545.html
HSDB	https://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+847
chemidplus	https://chem.nlm.nih.gov/chemidplus/rn/1314-56-3