

VAPORPH3OS® PHOSPHINE FUMIGANT

Revision Date 08/01/2022

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifier**

- Trade name VAPORPH3OS® PHOSPHINE FUMIGANT
- FIFRA Registration number 68387-8

1.2 Relevant identified uses of the substance or mixture and uses advised against**Uses of the Substance / Mixture**

- Fumigant

1.3 Details of the supplier of the safety data sheet**Company**

CYTEC INDUSTRIES INC.
504 CARNEGIE CENTER
PRINCETON, NJ 08540 USA

Local contact

+800-438-5615; +888-298-3272

1.4 Emergency telephone

FOR EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CONTACT CHEMTREC (24-Hour Number): +1-800-424-9300 within the United States and Canada, or +1-703-527-3887 for international collect calls.

Disclaimer

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SECTION 2: Hazards identification

Although OSHA has not adopted the environmental portion of the GHS regulations, this document may include information on environmental effects.

2.1 Classification of the substance or mixture**HCS 2012 (29 CFR 1910.1200)**

Flammable gases, Category 1
Gases under pressure, Liquefied gas
Pyrophoric gas
Acute toxicity, Category 1
Skin corrosion, Category 1B
Serious eye damage, Category 1

H220: Extremely flammable gas.
H280: Contains gas under pressure; may explode if heated.
H250: Catches fire spontaneously if exposed to air.
H330: Fatal if inhaled.
H314: Causes severe skin burns and eye damage.
H318: Causes serious eye damage.

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2.2 Label elements

HCS 2012 (29 CFR 1910.1200)**Pictogram****Signal Word**

- Danger

Hazard Statements

- H220 Extremely flammable gas.
- H250 Catches fire spontaneously if exposed to air.
- H280 Contains gas under pressure; may explode if heated.
- H314 Causes severe skin burns and eye damage.
- H330 Fatal if inhaled.

Precautionary StatementsPrevention

- P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
- P260 Do not breathe gas.
- P264 Wash skin thoroughly after handling.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P284 Wear respiratory protection.

Response

- P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
- P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
- P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor. Wash contaminated clothing before reuse.
- P363 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
- P377 Eliminate all ignition sources if safe to do so.
- P381

Storage

- P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
- P405 Store locked up.
- P410 + P403 Protect from sunlight. Store in a well-ventilated place.

Disposal

- P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards which do not result in classification

- H400: Very toxic to aquatic life.
- Phosphine gas may react with certain metals and cause corrosion, especially at higher temperatures and relative humidity.

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SECTION 3: Composition/information on ingredients**3.1 Substance**

- Chemical nature Phosphorus trihydride (phosphine)

Hazardous Ingredients and Impurities

| Chemical name | Identification number CAS-No. | Concentration [%] |
|---------------|----------------------------------|-------------------|
| Phosphine | 7803-51-2 | > 97 |

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

3.2 Mixture

- Not applicable, this product is a substance.

SECTION 4: First aid measures**4.1 Description of first-aid measures****In case of inhalation**

- Quickly move the person away from the contaminated area. Make the affected person rest.
- Immediate medical attention is required.
- Show this sheet to the doctor.
- If person is not breathing, immediately call for emergency medical support then, begin cardiopulmonary resuscitation. For artificial respiration, use a bag-valve-mask device. If artificial respiration is not possible due to physical or psychological reasons, start only heart massage as soon as possible.
- Rescuers within the areas of potentially unsafe levels of this product (the "HOT ZONE") should employ appropriate personal protective equipment such as SCBA during the rescue of the victim.

In case of skin contact

- Take off contaminated clothing and shoes immediately.
- Immediately flush skin with large amounts of water.
- Immediate medical attention is required.

In case of eye contact

- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- Keep eye wide open while rinsing.
- Show this sheet to the doctor.
- Always obtain medical advice, even if there are no symptoms.

In case of ingestion

- Not applicable

4.2 Most important symptoms and effects, both acute and delayed**In case of inhalation****Symptoms**

- Fatigue
- discomfort in the chest

Effects

- Serious effects on health can appear after exposure.
- The effects will depend on target organs.
- In case of inhalation, irritation/corrosion of the respiratory tract.
- Risk of respiratory disorder

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- May cause irreversible skin damage.
- Chronic exposure may cause dermatitis.
- May cause irreversible eye damage.

Symptoms

- Weakness
- Vomiting
- chest pain
- Diarrhea
- Difficulty in breathing

Symptoms

- Symptoms will depend on the target organs.
- Inhalation may provoke the following symptoms:
 - Cough
 - Breathing difficulties
 - Irritation
 - Redness
 - Swelling of tissue
 - May cause respiratory tract irritation.
 - Dermatitis
 - Causes skin burns.
 - Lachrymation
 - Conjunctivitis
 - Causes eye burns.

Symptoms

- pulmonary edema
- Dizziness
- Cyanosis
- Unconsciousness

4.3 Indication of any immediate medical attention and special treatment needed**Notes to physician**

- If breathed in, move person into fresh air.
- Be aware to maintain life support if necessary.
- Immediate medical attention is required.
- Consult with an ophthalmologist immediately in all cases.
- Burns must be treated by a physician.
- Treat symptomatically.
- Contact a poison control center.
- Keep under medical supervision for at least 48 hours.

SECTION 5: Firefighting measures**Flash point**

Pyrophoric

Autoignition temperature

The substance or mixture is pyrophoric.

Flammability / Explosive limit

Lower flammability/explosion limit : 1.80 %(V)

Upper flammability/explosion limit : 98.00 %(V)

5.1 Extinguishing media

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Suitable extinguishing media

- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2 Special hazards arising from the substance or mixture

- Highly flammable
- Dense white fumes are given off that may obscure the area.
- On combustion, forms:
- Toxic and highly flammable gases are released, which increase fire / explosion hazards.
- In the presence of water, forms acidic solutions.

5.3 Advice for firefighters**Special protective equipment for fire-fighters**

- Wear full protective clothing and self-contained breathing apparatus.

Specific fire fighting methods

- Cool containers/tanks with water spray.
- Evacuate personnel to safe areas.
- Remove undamaged containers from fire area if it is safe to do so.

Further information

- Control the use of water due to environmental risk (see section 6).

SECTION 6: Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures**

- Do not breathe gas.
- Wear self-contained breathing apparatus and protective suit.
- If spillage occurs on the public highway, indicate the danger and notify the authorities (police, fire service).
- Evacuate personnel to safe areas.
- Remove all sources of ignition.
- Only qualified personnel equipped with suitable protective equipment may intervene.
- Avoid contact with the skin and the eyes.
- Do NOT approach from DOWNWIND.
- Stop the leak as quickly as possible (using non-sparking tools).
- Mechanically ventilate the spillage area, whilst avoiding the formation of explosive concentrations.

6.2 Environmental precautions

- Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

- Keep container tightly closed.
- Flammable product. Take all necessary precautions. Earth the containers and the equipment.
- Ventilate the area.

6.4 Reference to other sections

- For personal protection see section 8.
- For disposal considerations see section 13.

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SECTION 7: Handling and storage**7.1 Precautions for safe handling**

- Wear protective gloves/ protective clothing/ eye protection/ face protection.
- Wash hands after handling.
- Do not breathe gas.
- The gas deadens the sense of smell. Do not depend on odor to detect presence of gas.
- Keep cylinder out of sun and away from heat.
- Keep cylinder in an upright position and protect from falling.
- Before dispensing product, purge equipment with an inert gas.
- Cylinders must be handled in accordance with industry standards for compressed gases.
- Metals such as brass, copper and other copper alloys and precious metals are susceptible to corrosion.

Hygiene measures

- Handle in accordance with good industrial hygiene and safety practice.
- Wash hands before breaks and at the end of workday.
- When using do not eat, drink or smoke.
- Eye wash bottles or eye wash stations in compliance with applicable standards.
- Ensure that eyewash stations and safety showers are close to the workstation location.
- Keep away from food and drink.

7.2 Conditions for safe storage, including any incompatibilities**Technical measures/Storage conditions**

- Keep in properly labeled containers.
- Keep away from incompatible materials to be indicated by the manufacturer
- Keep away from heat and sources of ignition.

Requirements for storage rooms and vessels

Recommended storage temperature: < 122 °F (< 50 °C)

- The building should be adequately ventilated and equipped with a continuous monitoring and alarm system.
- Keep in a dry, cool and well-ventilated place.
- Store in a fireproof area.
- Indoor storage in a separate building with no other occupancy is suitable.
- The indoor storage of toxic gases is prohibited in some jurisdictions.
- Store in upright position only.
- It is recommended that both full and used cylinders be stored outdoors in a dedicated and properly designed and labeled storage area, away from other building ventilation intakes.
- The storage of these gases in occupied spaces is not recommended.
- This area should be secured, locked and have a well-drained, firm and level surface, preferably reinforced concrete.
- To guarantee safety keep according to Storage temperature and conditions.

7.3 Specific end use(s)

- Contact your supplier for additional information

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SECTION 8: Exposure controls/personal protection

Introductory Remarks: These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

8.1 Control parameters**Components with workplace occupational exposure limits**

| Components | Value type | Value | Basis |
|------------|------------|----------------------------------|--|
| Phosphine | TWA | 0.3 ppm 0.4 mg/m ³ | National Institute for Occupational Safety and Health |
| Phosphine | ST | 1 ppm 1 mg/m ³ | National Institute for Occupational Safety and Health |
| Phosphine | TWA | 0.05 ppm | American Conference of Governmental Industrial Hygienists |
| Phosphine | TWA | 0.3 ppm 0.4 mg/m ³ | Occupational Safety and Health Administration - Table Z-1 Limits for Air Contaminants |
| Phosphine | C | 0.15 ppm | American Conference of Governmental Industrial Hygienists |

NIOSH IDLH (Immediately Dangerous to Life or Health Concentrations)

| Components | CAS-No. | Concentration |
|------------|-----------|----------------------|
| Phosphine | 7803-51-2 | 50 parts per million |

8.2 Exposure controls**Control measures****Engineering measures**

- Ensure adequate ventilation.
- Apply technical measures to comply with the occupational exposure limits.
- Use a closed system process where feasible.
-

Individual protection measures**Respiratory protection**

- Self-contained breathing apparatus in confined spaces/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection.
- Use only respiratory protection that conforms to international/ national standards.
- Wear a positive-pressure supplied-air respirator.
- Ingredients with workplace control parameters

Hand protection

- Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).
- Impervious gloves

Eye protection

- Chemical resistant goggles must be worn.
- Ensure that eyewash stations and safety showers are close to the workstation location.

Skin and body protection

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- Full protective suit
- Change working clothes after each work-shift.
- Contaminated work clothing should not be allowed out of the workplace.
- Gas is not known to be absorbed through skin.
- Steel toed safety shoes are recommended for anyone handling compressed gas cylinders.

Hygiene measures

- Handle in accordance with good industrial hygiene and safety practice.
- Wash hands before breaks and at the end of workday.
- When using do not eat, drink or smoke.
- Eye wash bottles or eye wash stations in compliance with applicable standards.
- Ensure that eyewash stations and safety showers are close to the workstation location.
- Keep away from food and drink.

SECTION 9: Physical and chemical properties

Physical and Chemical properties here represent typical properties of this product. Contact the business area using the Product information phone number in Section 1 for its exact specifications.

