

# Silver Phosphorous

## Safety Data Sheet

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

Product name. : Silver Phosphorous

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Manufacturing

#### 1.3. Details of the supplier of the safety data sheet

Harger  
301 Ziegler Drive  
Grayslake, IL 60030  
T 847-548-8700 - F 847-548-8755

#### 1.4. Emergency telephone number

No additional information available

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### GHS-US classification

Comb. Dust	H232
Acute Tox. 2 (Oral)	H300
Acute Tox. 4 (Dermal)	H312
STOT SE 3	H335
Aquatic Acute 1	H400
Aquatic Chronic 2	H411

#### 2.2. Label elements

##### GHS-US labelling

Hazard pictograms (GHS-US) :



GHS06



GHS07



GHS09

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H232 - May form combustible dust concentrations in air  
H300 - Fatal if swallowed  
H312 - Harmful in contact with skin  
H335 - May cause respiratory irritation  
H400 - Very toxic to aquatic life  
H411 - Toxic to aquatic life with long lasting effects

Precautionary statements (GHS-US) : P261 - Avoid breathing dust/fume/gas/mist/vapours/spray  
P264 - Wash thoroughly after handling  
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 protective gloves/protective clothing/eye protection/face protection  
P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor  
P302+P352 - IF ON SKIN: Wash with plenty of soap and water  
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing  
P312 - Call a POISON CENTER/doctor if you feel unwell  
P321 - Specific treatment (see label)  
P330 - If swallowed, rinse mouth  
P362+P364 - Take off contaminated clothing and wash it before reuse  
P391 - Collect spillage  
P403+P233 - Store in a well-ventilated place. Keep container tightly closed  
P405 - Store locked up  
P501 - Dispose of contents/container in accordance with local/regional/national/international regulations.

#### 2.3. Other hazards

No additional information available

#### 2.4. Unknown acute toxicity (GHS US)

No data available

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### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

Not applicable

Full text of H-phrases: see section 16

#### 3.2. Mixture

Name	Product identifier	%	GHS-US classification
Copper	(CAS No) 7440-50-8	74 - 94	Not classified
Silver	(CAS No) 7440-22-4	0.5 - 19	Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Phosphorus elemental	(CAS No) 7723-14-0	2 - 8	Not classified

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

- First-aid measures after inhalation : If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing.
- First-aid measures after skin contact : Immediately wash skin with soap and plenty of water. If irritation persists, call a physician.
- First-aid measures after eye contact : If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation develops, call a physician.
- First-aid measures after ingestion : If swallowed: Rinse mouth. Do NOT induce vomiting. Seek medical attention.

#### 4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries after inhalation : Overexposure may cause kidney and liver damage and blood disorders. May cause respiratory tract irritation. Overexposure to freshly formed fumes may cause a flu-like illness called "metal fume fever."
- Symptoms/injuries after skin contact : May cause irritation.
- Symptoms/injuries after eye contact : Direct contact with the eyes is likely irritating.
- Symptoms/injuries after ingestion : Harmful if large amounts are swallowed. May cause gastrointestinal irritation, nausea, vomiting, and diarrhea.

#### 4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

- Suitable extinguishing media : Use appropriate extinguishing media for surrounding fire.
- Unsuitable extinguishing media : None.

#### 5.2. Special hazards arising from the substance or mixture

- Fire hazard : None known.
- Explosion hazard : Not a fire or explosion hazard in solid form. Finely divided dust may ignite and burn rapidly when mixed with air in the proper proportions. Toxic metal fumes may be released in a fire situation.

#### 5.3. Advice for firefighters

- Protection during firefighting : Firefighters should wear full protective gear.

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

##### 6.1.1. For non-emergency personnel

No additional information available

##### 6.1.2. For emergency responders

No additional information available

#### 6.2. Environmental precautions

Avoid release to the environment.

#### 6.3. Methods and material for containment and cleaning up

- For containment : Recover the product by vacuuming, shovelling or sweeping.
- Methods for cleaning up : Minimize generation of dust. Dispose of waste in accordance with local, state and federal regulations.

#### 6.4. Reference to other sections

No additional information available

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### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Precautions for safe handling : Wash thoroughly after handling. Do not eat, drink, or smoke in work area. Use only with adequate ventilation. Avoid contact with any dusts, mists or fumes resulting from the use of this product.

#### 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a cool, dry location away from incompatible materials.

#### 7.3. Specific end use(s)

Manufacturing

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

##### Copper (7440-50-8)

USA ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup>
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup>

##### Silver (7440-22-4)

USA ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	0.1 mg/m <sup>3</sup>
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	0.01 mg/m <sup>3</sup>

#### 8.2. Exposure controls

Appropriate engineering controls : Local exhaust and general ventilation must be adequate to meet exposure standards.  
Hand protection : None required under normal product handling conditions.  
Eye protection : Wear safety glasses with side shields if dusts are generated.  
Skin and body protection : Wear suitable working clothes.  
Respiratory protection : If airborne concentrations are above the applicable exposure limits, use NIOSH approved respiratory protection.

