

PHOSPHOROUS PENTASULPHIDE

GHS Safety Data Sheet

Version No:3

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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

PHOSPHORUS PENTASULPHIDE

OTHER NAMES

P2-S5, P4-S10, "phosphorus (V) sulfide", "phosphorus (V) sulfide", "phosphorous pentasulfide", "phosphoric sulfide", "phosphoric sulphide", "sulfur phosphide", "thiophosphoric anhydride", "phosphorus persulfide", "phosphorus persulphide",

PROPER SHIPPING NAME

PHOSPHORUS PENTASULPHIDE, free from yellow and white phosphorus
PHOSPHORUS PENTASULPHIDE

PRODUCT USE

In manufacture of lube oil additives, pesticides (chiefly malathion and parathion); in safety match manufacture, ignition compounds and for introducing sulfur into organic compounds.

SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V. INDUSTRIAL ESTATE,

248, WORLI,

MUMBAI- 400030.INDIA.

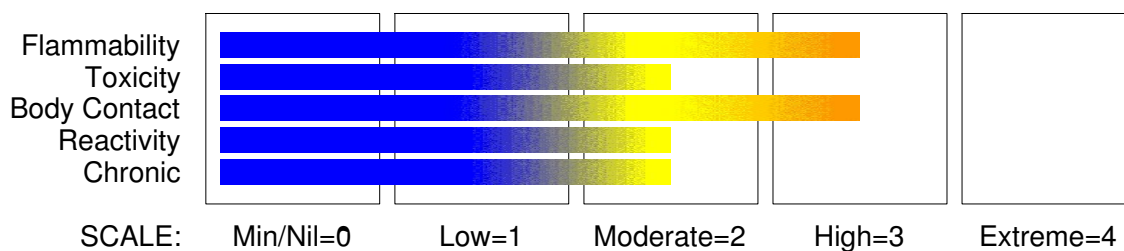
technical@sdfine.com

Telephone: 91- 22- 24959898

Telephone: 91- 22- 24959899

Fax: 91- 22- 24937232

HAZARD RATINGS



Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Acute Aquatic Hazard Category 1

Acute Toxicity (Inhalation) Category 4

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Section 2 - HAZARDS IDENTIFICATION

Acute Toxicity (Oral) Category 4
Emit Flammable Gases with Water Category 2
Skin Corrosion/Irritation Category 1C



EMERGENCY OVERVIEW

HAZARD

DANGER

Determined by using GHS criteria:

H261 H332 H302 H314 H400

In contact with water releases flammable gases

Harmful if inhaled

Harmful if swallowed

Causes severe skin burns and eye damage

Very toxic to aquatic life

PRECAUTIONARY STATEMENTS

Prevention

Do not eat, drink or smoke when using this product.

Wash hands thoroughly after handling.

Keep from any possible contact with water, because of violent reaction and possible flash fire.

Handle under inert gas, protect from moisture.

Use only outdoors or in a well ventilated area.

Wash thoroughly after handling.

Do not breathe dust or mist.

Avoid breathing dust/fume/gas/mist/vapours/spray.

Wear protective gloves/clothing and eye/face protection.

Ground/bond container and receiving equipment.

Keep away from heat/sparks/open flame - No smoking.

Use explosion-proof electrical/ventilating/lighting/equipment

Wear protective gloves and eye/face protection.

Response

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Immediately call a POISON CENTER or doctor/physician.

Wash contaminated clothing before reuse.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

In case of fire, use dry agent for extinction.

In case of fire, use foam for extinction.

If on skin or hair: remove/take off immediately all contaminated clothing. Rinse with water/shower.

Specific treatment: refer to Label or MSDS.

Call a POISON CENTER or doctor/physician if you feel unwell.

Storage

Store in a dry place and/or in a closed container

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Section 2 - HAZARDS IDENTIFICATION

Store locked up.

Disposal

Dispose of contents and container in accordance with relevant legislation.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
phosphorus pentasulfide	1314-80-3	>98
decomposes in water or moist air to		
phosphoric acid	7664-38-2	
hydrogen sulfide	7783-06-4	

Section 4 - FIRST AID MEASURES

SWALLOWED

For advice, contact a Poisons Information Centre or a doctor.

- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.

EYE

If this product comes in contact with the eyes:

- Immediately hold eyelids apart and flush the eye continuously with running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
- Transport to hospital or doctor without delay.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor.

NOTES TO PHYSICIAN

For acute or short term repeated exposures to strong acids:

- Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100%

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Section 4 - FIRST AID MEASURES

oxygen initially.

- Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling
- Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
- Strong acids produce a coagulation necrosis characterised by formation of a coagulum (eschar) as a result of the dessicating action of the acid on proteins in specific tissues.

INGESTION:

- Immediate dilution (milk or water) within 30 minutes post ingestion is recommended.
- DO NOT attempt to neutralise the acid since exothermic reaction may extend the corrosive injury.
- Be careful to avoid further vomit since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult.
- Charcoal has no place in acid management.
- Some authors suggest the use of lavage within 1 hour of ingestion.

SKIN:

- Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping.
- Deep second-degree burns may benefit from topical silver sulfadiazine.

EYE:

- Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjunctival cul-de-sacs. Irrigation should last at least 20-30 minutes. DO NOT use neutralising agents or any other additives. Several litres of saline are required.
- Cycloplegic drops, (1% cyclopentolate for short-term use or 5% homatropine for longer term use) antibiotic drops, vasoconstrictive agents or artificial tears may be indicated dependent on the severity of the injury.
- Steroid eye drops should only be administered with the approval of a consulting ophthalmologist).

[Ellenhorn and Barceloux: Medical Toxicology].

For exposures involving sulfides and hydrogen sulfide (including gastric acid decomposition products of alkaline sulfides):

- Hydrogen sulfide anion produces its major toxic effect through inhibition of cytochrome oxidases.
- Symptoms include profuse salivation, nausea, vomiting and diarrhea. Central nervous effects may include giddiness, headache, vertigo, amnesia, confusion and unconsciousness. Tachypnoea, palpitations, tachycardia, arrhythmia, sweating, weakness and muscle cramps may also indicate overexposure.

Treatment involves:

- If respirations are depressed, application of artificial respiration, administration of oxygen (continue after spontaneous breathing is established).
- For severe poisonings administer amyl nitrite and sodium nitrite (as for cyanide poisoning) but omit sodium thiosulfate injection.
- Atropine sulfate (0.6 mg intramuscularly) may contribute symptomatic relief.
- Conjunctivitis may be relieved by installation of 1 drop of olive-oil in each eye and sometimes by 3 drops of epinephrine solution (1:1000) at frequent intervals. Occasionally local anesthetics and hot and cold compresses are necessary to control pain.
- Antibiotics at first hint of pulmonary infection.

[Gosselin et al, Clinical Toxicology of Commercial Products].

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- Dry chemical powder.
- BCF (where regulations permit).

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Section 5 - FIRE FIGHTING MEASURES

- Carbon dioxide.
- DO NOT use water.

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Consider evacuation (or protect in place).
- DO NOT use water on fires.
- Avoid spraying water onto liquid pools.
- Do not approach containers suspected to be hot.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD

Avoid reaction with oxidising agents, bases and strong reducing agents.

Combustion products include:.

sulfur oxides (SO_x) and phosphorus oxides (PO_x).

FIRE INCOMPATIBILITY

Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

Personal Protective Equipment

Breathing apparatus.

Gas tight chemical resistant suit.

Limit exposure duration to 1 BA set 30 mins.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact by using protective equipment.
- Contain and absorb spill with sand, earth, inert material or vermiculite.
- Wipe up.
- Place in a suitable labelled container for waste disposal.

MAJOR SPILLS

Clear area of personnel and move upwind.

Alert Fire Brigade and tell them location and nature of hazard.

- May be violently or explosively reactive.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains and water course.
- Consider evacuation (or protect in place).

No smoking, naked lights or ignition sources.

Increase ventilation.

Stop leak if safe to do so.

