

SECTION 1: IDENTIFICATION

Product Identifier

Product Name: Phosphorus Pentasulfide

CAS No: 1314-80-3

Formula: P₂S₅

Synonyms: Tetraphosphorus Decasulfide; Phosphorus Persulfide

Intended Use of the Product

Intermediate for lubricating oil additives or for pesticide manufacture. Also used as "sink float" agent for ore processing.

Name, Address, and Telephone of the Responsible Party

Manufacturer

CHEMTRADE LOGISTICS INC.

155 Gordon Baker Road

Suite 300

Toronto, Ontario M2H 3N5

For MSDS Info: (416) 496-5856

www.chemtradelogistics.com

Emergency Telephone Number

Emergency number : Canada: CANUTEC +1-613-996-6666 / US: CHEMTREC +1-800-424-9300
Chemtrade Emergency Contact: (866) 416-4404

For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)

Flam. Sol. 1	H228
Water-react. 1	H260
Acute Tox. 4 (Oral)	H302
Acute Tox. 4 (Inhalation:dust,mist)	H332
Eye Irrit. 2B	H320
Aquatic Acute 1	H400

Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US)



Signal Word (GHS-US) : Danger

Hazard Statements (GHS-US) : H228 - Flammable solid
H260 - In contact with water releases flammable gases which may ignite spontaneously
H302+H332 - Harmful if swallowed or if inhaled
H320 - Causes eye irritation
H400 - Very toxic to aquatic life

Precautionary Statements (GHS-US) : P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
P223 - Keep away from any possible contact with water, because of violent reaction and possible flash fire
P231+P232 - Handle under inert gas. Protect from moisture
P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical, lighting, ventilating equipment
P261 - Avoid breathing dust, fume, vapors
P264 - Wash exposed areas. thoroughly after handling

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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 - Wear eye protection, protective clothing, protective gloves
P301+P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P304+P340 - IF INHALED: Remove person to fresh air and keep at rest in a position 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
P312 - Call a POISON CENTER/doctor/physician if you feel unwell
P330 - If swallowed, rinse mouth
P335+P334 - Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages
P337+P313 - If eye irritation persists: Get medical advice/attention
P370+P378 - In case of fire: Use appropriate media to extinguish
P391 - Collect spillage
P402+P404 - Store in a dry place. Store in a closed container
P501 - Dispose of contents/container according to local, regional, national, and international regulations

Other Hazards

Other Hazards Not Contributing to the Classification: Not available

Unknown Acute Toxicity (GHS-US) Not available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances

Name	Product identifier	% (w/w)	Classification (GHS-US)
Phosphorus pentasulfide	(CAS No) 1314-80-3	100	Flam. Sol. 1, H228 Water-react. 1, H260 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation:dust,mist), H332 Eye Irrit. 2B, H320 Aquatic Acute 1, H400

Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible). IF exposed or concerned: Get medical advice/attention.

Inhalation: When symptoms occur: go into open air and ventilate suspected area. Remove to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER/doctor/physician if you feel unwell.

Skin Contact: Brush off loose particles from skin. Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Immerse in cool water/wrap in wet bandages.

Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice and attention.

Ingestion: Rinse mouth. Do NOT induce vomiting. Call a POISON CENTER/doctor/physician if you feel unwell.

Most Important Symptoms and Effects Both Acute and Delayed

General: Harmful if swallowed. Harmful if inhaled. Eye irritation. Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

Inhalation: Harmful if inhaled.

Skin Contact: Causes mild skin irritation.

Eye Contact: Causes eye irritation.

Ingestion: Swallowing a small quantity of this material will result in serious health hazard.

Chronic Symptoms: None known.

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Indication of Any Immediate Medical Attention and Special Treatment Needed

If medical advice is needed, have product container or label at hand.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Cover with sand or earth. Use extinguishing media appropriate for surrounding fire.

Unsuitable Extinguishing Media: Do not use extinguishing media containing water.

Special Hazards Arising From the Substance or Mixture

Fire Hazard: Contact with water liberates highly toxic and flammable gas.

Explosion Hazard: Ignitable by spark or friction. Combustible materials/Substances liable to spontaneous combustion.

Reactivity: Hydrogen sulfide and phosphoric acid are generated from reaction with water to form poisonous and flammable (explosive) hydrogen sulfide and phosphoric acid. Reacts violently with water, liberating extremely flammable gases.

Advice for Firefighters

Precautionary Measures Fire: Phosphorus Pentasulfide will generate H₂S gas on contact with water. P₂S₅ reacts with moisture to produce flammable hydrogen sulfide gas phosphoric acid. Excessive concentrations of dust are subject to explosion.

