



EXCEL INDUSTRIES LIMITED

PHOSPHORUS PENTASULPHIDE MATERIAL SAFETY DATA SHEET

SECTION 1 : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

- **Product identifier** :
 - Chemical Name : Phosphorus pentasulphide
 - Molecular formula : P_2S_5
 - Chemical class : Inorganic solid
 - Trade name : Phosphorus pentasulphide
 - Synonyms : Phosphoric sulphide, Diphosphorus pentasulphide, Phosphorus persulphide
- **Name of manufacturer** :

CORPORATE HEAD OFFICE :

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Dhatav, Roha
District - Raigad 402116
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Emergency Tel. : +91 2194 264004, 264005
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- **Product use** : Used in the manufacture of organophosphorus compounds, pesticides, pharmaceuticals, lubricant oil additives.

SECTION 2 : COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient name	CAS No.	%	EC / EINECS No.	Symbol	R / S Phrases
Phosphorus pentasulphide	1314-80-3	98 %	215-242-4	F, Xn, N	R11, R20/22, R29, R50,S61

Note: See Section 16 for full text of R & S phrases mentioned above.

SECTION 3 : HAZARDS IDENTIFICATION

- **Potential hazards** : Flammable solid. Contact with water / moisture liberates toxic, highly flammable gas H_2S .
- **Potential health effects** : Toxic, Irritant
- **Relevant route of exposure** :
 - Skin contact : Irritant effect on skin, redness, pain
 - Eye Contact : Causes severe irritation to eyes, pain & poor visibility
 - Inhalation : Dust irritates the mucous membrane and all parts of respiratory system causing sore throat, cough, shortness of breath. High concentration can paralyse the sense of smell (olfactory nerves)
 - Symptoms due to toxic effect of Hydrogen sulphide (H_2S) : Contact of material with water or atmospheric moisture liberates toxic H_2S . Symptoms include headache, dizziness, fall in blood pressure, loss of consciousness. There is a risk of paralysis of the central nervous system and formation of lung oedema can cause sudden death
 - Ingestion : Abdominal cramps, burning sensation, diarrhea, vomiting



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- R-phrases : R11, R20/22, R29, R50
- S-phrases : S61
- NFPA Code : H=2; F=1; R=2; W
- Environmental effects : Toxic to aquatic organisms
- Hazard symbols : F, Xn, N



SECTION 4 : FIRST AID MEASURES

- Eyes : Immediately flush eyes with plenty of water. Eyelid should be held apart during the flushing. Seek medical attention immediately.
- Skin : Dust off the material from skin and clothing . Remove contaminated clothing. Wash affected area with large amounts of water. If the clothing is contaminated, it should be laundered.
- Inhalation : Remove exposed person to fresh air. If breathing has ceased, give artificial respiration immediately. Immediately call physician. If medical oxygen cylinder is available, administer oxygen. Patient should be kept warm. Never give anything by mouth to an unconscious person.
- Ingestion : First rinse mouth. Give large amount of water or milk to drink immediately in order to reduce the concentration. **DO NOT INDUCE VOMITING.** Seek medical attention immediately.
- Medical conditions likely to be aggravated by exposure : Disorders of eyes, respiratory system and nervous system may be aggravated due to H₂S
- Note to Physician : Antidote in suspected H₂S inhalation : Cap./ inj. Amyl nitrate take - 0.2 ml. in a cloth & hold lightly under nose for 15 seconds. Repeat at least 2 3 times after every 30 seconds. Monitor B.P. Stop if B.P. falls below 80 mm of Hg. In case of ingestion :- Consider lavage

SECTION 5 : FIREFIGHTING MEASURES

- HAZCHEM code : 4YE
- Hazardous combustion products : Sulfur dioxide, phosphorus pentoxide
- Conditions under which flammability could occur : Heat
- Extinguishing media : **DO NOT USE WATER.** Use Dry chemical powder, Dry sand , CO₂
- Unsuitable fire extinguishing media : Water & Foam
- Sensitivity to explosion : Ignitable by friction. Finely dispersed particles form explosive mixtures in air
- Fire fighting procedure : Avoid contact of the substance with water.
- Special protective equipment for the fighters : Wear self-contained breathing apparatus and protective clothing. Equipment should be thoroughly decontaminated after use



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SECTION 6 : ACCIDENTAL RELEASE MEASURES

- Personal precautions : Do not inhale. Avoid contact with material. Use personal protection recommended in Section 8
- Environmental precautions : Prevent mixing with water bodies
- Procedures for dealing with release or spill (Major/Minor) : Carefully collect material in containers for disposal. Prevent dust formation. Use respiratory equipment & personal protective clothing. Cover spill area with soda ash. Don't use water for clean up. Dispose as per instructions mentioned in Section 13.
- Additional instructions : After clean up operations, decontaminate & launder all protective clothing and equipment before storing & reusing

SECTION 7 : HANDLING AND STORAGE

HANDLING :

- **Safe handling practices and equipment :** Good industrial practice in housekeeping and personal hygiene should be followed. Avoid contact with eyes, skin and clothing. Avoid dust formation & accumulation. Ensure good ventilation at workplace.
- **Instruction for fire & explosion protection:** No smoking. To avoid dust, spillage should be prevented. Use spark resistant tools. Preventive measures like earthing & bonding of all equipment & plants should be taken to avoid electrostatic charge build-up. Avoid friction, jolts.