DO NOT use water.

Use dry clean up procedures and avoid generating dust.

Collect recoverable product into labelled containers for recycling.

Collect residues and seal in labelled drums for disposal.

After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.

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Section 6 - ACCIDENTAL RELEASE MEASURES

If contamination of drains or waterways occurs, advise emergency services.

EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:

phosphorus pentasulfide 250 mg/m³

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:

phosphorus pentasulfide 5 mg/m³

other than mild, transient adverse effects without perceiving a clearly defined odour is:

phosphorus pentasulfide 3 mg/m³

The threshold concentration below which most people will experience no appreciable risk of health effects:

phosphorus pentasulfide 1 mg/m³

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

Very Toxic (T+)	$\geq 0.1\%$	Toxic (T)	$\geq 3.0\%$
R50	$\geq 0.25\%$	Corrosive (C)	$\geq 5.0\%$
R51	$\geq 2.5\%$		
else	$\geq 10\%$		

where percentage is percentage of ingredient found in the mixture

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+: May be stored together

O: May be stored together with specific precautions

X: Must not be stored together

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

Avoid shock and friction.

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- Avoid smoking, naked lights or ignition sources.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.

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Section 7 - HANDLING AND STORAGE

- Work clothes should be laundered separately.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.

SUITABLE CONTAINER

- Glass container.
- Plastic container.
- Metal can or drum
- Packaging as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY

- Contact with acids produces toxic fumes.
- Avoid reaction with oxidising agents.
- Forms explosive and extremely sensitive compounds with most oxidising substances; e.g. chlorates, nitrates, perchlorates and permanganates.
- Avoid moisture and alcohols
- Material ignitable by friction, sparks or flames.

STORAGE REQUIREMENTS

- Keep dry.
- Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

- phosphorus pentasulfide: CAS:1314- 80- 3 CAS:15857- 57- 5 CAS:337913- 53- 8 CAS:409325- 03- 7 CAS:341007- 60- 1 CAS:129680- 27- 9 CAS:132620- 99- 6 CAS:16857- 09- 3 CAS:12066- 62- 5 CAS:342401- 47- 2
- phosphoric acid: CAS:7664- 38- 2 CAS:28602- 75- 7 CAS:178560- 73- 1
- hydrogen sulfide: CAS:7783- 06- 4 CAS:11144- 15- 3

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
phosphorus pentasulfide	250	
phosphoric acid	1, 000	
hydrogen sulfide		100

ODOUR SAFETY FACTOR (OSF)

OSF=1.2E3 (phosphorus pentasulfide)

Exposed individuals are reasonably expected to be warned, by smell, that the Exposure Standard is being exceeded.

Odour Safety Factor (OSF) is determined to fall into either Class A or B.

The Odour Safety Factor (OSF) is defined as:

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

OSF= Exposure Standard (TWA) ppm/ Odour Threshold Value (OTV) ppm
Classification into classes follows:

Class	OSF	Description
A	550	Over 90% of exposed individuals are aware by smell that the Exposure Standard (TLV- TWA for example) is being reached, even when distracted by working activities
B	26- 550	As " A" for 50- 90% of persons being distracted
C	1- 26	As " A" for less than 50% of persons being distracted
D	0.18- 1	10- 50% of persons aware of being tested perceive by smell that the Exposure Standard is being reached
E	<0.18	As " D" for less than 10% of persons aware of being tested

MATERIAL DATA

The TLV-TWA is thought to be protective against ocular, upper respiratory tract and skin irritation produced by the hydrolysis products, hydrogen sulfide and phosphoric acid.

INGREDIENT DATA

PHOSPHORIC ACID:

The saturated vapour concentration of phosphoric acid exceeds the TLV.

The TLV-TWA is based by analogy from comparable experience and data for sulfuric acid. Exposure at or below this limit is thought to prevent throat irritation amongst unacclimatised workers.

Fumes of phosphorus pentoxide at concentrations between 0.8 and 5.4 mg/m³ were reported to be noticeable but not uncomfortable whilst concentrations between 3.6 and 11.3 mg/m³ produced coughing in unacclimatised workers but were tolerable. Concentrations of 100 mg/m³ were unbearable except in inured workers.

