

SAFETY DATA SHEET

Creation Date 09-Oct-2009

Revision Date 25-Apr-2019

Revision Number 5

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 Food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company

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

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

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

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

| | |
|--|------------|
| Flammable solids | Category 1 |
| Substances/mixtures which, in contact with water, emit flammable gases | Category 1 |
| Acute oral toxicity | Category 4 |
| Acute Inhalation Toxicity - Dusts and Mists | Category 4 |
| Combustible dust | Yes |

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

Harmful if inhaled



Precautionary Statements

Prevention

Wash face, hands and any exposed skin thoroughly after handling
 Do not eat, drink or smoke when using this product
 Avoid breathing dust/fume/gas/mist/vapors/spray
 Use only outdoors or in a well-ventilated area
 Keep away from heat/sparks/open flames/hot surfaces. - No smoking
 Ground/bond container and receiving equipment
 Use explosion-proof electrical/ventilating/lighting/equipment
 Wear protective gloves/protective clothing/eye protection/face protection
 Keep away from any possible contact with water, because of violent reaction and possible flash fire
 Handle under inert gas. Protect from moisture

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
 Call a POISON CENTER or doctor/physician if you feel unwell

Skin

Brush off loose particles from skin. Immerse in cool water/wrap with wet bandages

Ingestion

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
 Rinse mouth

Fire

In case of fire: Use CO₂, dry chemical, or foam for extinction

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

Hazards not otherwise classified (HNOC)

Very toxic to aquatic life
 Contact with water liberates toxic gas

Other hazards

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 and 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
2

Flammability
3

Instability
2

Physical hazards
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 | ACGIH TLV | OSHA PEL | NIOSH IDLH | Mexico OEL (TWA) |
|-------------------------|---|---|--|---|
| Phosphorus pentasulfide | TWA: 1 mg/m ³ STEL: 3 mg/m ³ | (Vacated) TWA: 1 mg/m ³ (Vacated) STEL: 3 mg/m ³ TWA: 1 mg/m ³ | IDLH: 250 mg/m ³ TWA: 1 mg/m ³ STEL: 3 mg/m ³ | TWA: 1 mg/m ³ STEL: 3 mg/m ³ |

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.

Personal Protective Equipment

Eye/face 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. Tightly fitting safety goggles. Face-shield.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure. impervious clothing. Chemical resistant apron. Boots. Impervious gloves.

Respiratory Protection 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.

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

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|---|---|
| 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

United States of America Inventory

| Component | CAS-No | TSCA | TSCA Inventory notification - Active/Inactive | TSCA - EPA Regulatory Flags |
|-------------------------|-----------|------|---|-----------------------------|
| Phosphorus pentasulfide | 1314-80-3 | X | ACTIVE | - |

Legend:

TSCA - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

| Component | CAS-No | DSL | NDSL | EINECS | PICCS | ENCS | AICS | IECSC | KECL |
|-------------------------|-----------|-----|------|-----------|-------|------|------|-------|----------|
| Phosphorus pentasulfide | 1314-80-3 | X | - | 215-242-4 | X | X | X | X | KE-12128 |

U.S. Federal Regulations

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

| Component | CWA - Hazardous Substances | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants |
|-------------------------|----------------------------|-----------------------------|------------------------|---------------------------|
| Phosphorus pentasulfide | X | 100 lb | - | - |

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

| Component | Hazardous Substances RQs | CERCLA EHS RQs |
|-------------------------|--------------------------|----------------|
| Phosphorus pentasulfide | 100 lb | - |

California Proposition 65 This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

| Component | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|-------------------------|---------------|------------|--------------|----------|--------------|
| Phosphorus pentasulfide | X | X | X | - | X |

U.S. Department of Transportation

Reportable Quantity (RQ): Y

DOT Marine Pollutant N

DOT Severe Marine Pollutant N

U.S. Department of Homeland Security

This product contains the following DHS chemicals:

Legend - STQs = Screening Threshold Quantities, APA = A placarded amount

| Component | DHS Chemical Facility Anti-Terrorism Standard |
|-------------------------|---|
| Phosphorus pentasulfide | APA |

Other International Regulations**Mexico - Grade** Slight risk, Grade 1

| |
|------------------------------|
| 16. Other information |
|------------------------------|

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Revision Summary

This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS