SAFETY DATA SHEET

Creation Date 09-October-2009 **Revision Date** 19-January-2018 **Revision Number** 4

1. Identification

Product Name **Phosphorus pentasulfide**

Cat No. : **AC196720000; AC196720010; AC196720050; AC196725000**

CAS-No 1314-80-3
Synonyms Sulfur phosphide; Thiophosphoric anhydride; Diphosphorus pentasulfide

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company

Importer/Distributor
Fisher Scientific
112 Colonnade Road,
Ottawa, ON K2E 7L6,
Canada
Tel: 1-800-234-7437

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Manufacturer
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification

WHMIS 2015 Classification Classified as hazardous under the Hazardous Products Regulations (SOR/2015-17)

Flammable solids	Category 1	
Substances/mixtures which, in contact with water, emit flammable gases	Category 1	Gas(es) = Hydrogen sulfide (H2S)
Acute oral toxicity	Category 4	
Acute Inhalation Toxicity	Category 2	(based on evolved H2S gas)
Combustible Dusts	Category 1	
Health Hazards Not Otherwise Classified	Category 1	
In contact with water, releases gases which are toxic if inhaled		

Label Elements

Signal Word
Danger

Hazard Statements
Flammable solid
May form combustible dust concentrations in air
In contact with water releases flammable gases which may ignite spontaneously

Harmful if swallowed
Fatal if inhaled
In contact with water, releases gases which are toxic if inhaled

Precautionary Statements
Prevention
Do not allow contact with water
Do not breathe dust/fumes/gas/mist/vapours/spray
Use only outdoors or in a well-ventilated area
Keep container tightly closed
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
Handle under inert gas. Protect from moisture
Ground/bond container and receiving equipment
Avoid breathing dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Wear protective gloves/protective clothing/eye protection/face protection
Response
IF INHALED: Remove person to fresh air and keep comfortable for breathing
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
Call a POISON CENTER/ doctor
Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish
In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion
Call a POISON CENTER/ doctor if you feel unwell
Rinse mouth
Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up
Store in a dry place. Store in a closed container
Disposal
Dispose of contents/container to an approved waste disposal plant

Other Hazards
Very toxic to aquatic organisms
Stench

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Phosphorus pentasulfide	1314-80-3	>95

4. First-aid measures

General Advice Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Immediate medical attention is required.

Skin Contact Immediate medical attention is required. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.

Inhalation Move to fresh air. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required. If not breathing, give artificial respiration. Call a physician or Poison Control Center immediately.

Ingestion Do not induce vomiting. Call a physician or Poison Control Center immediately. Immediate medical attention is required. Remove from exposure, lie down. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person.

Most important symptoms/effects Breathing difficulties. May cause pulmonary edema: Symptoms may be delayed
Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Cool closed containers exposed to fire with water spray. CO_2, dry chemical, dry sand, alcohol-resistant foam.

Unsuitable Extinguishing Media No information available

Flash Point > 100 °C / > 212 °F

Method - No information available

Autoignition Temperature 282 °C / 539.6 °F

Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Flammable. Containers may explode when heated. Contact with water liberates toxic gas. May form explosive mixtures with air. Produce flammable gases on contact with water. Thermal decomposition can lead to release of irritating gases and vapors. In the event of fire and/or explosion do not breathe fumes. Contact with water liberates toxic gas. Do not allow run-off from fire fighting to enter drains or water courses. Fine dust dispersed in air may ignite.

Hazardous Combustion Products
Hydrogen sulfide (H2S) Sulfur oxides Oxides of phosphorus
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
2	3	2	W

6. Accidental release measures

Personal Precautions Use personal protective equipment. Avoid dust formation. Remove all sources of ignition. Take precautionary measures against static discharges. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Environmental Precautions Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

Methods for Containment and Clean Up Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid dust formation. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Do not expose spill to water.

7. Handling and storage

Handling Use only under a chemical fume hood. Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Avoid dust formation. Keep away from open flames, hot surfaces and sources of ignition. Do not taste or swallow. Do not allow contact with water.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Flammables area. Keep away from heat and sources of ignition. Keep in properly labeled containers. Never allow product to get in contact with water during storage. Keep away from water.