9.1 Information on basic physical and chemical properties

| | |
|---|--|
| <u>Physical state</u> | gaseous |
| <u>Form</u> | Liquefied gas |
| <u>Color</u> | colorless |
| <u>Odor</u> | garlic |
| <u>Odor Threshold</u> | No data available |
| <u>Melting point/freezing point</u> | Sublimes |
| <u>Initial boiling point and boiling range</u> | Sublimes |
| <u>Flammability (solid, gas)</u> | Pyrophoric |
| <u>Flammability (liquids)</u> | Not applicable |
| <u>Flammability / Explosive limit</u> | <u>Lower flammability/explosion limit:</u> 1.80 %(V) |
| | <u>Upper flammability/explosion limit:</u> 98.00 %(V) |
| <u>Flash point</u> | Pyrophoric |
| <u>Autoignition temperature</u> | <u>Ignition temperature:</u> 100 °F (38 °C) |
| <u>Decomposition temperature</u> | No data available |
| <u>pH</u> | Not applicable |
| <u>Viscosity</u> | No data available |
| <u>Solubility</u> | <u>Water solubility:</u> 364 mg/l (68 °F (20 °C)) |
| <u>Partition coefficient: n-octanol/water</u> | Not applicable |

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| | |
|---|---|
| <u>Vapor pressure</u> | Not applicable |
| <u>Density</u> | 1.17 g/cm ³ (68 °F (20 °C)) |
| <u>Relative density</u> | 1.17 (68 °F (20 °C)) |
| <u>Relative vapor density</u> | 1.146 (68 °F (20 °C)) (Air = 1.0) |
| <u>Particle characteristics</u> | No data available |
| <u>Evaporation rate (Butylacetate = 1)</u> | Not applicable |

9.2 Other information

| | |
|------------------------------------|--|
| <u>Explosiveness</u> | Not explosive, In use, may form flammable/explosive vapor-air mixture. |
| <u>Oxidizing properties</u> | Not considered as oxidizing. |
| <u>Self-ignition</u> | The substance or mixture is pyrophoric. |
| <u>Peroxides</u> | The substance or mixture is not classified as organic peroxide. |
| <u>Corrosion of Metals</u> | Corrosive to copper and copper alloys. |
| <u>Surface tension</u> | Not applicable |

SECTION 10: Stability and reactivity**10.1 Reactivity**

- No data available

10.2 Chemical stability

- Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

- No data available

10.4 Conditions to avoid

- Keep away from direct sunlight.
- Keep away from open flames, hot surfaces and sources of ignition.

10.5 Incompatible materials

- Exposure to air.
- Oxidizing agents
- dimethyl sulfoxide
- copper
- Brass
- Copper alloys
- Noble metals

10.6 Hazardous decomposition products

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Hazardous decomposition products

- Oxides of phosphorus

SECTION 11: Toxicological information**11.1 Information on toxicological effects****Acute toxicity****Acute oral toxicity**

No data available

Acute inhalation toxicity

Phosphine

LC50 - 4 h (gas) : ca. 0.08 mg/l - Rat , male and female
 This product is classified as acute toxicity category 1
 Unpublished reports

Acute dermal toxicity

No data available

Acute toxicity (other routes of administration)

No data available

Skin corrosion/irritation

Phosphine

Causes burns.

Serious eye damage/eye irritation

Phosphine

Corrosive

Respiratory or skin sensitization

No data available

Mutagenicity**Genotoxicity in vitro**

Phosphine

Ames test
 Strain: Salmonella typhimurium
 with and without metabolic activation

negative
 Method: OECD Test Guideline 471
 Unpublished reports

Genotoxicity in vivo

Phosphine

Chromosome aberration test in vivo - Mouse
 male
 Inhalation

negative
 Published data

Carcinogenicity

Phosphine

Rat , male and female
 Inhalation
 NOAEC: 0.004mg/l
 Method: OECD Test Guideline 453
 Highest dose tested
 Animal testing did not show any carcinogenic effects.
 Published data

This product does not contain any ingredient designated as probable or suspected human carcinogens by:

NTP
 IARC
 OSHA

Toxicity for reproduction and development**Toxicity to reproduction / fertility**

No data available

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Developmental Toxicity/Teratogenicity

Phosphine

Rat, female, Inhalation
 General Toxicity Maternal NOAEL: > 0.007 mg/l
 Developmental Toxicity NOAEL: > 0.007 mg/l
 Method: OECD Test Guideline 414
 Highest dose tested, No toxicity to reproduction, Published data

STOT**STOT-single exposure
STOT-repeated exposure**

Phosphine

No data available

Routes of exposure: Inhalation
 The substance or mixture is not classified as specific target organ toxicant, repeated exposure according to GHS criteria.