HYDROGEN SULFIDE:

Odour Threshold Value: 0.0011 ppm (detection), 0.0045 ppm (recognition)

NOTE: Detector tubes for hydrogen sulfide, measuring in excess of 0.5 ppm are available commercially.

The TLV-TWA is protective against sudden death, eye irritation, neurasthenic symptoms such as fatigue, headache, dizziness, and irritability, or permanent central nervous system effects that may result from acute, subchronic, or acute exposure to hydrogen sulfide.

The offensive odour of hydrogen sulfide does not give a reliable warning signal because olfactory fatigue occurs at concentrations of 150 to 200 ppm.

Hydrogen sulfide is probably the leading cause of sudden death in the workplace. Lethal hydrogen sulfide toxicity following inhalation of 1000-2000 ppm paralyzes the respiratory centre and causes breathing to stop. At concentrations between 500 to 1000 ppm, the carotid bodies are stimulated causing hypernea which is followed by apnea. Low concentrations (50-1500 ppm) produce eye and respiratory tract irritation. Prolonged exposure to concentrations of the order of 250-500 ppm may produce pulmonary oedema although 50 ppm has also reportedly produced this effect.

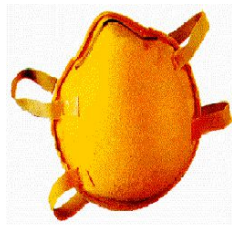
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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Concentrations in excess of 50 ppm produce acute conjunctivitis with pain, lachrymation and photophobia. These acute changes may progress to keratoconjunctivitis and vesiculation of the corneal epithelium. Concentrations between 5 and 30 ppm produce ocular toxicity.

PERSONAL PROTECTION



EYE

- Chemical goggles.
- Full face shield may be required for supplementary but never for primary protection of eyes
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

Wear chemical protective gloves, eg. PVC.
Wear safety footwear.

OTHER

- Overalls.
- PVC Apron.
- PVC protective suit may be required if exposure severe.
- Eyewash unit.
- Ensure there is ready access to a safety shower.

RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	P1 Air- line*	-	PAPR- P1 -
50 x ES	Air- line**	P2	PAPR- P2
100 x ES	-	P3	-
		Air- line*	-
100+ x ES	-	Air- line**	PAPR- P3

* - Negative pressure demand ** - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.
For further information consult your Occupational Health and Safety Advisor.

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS

- Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
- Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.
- If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered. Such protection might consist of:
 - (a): particle dust respirators, if necessary, combined with an absorption cartridge;
 - (b): filter respirators with absorption cartridge or canister of the right type;
 - (c): fresh-air hoods or masks
- Build-up of electrostatic charge on the dust particle, may be prevented by bonding and grounding.
- Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to efficiently remove the contaminant.

Type of Contaminant:

direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).

Air Speed:

1- 2.5 m/s (200- 500 f/min.)

2.5- 10 m/s (500- 2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range

- 1: Room air currents minimal or favourable to capture
- 2: Contaminants of low toxicity or of nuisance value only
- 3: Intermittent, low production.
- 4: Large hood or large air mass in motion

Upper end of the range

- 1: Disturbing room air currents
- 2: Contaminants of high toxicity
- 3: High production, heavy use
- 4: Small hood- local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 4-10 m/s (800-2000 f/min) for extraction of crusher dusts generated 2 metres distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Light-yellow or greenish-yellow, hygroscopic crystalline mass with odour similar to hydrogen sulfide; decomposes in water or moist air.

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Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Soluble in solutions of alkali hydroxides, carbon disulfide.

PHYSICAL PROPERTIES

Solid.

Acid.