STORAGE :

- **Appropriate storage practices/ requirements:** Store in cool, dry, well-ventilated area away from water, heat and ignition sources. Keep containers closed.
- **Technical measures:** Ventilation (Natural / Forced exhaust) to be provided to prevent buildup of H₂S gas in plant areas & closed storage rooms. Store & handle under nitrogen.
- **Material of construction of containers:** MS can corrode with moist P₂S₅. If used M.S. container should be suitably lined to prevent corrosion. Suitable storage for bulk in SS 304 containers

SECTION 8 : EXPOSURE CONTROL / PERSONAL PROTECTION

- **Occupational exposure limit values / Biological limit values:**
 - TLV : 1 mg/ m³ as TWA; 3 mg/ m³ as STEL (ACGIH 2004)
 - PEL (OSHA) : TWA 1 mg/m³
- **Applicable control measures, including engineering controls:** Good industrial practice in housekeeping should be followed. Avoid dust formation & accumulation. Ensure adequate ventilation of workplace & storage areas. Provide eyewash facility & safety shower.
- **Industrial Hygiene Controls:** Good personal hygiene practices should be followed. Avoid contact with eyes, skin and clothing. Wash hands before breaks and after work. Do not eat, drink, smoke in the workplace. Use personal protective equipment.
- **Personal protective equipment for each exposure route (type & MOC):**
 - Eyes : Safety goggles.
 - Skin : PVC gloves.
 - Clothing : Chemical resistant apron with antistatic properties
 - Foot : Safety shoes / Gumboots
 - Respiratory protection : Wear supplied air respirator with full face piece, SCBA.



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SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

- Physical state : Solid
- Appearance : Greenish yellow powder / flakes / granules
- Odour : Strong odour of Hydrogen Sulphide (similar to rotten eggs)
- Vapor pressure & reference temperature : 1 mm at 300°C
- Bulk Density : 900 1100 kg/m³
- Boiling point : 513°C
- Melting point : 273-285°C
- Specific gravity : 2.03 @ 25°C
- Odor threshold : 0.0047 ppm (H₂S)
- pH : Approx. 1 (at 10 g/l water and 20°C)
- Solubility in water : Reacts with water
- Flash point (with method) : > 260°C
- Upper explosive limit in air : Not available
- Lower explosive limit in air : 50 g/m³
- Auto ignition temperature : Liquid : 300°C & Dust : 142°C

SECTION 10 : STABILITY AND REACTIVITY

- Chemical stability : Generally stable under normal conditions of handling and storage. Contact with atmospheric moisture starts decomposition.
- Conditions to avoid : Water, Exposure to moisture, Heat, Dust formation, Electrostatic build up
- Incompatibility with other materials : Water, alcohol, oxidising substances & alkalis
- Hazardous decomposition products : Sulfur dioxide, hydrogen sulphide and phosphorus pentoxide
- Hazardous polymerization : None
- Effect of weather (Humidity/ oxygen/ CO₂) : Moisture / Humid conditions liberate toxic hydrogen sulphide gas

SECTION 11 : TOXICOLOGICAL INFORMATION

Toxicology data:

- Skin : Dermal LD50 (Rabbit) 500 mg/kg (24H)
- Ingestion : Oral LD50 (Rat) 389 mg/kg
- Inhalation : No data available
- Irritancy : Moderate irritation of skin & eyes of rabbit
- Sensitization : No data available
- Carcinogenicity : No data available
- Reproductive toxicity : No data available
- Teratogenicity : No data available
- Mutagenicity : No data available
- Name of toxicologically synergistic products : No data available

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SECTION 12 : ECOLOGICAL INFORMATION





Ecotoxicity:

- Mobility : No data available
- Persistence and degradability in soil/
water : No data available
- Bioaccumulation potential : No data available
- Other adverse effects (ODP, GWP, etc). : No data available

SECTION 13 : DISPOSAL CONSIDERATION

- **Waste disposal information of product & contaminated packaging:** Spill and waste disposal procedures approved by state and local authorities must be observed. Labels should not be removed from containers until they have been cleaned and decontaminated. Decontaminate the container taking suitable precaution considering hazard before reuse or recycle and dispose off as per local rules. Do not use empty containers for storing food.

SECTION 14 : TRANSPORT INFORMATION

Regulatory information	UN No.	Proper shipping name	UN Class & Subs. Haz class	Packaging group	Label	Additional information
IMDG	1340	Phosphorus pentasulphide	4.3 4.1	II		
ADR/ RID	1340	Phosphorus pentasulphide	4.3 4.1	II		
US-DOT	1340	Phosphorus pentasulphide	4.3 4.1	II		
ICAO/ IATA	1340	Phosphorus pentasulphide	4.3 4.1	II		

SECTION 15 : REGULATORY INFORMATION

- National laws/ Regional laws:-
 - USA -
 - RTECS no. - TH4375000
 - Europe
 - EC / EINECS No. - 215-242-4
 - Hazard Symbol - F, Xn, N



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SECTION 16 : OTHER INFORMATION

Full text of R & S phrases given below:-

- R11- Highly flammable
- R20/22- Harmful by inhalation and if swallowed
- R29- Contact with water liberates toxic gas
- R50- Very toxic to aquatic organisms
- S61 - Avoid release to the environment. Refer to special instructions/safety data sheets

DISCLAIMER: Information contained in this Material Safety Data Sheet is believed to be reliable but no representation, guarantee or warranties of any kind are made as to the accuracy, suitability for a particular application or results to be obtained from them. It is up to the user to ensure that the information contained in the Material Safety Data Sheet is relevant to the product manufactured/ handled or sold by him as the case may be. Excel Industries Limited makes no warranties, expressed or implied, in respect of the adequacy of this document for any particular purpose.