Firefighting Instructions: Exercise caution when fighting any chemical fire.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Use special care to avoid static electric charges. No naked lights. No smoking. Eliminate every possible source of ignition. Avoid generating dust. Do not allow product to spread into the environment.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area.

Environmental Precautions

Prevent entry to sewers and public waters. Avoid release to the environment.

Methods and Material for Containment and Cleaning Up

For Containment: Use only non-sparking tools. Contain and collect as any solid. Avoid generation of dust during clean-up of spills.

Spills or Leaks

In case of spill, get full personal protective equipment and keep spill covered to prevent exposure to moisture. Using spark-proof tools transfer into clean, dry containers; avoid creating dust. Coat spill area with dry soda ash or sand. Carefully transfer into containers. Flush spill areas with very large quantities of water.

DO NOT USE WATER, Smother with CO₂, Dry Chemical, or Sand.

Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection.

SECTION 7: HANDLING AND STORAGE

STORE IN A DRY PLACE. STORE IN A CLOSED CONTAINER

Use in a totally enclosed process with a low moisture inert atmosphere. Maintain a low humidity atmosphere in the work areas where containers with the same precautions as followed for full containers. Dry powder can build static electricity when subjected to the friction of conveying, mixing, or sliding. Adequate precautions, such as electrical grounding, bonding, and inert atmospheres should be taken when P₂S₅ is either loaded or unloaded in order to prevent potential ignition. Grounding is not required during transportation or storage of containers. Do not cut or weld near product containers. Store in a cool, dry, well ventilated areas (mechanical exhaust ventilation systems, if necessary) away from combustible or open flames. Thoroughly ventilate vans or box cars using air movers to remove hydrogen sulfide gas.

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Precautions for Safe Handling

Additional Hazards When Processed: Do not allow water (or moist air) contact with this material. Shock sensitive. Take precautionary measure against build-up of electrostatic charge.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Do not eat, drink or smoke when using this product. Always wash your hands immediately after handling this product, and once again before leaving the workplace.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. Use explosion-proof lighting, ventilating, electrical equipment.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Heat sources. Direct sunlight. Keep in fireproof place. Store in a dry place. Protect from moisture.

Special Rules on Packaging: Store in a closed container.

Specific End Use(s) Intermediate for lubricating oil additives or for pesticide manufacture. Also used as "sink float" agent for ore processing.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Phosphorus pentasulfide (1314-80-3)		
Mexico	OEL TWA (mg/m ³)	1 mg/m ³
Mexico	OEL STEL (mg/m ³)	3 mg/m ³
USA ACGIH	ACGIH TWA (mg/m ³)	1 mg/m ³
USA ACGIH	ACGIH STEL (mg/m ³)	3 mg/m ³
USA OSHA	OSHA PEL (TWA) (mg/m ³)	1 mg/m ³
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	1 mg/m ³
USA NIOSH	NIOSH REL (STEL) (mg/m ³)	3 mg/m ³
USA IDLH	US IDLH (mg/m ³)	250 mg/m ³
Alberta	OEL STEL (mg/m ³)	3 mg/m ³
Alberta	OEL TWA (mg/m ³)	1 mg/m ³
British Columbia	OEL STEL (mg/m ³)	3 mg/m ³
British Columbia	OEL TWA (mg/m ³)	1 mg/m ³
Manitoba	OEL STEL (mg/m ³)	3 mg/m ³
Manitoba	OEL TWA (mg/m ³)	1 mg/m ³
New Brunswick	OEL STEL (mg/m ³)	3 mg/m ³
New Brunswick	OEL TWA (mg/m ³)	1 mg/m ³
Newfoundland & Labrador	OEL STEL (mg/m ³)	3 mg/m ³
Newfoundland & Labrador	OEL TWA (mg/m ³)	1 mg/m ³
Nova Scotia	OEL STEL (mg/m ³)	3 mg/m ³
Nova Scotia	OEL TWA (mg/m ³)	1 mg/m ³
Nunavut	OEL STEL (mg/m ³)	3 mg/m ³
Nunavut	OEL TWA (mg/m ³)	1 mg/m ³
Northwest Territories	OEL STEL (mg/m ³)	3 mg/m ³
Northwest Territories	OEL TWA (mg/m ³)	1 mg/m ³
Ontario	OEL STEL (mg/m ³)	3 mg/m ³
Ontario	OEL TWA (mg/m ³)	1 mg/m ³
Prince Edward Island	OEL STEL (mg/m ³)	3 mg/m ³
Prince Edward Island	OEL TWA (mg/m ³)	1 mg/m ³
Québec	VECD (mg/m ³)	3 mg/m ³
Québec	VEMP (mg/m ³)	1 mg/m ³
Saskatchewan	OEL STEL (mg/m ³)	3 mg/m ³

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Saskatchewan	OEL TWA (mg/m ³)	1 mg/m ³
Yukon	OEL STEL (mg/m ³)	3 mg/m ³
Yukon	OEL TWA (mg/m ³)	1 mg/m ³

Exposure Controls

Appropriate Engineering Controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ground/bond container and receiving equipment.

Personal Protective Equipment: Safety glasses. Gloves. Face shield. Full protective flameproof clothing. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. Protective goggles. Protective clothing. Respiratory protection of the dependent type.

Materials for Protective Clothing: Use flame retardant clothing, chemically resistant materials and fabrics.

Hand Protection: Wear chemically resistant protective gloves. protective gloves.

Eye Protection: Chemical goggles or safety glasses. Face shield.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: If hydrogen sulfide gas (odor of rotten eggs at 3 to 5 ppm) is encountered, use air supply or self-contained breathing apparatus because the sense of smell is lost. Wear approved mask. Use a NIOSH-approved respirator or self-contained breathing apparatus whenever exposure may exceed established Occupational Exposure Limits.

Other Information: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	: Solid
Appearance	: Yellow to yellow-green solid
Odor	: Hydrogen sulfide (rotten eggs)
Odor Threshold	: 1 ppm
pH	: Not applicable
Relative Evaporation Rate (butylacetate=1)	: Not applicable
Relative evaporation rate (ether=1)	: Not applicable
Melting Point	: 280 - 288 °C (536-550 °F)
Freezing Point	: Not applicable
Boiling Point	: 514 - 525 °C (957-977 °F)
Flash Point	: Not applicable
Auto-ignition Temperature	: Not available
Decomposition Temperature	: Not available
Flammability (solid, gas)	: Not available
Lower Flammable Limit	: Not available
Upper Flammable Limit	: Not available
Vapor Pressure	: 1 mm Hg @300°C
Relative Vapor Density at 20 °C	: 9.5
Relative Density	: Not available
Specific Gravity	: 2.03 @20°C
Solubility	: Not available
Partition coefficient: n-octanol/water	: Not available
Viscosity	: Not applicable
Viscosity, Kinematic	: Not applicable
Viscosity, Dynamic	: Not applicable
Explosion Data – Sensitivity to Mechanical Impact	: Not expected to present an explosion hazard due to mechanical impact.
Explosion Data – Sensitivity to Static Discharge	: Static discharge could act as an ignition source.

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SECTION 10: STABILITY AND REACTIVITY

Reactivity: Hydrogen sulfide and phosphoric acid are generated from reaction with water to form poisonous and flammable (explosive) hydrogen sulfide and phosphoric acid. Reacts violently with water, liberating extremely flammable gases.

Chemical Stability: Stable at standard temperature and pressure. Flammable solid. Combustible materials/Substances liable to spontaneous combustion. May ignite on contact with water or moist air.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur. In contact with water releases flammable gases which may ignite spontaneously.

Conditions to Avoid: Avoid formation of dust. Potential dust explosion hazard. Sparks. friction. Direct sunlight. Extremely high or low temperatures. Open flame. Overheating. Heat. Water.

Incompatible Materials: Water. Acids. Alcohols. Oxidizers. Strong acids. Strong bases. Strong oxidizers.

Hazardous Decomposition Products: Sulfur compounds. Phosphorus oxides. May release flammable gases. Hydrogen sulfide. sulfur oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product

Acute Toxicity: Harmful if swallowed. Harmful if inhaled.

LD50 and LC50 Data:

Phosphorus Pentasulfide (\f)1314-80-3	
ATE US (oral)	500.00000000 mg/kg body weight
ATE US (dust, mist)	1.50000000 mg/l/4h

Skin Corrosion/Irritation: Not classified

pH: Not applicable

Serious Eye Damage/Irritation: Causes eye irritation.

pH: Not applicable

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Potential Adverse Human Health Effects and Symptoms: Harmful if inhaled. Harmful if swallowed.

Symptoms/Injuries After Inhalation: Harmful if inhaled.

Symptoms/Injuries After Skin Contact: Causes mild skin irritation.

Symptoms/Injuries After Eye Contact: Causes eye irritation.

Symptoms/Injuries After Ingestion: Swallowing a small quantity of this material will result in serious health hazard.

Chronic Symptoms: None known.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Phosphorus pentasulfide (1314-80-3)	
LD50 Oral Rat	389 mg/kg

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Ecology - General: Very toxic to aquatic life.

Persistence and Degradability

Phosphorus Pentasulfide (1314-80-3)	
Persistence and Degradability	Not established. May cause long-term adverse effects in the environment.