Phosphine

Inhalation (gas) two-year - Rat
 NOAEC: 0.0042 mg/l
 Method: OECD Test Guideline 453
 no observed effect
 Published data
 No data available

Experience with human exposure**CMR effects****Carcinogenicity**

Phosphine

Not classified as a carcinogen according to GHS criteria

Mutagenicity

Phosphine

Not classified as mutagen according to GHS criteria.

Teratogenicity

Phosphine

Not classified as toxic for the reproduction (development) according to GHS criteria

Reproductive toxicity

Phosphine

Not classified as toxic for the reproduction (fertility and/or development) according to GHS criteria

Aspiration toxicity

No data available

SECTION 12: Ecological information**12.1 Toxicity****Aquatic Compartment****Acute toxicity to fish**

Phosphine

By analogy

LC50 - 96 h : - Oncorhynchus mykiss (rainbow trout)
 static test

Very toxic to fish.
 Freshwater species

Acute toxicity to daphnia and other aquatic invertebrates

No data available

Toxicity to aquatic plants**Toxicity to microorganisms**

No data available

No data available

Chronic toxicity to fish

No data available

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Chronic toxicity to daphnia and other aquatic invertebrates

No data available

M-Factor

Phosphine

Acute aquatic toxicity = 100
(according to the Globally Harmonized System (GHS))**12.2 Persistence and degradability****Abiotic degradation**

No data available

Physical- and photo-chemical elimination

No data available

Biodegradation**Biodegradability**

Phosphine

Not applicable, inorganic substance

12.3 Bioaccumulative potential**Partition coefficient: n-octanol/water**

Phosphine

Not applicable, inorganic substance

Bioconcentration factor (BCF)

No data available

12.4 Mobility in soil**Adsorption potential (Koc)**

No data available

Known distribution to environmental compartments

No data available

12.5 Results of PBT and vPvB assessment

Phosphine

Not applicable, inorganic substance

12.6 Other adverse effects**Ecotoxicity assessment****Short-term (acute) aquatic hazard**

Phosphine

Very toxic to aquatic life.

Long-term (chronic) aquatic hazard

Phosphine

Not classified due to lack of data.

SECTION 13: Disposal considerations**13.1 Waste treatment methods****Product Disposal**

- The Company encourages the recycle, recovery and reuse of materials, where permitted. If disposal is necessary, The Company recommends that organic materials, especially when classified as hazardous waste, be disposed of by thermal treatment or incineration at approved facilities. All local and national regulations should be followed.

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SECTION 14: Transport information

Transportation status: IMPORTANT! Statements below provide additional data on listed transport classification. The listed Transportation Classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.

49 CFR

| | |
|--|---------------------------------------|
| 14.1 UN number | UN 2199 |
| 14.2 Proper shipping name | PHOSPHINE |
| 14.3 Transport hazard class | 2.3 |
| Subsidiary hazard class | 2.1 |
| Label(s) | 2.3 -TOXIC INHALATION HAZARD (2.1) |
| 14.4 Packing group | |
| Packing group | |
| ERG No | 119 |
| 14.5 Environmental hazards | YES |
| Marine pollutant | |
| 14.6 Special precautions for user | |

This product contains one or more ingredients identified as a hazardous substance in Appendix A of 49 CFR 172.101.

| | | |
|-----------------------|---|--------------------------------|
| Reportable quantities | : | RQ substance: Phosphine |
| | | RQ limit for substance: 100 lb |