Molecular Weight: 222.29

Melting Range (°C): 286- 290

Solubility in water (g/L): Reacts

pH (1% solution): Not available

Volatile Component (%vol): Not available

Relative Vapour Density (air=1): >1

Lower Explosive Limit (%): 0.5 w/v

Autoignition Temp (°C): 141.6

State: Divided solid

Boiling Range (°C): 513- 515

Specific Gravity (water=1): 2.09

pH (as supplied): Not applicable

Vapour Pressure (kPa): 0.13 @ 300 C

Evaporation Rate: Not available

Flash Point (°C): Not available

Upper Explosive Limit (%): Not available

Decomposition Temp (°C): Not available

Viscosity: Not available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of shock and friction.
- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.

The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion.

EYE

The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating.

When applied to the eye(s) of animals, the material produces severe ocular lesions which are present twenty-four hours or more after instillation.

SKIN

The material can produce chemical burns following direct contact with the skin.

The material may accentuate any pre-existing skin condition.

INHALED

Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system in a substantial number of individuals following inhalation.

Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.

Acute phosphorus poisoning results in fatality rates of almost 50% once hypoglycaemia,

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Section 11 - TOXICOLOGICAL INFORMATION

azotemia, hepatomegaly or delirium appear. The mean-time to death is 5 to 6 days. Phosphorus is eliminated in exhaled air, urine and faeces and death results from gastroenteritis, hepatic and renal failure and, in some cases, acute myocardial infarction.

CHRONIC HEALTH EFFECTS

Principal routes of exposure are by accidental skin and eye contact and inhalation of generated dusts.

Chronic phosphorus intoxication is characterised by anaemia, cachexia, bronchitis and skeletal necrosis.

TOXICITY AND IRRITATION

TOXICITY

Oral (rat) LD50: 389 mg/kg

IRRITATION

SKIN (RABBIT): 500 MG/24H - Moderate

EYE (RABBIT): 20 MG/24H - Moderate

PHOSPHORIC ACID:

TOXICITY

Unreported (human) LDLo: 220 mg/kg

Oral (rat) LD50: 1530 mg/kg

Oral (rat) LD50: 3500 mg/kg* [Monsanto]*

Dermal (rabbit) LD50: >1260 mg/kg*

IRRITATION

Skin (rabbit):595 mg/24h - SEVERE

Eye (rabbit): 119 mg - SEVERE

The material may produce severe irritation to the eye causing pronounced inflammation.

Repeated or prolonged exposure to irritants may produce conjunctivitis.

The material may produce severe skin irritation after prolonged or repeated exposure, and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) thickening of the epidermis.

Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. Prolonged contact is unlikely, given the severity of response, but repeated exposures may produce severe ulceration.

Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.

phosphoric acid (85%)

HYDROGEN SULFIDE:

TOXICITY

Inhalation (human) LDLo: 5.7 mg/kg

Inhalation (human) LCLo: 600 ppm/30m

Inhalation (human) LCLo: 800 ppm/5m

IRRITATION

Nil Reported

continued...

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Section 12 - ECOLOGICAL INFORMATION

Refer to data for ingredients, which follows:

PHOSPHORIC ACID:

Fish LC50 (96hr.) (mg/l): 138

The principal problems of phosphate contamination of the environment relates to eutrophication processes in lakes and ponds. Phosphorus is an essential plant nutrient and is usually the limiting nutrient for blue-green algae. A lake undergoing eutrophication shows a rapid growth of algae in surface waters. Planktonic algae cause turbidity and flotation films. Shore algae cause ugly muddying, films and damage to reeds. Decay of these algae causes oxygen depletion in the deep water and shallow water near the shore. The process is self-perpetuating because anoxic conditions at the sediment/water interface causes the release of more adsorbed phosphates from the sediment. The growth of algae produces undesirable effects on the treatment of water for drinking purposes, on fisheries, and on the use of lakes for recreational purposes. On the basis of available evidence concerning either toxicity, persistence, potential to accumulate and or observed environmental fate and behaviour, the material may present a danger, immediate or long-term and /or delayed, to the structure and/ or functioning of natural ecosystems.

Prevent, by any means available, spillage from entering drains or water courses.

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

Wastes resulting from use of the product must be disposed of on site or at approved waste sites.

DO NOT discharge into sewer or waterways.