Bioaccumulative Potential

Phosphorus Pentasulfide (1314-80-3)	
Bio-accumulative Potential	Not established.

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Mobility in Soil Not available

Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Sewage Disposal Recommendations: Do not flush into surface water or sewer system.

Waste Disposal Recommendations: Due to the sulfide-bearing nature of this chemical, waste from this product is considered a reactive hazardous waste and should be disposed of properly, while complying with all federal, state and local regulations. If disposed as an off-spec product, RCRA code U189 applies. D003 for reactive waste may also apply., Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

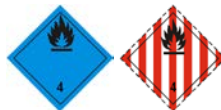
Additional Information: Empty product containers may contain hazardous residue. Do not reuse empty containers without commercial cleaning or reconditioning. Handle empty containers with care because residual vapors are flammable.

Ecology – Waste Materials: This material is hazardous to the aquatic environment. Keep out of sewers and waterways.

SECTION 14: TRANSPORT INFORMATION

14.1 In Accordance with DOT

Proper Shipping Name : PHOSPHORUS PENTASULFIDE free from yellow or white phosphorus
Hazard Class : 4.3
Identification Number : UN1340
Label Codes : 4.3,4.1
Packing Group : II
ERG Number : 139



14.2 In Accordance with IMDG

Proper Shipping Name : PHOSPHORUS PENTASULPHIDE
Hazard Class : 4.3
Identification Number : UN1340
Packing Group : II
Label Codes : 4.3,4.1
EmS-No. (Fire) : F-G
EmS-No. (Spillage) : S-N



14.3 In Accordance with IATA

Proper Shipping Name : PHOSPHORUS PENTASULPHIDE
Packing Group : II
Identification Number : UN1340
Hazard Class : 4
Label Codes : 4.3,4.1
ERG Code (IATA) : 4FW



14.4 In Accordance with TDG

Proper Shipping Name : PHOSPHORUS PENTASULPHIDE free from yellow and white phosphorus
Packing Group : II
Hazard Class : 4.3
Identification Number : UN1340
Label Codes : 4.3,4.1



SECTION 15: REGULATORY INFORMATION

US Federal Regulations

Phosphorus Pentasulfide (1314-80-3)	
RQ (Reportable Quantity, Section 304 of EPA's List of Lists):	100 lb
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Fire hazard Reactive hazard

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Phosphorus pentasulfide (1314-80-3)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

US State Regulations

Phosphorus Pentasulfide(1314-80-3)

Phosphorus pentasulfide (1314-80-3)

U.S. - Massachusetts - Right To Know List

U.S. - New Jersey - Right to Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

U.S. - Pennsylvania - RTK (Right to Know) List

Canadian Regulations

Phosphorus Pentasulfide (1314-80-3)

WHMIS Classification

Class B Division 4 - Flammable Solid

Class B Division 6 - Reactive Flammable Material

Class D Division 1 Subdivision B - Toxic material causing immediate and serious toxic effects

Class D Division 2 Subdivision B - Toxic material causing other toxic effects



Phosphorus pentasulfide (1314-80-3)

Listed on the Canadian DSL (Domestic Substances List) inventory.

Listed on the Canadian Ingredient Disclosure List

WHMIS Classification

Class B Division 4 - Flammable Solid

Class B Division 6 - Reactive Flammable Material

Class D Division 1 Subdivision B - Toxic material causing immediate and serious toxic effects

Class D Division 2 Subdivision B - Toxic material causing other toxic effects

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision date : 05/05/2015

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Eye Irrit. 2B	Serious eye damage/eye irritation Category 2B
Flam. Sol. 1	Flammable solids Category 1
Water-react. 1	Substances and mixtures which in contact with water emit flammable gases Category 1
H228	Flammable solid
H260	In contact with water releases flammable gases which may ignite spontaneously
H302	Harmful if swallowed
H320	Causes eye irritation
H332	Harmful if inhaled
H400	Very toxic to aquatic life

Party Responsible for the Preparation of This Document

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CHEMTRADE LOGISTICS, INC.

For SDS Info: (416) 496-5856

Handle product with due care and avoid unnecessary contact. This information is supplied under U.S. OSHA'S "Right to Know" (29 CFR 1910.1200) and Canada's WHMIS regulations. Although certain hazards are described herein, we cannot guarantee these are the only hazards that exist. The information contained herein is based on data available to us and is believed to be true and accurate but it is not offered as a product specification. No warranty, expressed or implied, regarding the accuracy of this data, the hazards connected with the use of the product, or the results to be obtained from the use thereof, is made and Chemtrade and its affiliates assume no responsibility. Chemtrade is a member of the CIAC (Chemistry Industry Association of Canada) and adheres to the codes and principles of Responsible Care™.



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