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

Physical state : Solid  
Appearance : Metallic wire, rod or strip  
Color : Silver  
Odor : Odorless  
Odor threshold : No data available  
pH : No data available  
Relative evaporation rate (butylacetate=1) : No data available  
Melting point : 636.9 to 643.3° C  
Freezing point : No data available  
Boiling point : No data available  
Flash point : No data available  
Self ignition temperature : No data available  
Decomposition temperature : No data available  
Flammability (solid, gas) : No data available  
Vapour pressure : No data available  
Relative vapour density at 20 °C : No data available  
Relative density : No data available  
Specific gravity : 7.40 to 8.54  
Solubility : Insoluble  
Log Pow : No data available  
Log Kow : No data available  
Viscosity, kinematic : No data available  
Viscosity, dynamic : No data available  
Explosive properties : No data available  
Oxidising properties : No data available  
Explosive limits : No data available

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### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No additional information available

### 10.2. Chemical stability

The product is stable at normal handling- and storage conditions.

### 10.3. Possibility of hazardous reactions

Will not occur.

### 10.4. Conditions to avoid

None

### 10.5. Incompatible materials

Strong acids and bases, oxidizing agents, acetylene, ammonia, hydrogen peroxide, magnesium metal, ammonium nitrate, hydrogen sulfide, chlorinated rubber.

### 10.6. Hazardous decomposition products

Toxic metal oxides are emitted when heated above the melting point. The amount of fume evolved increases as the temperature rises.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity : Fatal if swallowed. Harmful in contact with skin.

Silver Phosphorous	
ATE (oral)	5.000 mg/kg bodyweight
ATE (dermal)	1100.000 mg/kg bodyweight

Silver (7440-22-4)	
LD50 oral rat	> 2000 mg/kg

Phosphorus elemental (7723-14-0)	
LD50 oral rat	3.03 mg/kg
LD50 dermal rat	100 mg/kg
LC50 inhalation rat (mg/l)	4.3 mg/l (Exposure time: 1 h)
ATE (oral)	3.030 mg/kg
ATE (dermal)	100.000 mg/kg

Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified

## SECTION 12: Ecological information

### 12.1. Toxicity

Copper (7440-50-8)	
LC50 fishes 1	0.0068 - 0.0156 mg/l (Exposure time: 96 h - Species: Pimephales promelas)
EC50 Daphnia 1	0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 other aquatic organisms 1	0.0426 - 0.0535 mg/l (Exposure time: 72 h - Species: Pseudokirchneriella subcapitata [static])
LC50 fish 2	< 0.3 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 other aquatic organisms 2	0.031 - 0.054 mg/l (Exposure time: 96 h - Species: Pseudokirchneriella subcapitata [static])

Silver (7440-22-4)	
LC50 fishes 1	0.00155 - 0.00293 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 Daphnia 1	0.00024 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])

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Silver (7440-22-4)	
LC50 fish 2	0.0062 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])

Phosphorus elemental (7723-14-0)	
LC50 fishes 1	0.0017 - 0.0035 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [flow-through])
EC50 Daphnia 1	0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 fish 2	0.001 - 0.004 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
EC50 Daphnia 2	0.025 - 0.037 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])

### 12.2. Persistence and degradability

No additional information available

### 12.3. Bioaccumulative potential

Phosphorus elemental (7723-14-0)	
BCF fish 1	< 200

### 12.4. Mobility in soil

No additional information available

### 12.5. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations.

## SECTION 14: Transport information

In accordance with DOT / ADR / RID / ADNR / IMDG / ICAO / IATA

### 14.1. UN number

Not applicable

### 14.2. UN proper shipping name

Not applicable

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

Copper (7440-50-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on SARA Section 313 (Specific toxic chemical listings)	
SARA Section 313 - Emission Reporting	1.0 %

Silver (7440-22-4)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on SARA Section 313 (Specific toxic chemical listings)	
SARA Section 313 - Emission Reporting	1.0 %

Phosphorus elemental (7723-14-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on SARA Section 302 (Specific toxic chemical listings)	
Listed on SARA Section 313 (Specific toxic chemical listings)	
SARA Section 302 Threshold Planning Quantity (TPQ)	100 (This material is a reactive solid. The TPQ does not default to 10000 pounds for non-powder, non-molten, non-solution form)
SARA Section 313 - Emission Reporting	1.0 % (yellow or white)

### 15.2. US State regulations

Copper (7440-50-8)	
U.S. - Massachusetts - Right To Know List	
U.S. - Minnesota - Hazardous Substance List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) List	

Silver (7440-22-4)	

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### Silver (7440-22-4)

U.S. - Massachusetts - Right To Know List  
U.S. - Minnesota - Hazardous Substance List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

### Phosphorus elemental (7723-14-0)

U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

## SECTION 16: Other information

Full text of H-phrases:

Acute Tox. 2 (Oral)	Acute toxicity (oral) Category 2
Acute Tox. 4 (Dermal)	Acute toxicity (dermal) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment - Chronic Hazard Category 2
Comb. Dust	Combustible Dust
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H232	May form combustible dust concentrations in air
H300	Fatal if swallowed
H312	Harmful in contact with skin
H335	May cause respiratory irritation
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*