HYDROGEN SULFIDE:

Fish LC50 (96hr.) (mg/l): 0.0071- 0.5

The material is classified as an ecotoxin* because the Fish LC50 (96 hours) is less than or equal to 0.1 mg/l

* Classification of Substances as Ecotoxic (Dangerous to the Environment)

Appendix 8, Table 1

Compiler's Guide to the Preparation of International Chemical Safety Cards: 1993

Commission of the European Communities.

Toxicity Fish: LC50(96)75->395ug/L

Degradation Biological: sig

Section 13 - DISPOSAL CONSIDERATIONS

- Consult manufacturer for recycling options and recycle where possible .
- Consult State Land Waste Management Authority for disposal.
- Incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorised landfill.

For small quantities: Treat dilute basic solution (pH 10-11) with 50% excess laundry bleach. Control temperature by rate of addition. Stand overnight. Adjust pH to 7. Vigorous evolution of vapour may occur. Filter. Precipitate further heavy metals by addition of sulfide and filter. Additional equivalents of hypochlorite may be necessary if metal needs to be oxidised to higher valence state.

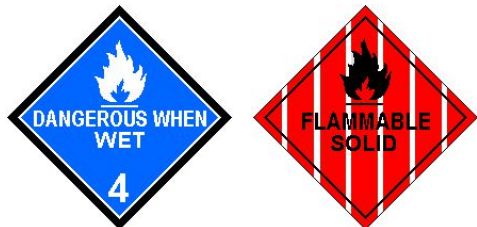
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Section 14 - TRANSPORTATION INFORMATION



Labels Required: DANGEROUS WHEN WET, FLAMMABLE SOLID
HAZCHEM: 4YE

UNDG:

Dangerous Goods Class:	4.3	Subrisk:	4.1
UN Number:	1340	Packing Group:	II
Shipping Name: PHOSPHORUS PENTASULPHIDE, free from yellow and white phosphorus			
PHOSPHORUS PENTASULPHIDE, free from yellow and white phosphorus			

Air Transport IATA:

ICAO/IATA Class:	4.3	ICAO/IATA Subrisk:	4.1
UN/ID Number:	1340	Packing Group:	II
ERG Code:	4FW		
Shipping name: PHOSPHORUS PENTASULPHIDE, free from yellow and white phosphorus			
PHOSPHORUS PENTASULPHIDE			

Maritime Transport IMDG:

IMDG Class:	4.3	IMDG Subrisk:	4.1
UN Number:	1340	Packing Group:	II
EMS Number:	F- G, S- N		
Shipping name: PHOSPHORUS PENTASULPHIDE, free from yellow and white phosphorus			
PHOSPHORUS PENTASULPHIDE			

Section 15 - REGULATORY INFORMATION

REGULATIONS

phosphorus pentasulfide (CAS: 1314-80-3) is found on the following regulatory lists;
International Air Transport Association (IATA) Dangerous Goods Regulations
OECD Representative List of High Production Volume (HPV) Chemicals
The Australia Group Export Control List: Chemical Weapons Precursors

No data available for phosphorus pentasulfide as CAS: 15857-57-5, CAS: 337913-53-8, CAS: 409325-03-7, CAS: 341007-60-1, CAS: 129680-27-9, CAS: 132620-99-6, CAS: 16857-09-3, CAS: 12066-62-5, CAS: 342401-47-2.

continued...

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Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
phosphorus pentasulfide	1314- 80- 3, 15857- 57 - 5, 337913- 53- 8, 409325- 03- 7, 341007- 60- 1, 129680- 27- 9, 132620- 99- 6, 16857- 09- 3, 12066- 62- 5, 342401- 47- 2
phosphoric acid	7664- 38- 2, 28602- 75 - 7, 178560- 73- 1
hydrogen sulfide	7783- 06- 4, 11144- 15 - 3

The above information is believed to be accurate and represent the best information currently available to us, but does not represent any warranty expressed or implied of the properties of the product. User should make their own investigation to determine the suitability of the information for their particular purpose.

Issue Date: 24-Jun-2018