8. Exposure controls / personal protection

Exposure Guidelines

Component	Alberta	British Columbia	Ontario TWAEV	Quebec	ACGIH TLV	OSHA PEL	NIOSH IDLH
Phosphorus pentasulfide	TWA: 1 mg/m³ STEL: 3 mg/m³	TWA: 1 mg/m³ STEL: 3 mg/m³	TWA: 1 mg/m³ STEL: 3 mg/m³	TWA: 1 mg/m³ STEL: 3 mg/m³	TWA: 1 mg/m³ STEL: 3 mg/m³	(Vacated) TWA: 1 mg/m³ (Vacated) STEL: 3 mg/m³ TWA: 1 mg/m³	IDLH: 250 mg/m³ TWA: 1 mg/m³ STEL: 3 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures

Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

Eye Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Hand Protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Glove material	Breakthrough time	Glove thickness	Glove comments
Natural rubber Nitrile rubber Neoprene PVC	See manufacturers recommendations	-	Splash protection only

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

Recommended Filter type: Particulates filter conforming to EN 143

When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls

Prevent product from entering drains. Do not allow material to contaminate ground water system. Local authorities should be advised if significant spillages cannot be contained.

Hygiene Measures

Keep away from food, drink and animal feeding stuffs. When using, do not eat, drink or smoke. Contaminated work clothing should not be allowed out of the workplace. Provide regular cleaning of equipment, work area and clothing. Avoid contact with skin, eyes and clothing. For environmental protection remove and wash all contaminated protective equipment before re-use. Wear suitable gloves and eye/face protection.

9. Physical and chemical properties

Physical State	Solid
Appearance	Yellow
Odor	Stench
Odor Threshold	No information available
pH	1 10 g/L (20°C)
Melting Point/Range	286 - 290 °C / 546.8 - 554 °F
Boiling Point/Range	514 °C / 957.2 °F @ 760 mmHg
Flash Point	> 100 °C / > 212 °F
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	1 mmHg @ 300 °C
Vapor Density	Not applicable
Specific Gravity	2.080
Solubility	Insoluble in cold water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	282 °C / 539.6 °F
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	P4 S10
Molecular Weight	444.48

10. Stability and reactivity

Reactive Hazard	Yes
Stability	Moisture sensitive. Reacts violently with water.
Conditions to Avoid	Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition. Avoid dust formation. Exposure to moist air or water. Exposure to air or moisture over prolonged periods. Exposure to moisture.
Incompatible Materials	Strong oxidizing agents
Hazardous Decomposition Products	Hydrogen sulfide (H2S), Sulfur oxides, Oxides of phosphorus
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	Contact with water liberates toxic gas.

11. Toxicological information

Acute Toxicity

Product Information
Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Phosphorus pentasulfide	791 mg/kg (Rat) 389 mg/kg (Rat)	3160 mg/kg (Rabbit)	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation May cause skin and eye irritation

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Phosphorus pentasulfide	1314-80-3	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed May cause pulmonary edema: Symptoms may be delayed

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity
Very toxic to aquatic organisms. The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Phosphorus pentasulfide	Not listed	Not listed	Not listed	EC50 = 0.16 mg/L (48h)

Persistence and Degradability Persistence is unlikely based on information available. Soluble in water

Bioaccumulation/ Accumulation No information available.

Mobility Is not likely mobile in the environment. Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Phosphorus pentasulfide - 1314-80-3	U189	-

14. Transport information

DOT

UN-No	UN1340
Proper Shipping Name	PHOSPHORUS PENTASULFIDE
Hazard Class	4.3
Subsidiary Hazard Class	1
Packing Group	II

TDG

UN-No	UN1340
Proper Shipping Name	PHOSPHORUS PENTASULFIDE
Hazard Class	4.3
Subsidiary Hazard Class	4.1
Packing Group	II

IATA

UN-No	UN1340
Proper Shipping Name	PHOSPHORUS PENTASULPHIDE
Hazard Class	4.3
Subsidiary Hazard Class	4.1
Packing Group	II

IMDG/IMO

UN-No	UN1340
Proper Shipping Name	PHOSPHORUS PENTASULPHIDE
Hazard Class	4.3
Subsidiary Hazard Class	4.1
Packing Group	II

15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

International Inventories

Component	DSL	NDSL	TSCA	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Phosphorus pentasulfide	X	-	X	215-242-4	-		X	X	X	X	X

Canada

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

16. Other information

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Revision Summary This document has been updated to comply with the requirements of WHMIS 2015 to align with the Globally Harmonised System (GHS) for the Classification and Labelling of Chemicals.

Disclaimer
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materials or in any process, unless specified in the text

End of SDS