TDG

| | |
|------------------------------------|-----------|
| 14.1 UN number | UN 2199 |
| 14.2 Proper shipping name | PHOSPHINE |
| 14.3 Transport hazard class | 2.3 |
| Subsidiary hazard class | 2.1 |
| Label(s) | 2.3 (2.1) |
| 14.4 Packing group | |
| Packing group | |
| ERG No | 119 |
| 14.5 Environmental hazards | YES |
| Marine pollutant | |

NOM

| | |
|-----------------------|---------|
| 14.1 UN number | UN 2199 |
|-----------------------|---------|

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14.2 Proper shipping name PHOSPHINE

14.3 Transport hazard class 2.3
 Subsidiary hazard class 2.1
 Label(s) 2.3 (2.1)

14.4 Packing group
 Packing group
 ERG No 119

14.5 Environmental hazards YES
Marine pollutant

IMDG

14.1 UN number UN 2199

14.2 Proper shipping name PHOSPHINE
 IMDG Code segregation group Not Relevant

14.3 Transport hazard class 2.3
 Subsidiary hazard class 2.1
 Label(s) 2.3 (2.1)

14.4 Packing group
 Packing group

14.5 Environmental hazards YES
Marine pollutant

14.6 Special precautions for user
 EmS F-D , S-U

For personal protection see section 8.

14.7 Transport in bulk vessels according to IMO instruments
 No data available

IATA

14.1 UN number UN 2199

14.2 Proper shipping name Not permitted for transport

14.3 Transport hazard class Not permitted for transport

14.4 Packing group
 Packing instruction (cargo aircraft) Not permitted for transport
 Packing instruction (passenger aircraft) Not permitted for transport

14.5 Environmental hazards YES

14.6 Special precautions for user
 For personal protection see section 8.

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Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transportation regulations for hazardous materials, it would be advisable to check their validity with your sales office.

SECTION 15: Regulatory information

15.1 Notification status

| Inventory Information | Status |
|--|--|
| United States TSCA Inventory | <ul style="list-style-type: none"> - All substances listed as active on the TSCA inventory - This product is regulated under the United States Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). |
| Canadian Domestic Substances List (DSL) | - Listed on Inventory |
| Australian Inventory of Industrial Chemicals (AIIC) | - Listed on Inventory |
| Japan. CSCL - Inventory of Existing and New Chemical Substances | - Listed on Inventory |
| Korea. Korean Existing Chemicals Inventory (KECI) | - Listed on Inventory |
| China. Inventory of Existing Chemical Substances in China (IECSC) | - Listed on Inventory |
| Philippines Inventory of Chemicals and Chemical Substances (PICCS) | - Listed on Inventory |
| Taiwan Chemical Substance Inventory (TCSI) | - Listed on Inventory |
| New Zealand. Inventory of Chemical Substances | - All components are listed on the NZIoC inventory. Additional HSNO obligations may apply. Please refer to Section 15 of SDS for New Zealand. |
| EU. European Registration, Evaluation, Authorization and Restriction of Chemical (REACH) | - When purchased from a Solvay legal entity based in the EEA ("European Economic Area"), this product is compliant with the registration provisions of the REACH Regulation (EC) No. 1907/2006 as all its components are either excluded, exempt, and/or registered. When purchased from a legal entity outside of the EEA, please contact your local representative for additional information. |
| Korea. Act on Registration and Evaluation of Chemicals | - When purchased from a Solvay legal entity based in Korea, this product is compliant with "Act on Registration and Evaluation of Chemicals" (AREC or K-REACH, Article 10) as all its components are either excluded, exempt, and/or (pre)registered. When purchased from a legal entity outside of Korea, please contact your local representative for additional information. |

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15.2 Federal Regulations

US. EPA EPCRA SARA Title III**SARA HAZARD DESIGNATION SECTIONS 311/312 (40 CFR 370)**

| | |
|---|-----|
| Flammable (gases, aerosols, liquids, or solids) | Yes |
| Gases under pressure | Yes |
| Pyrophoric gas | Yes |
| Acute toxicity (any route of exposure) | Yes |
| Skin corrosion or irritation | Yes |
| Serious eye damage or eye irritation | Yes |

The categories not mentioned are not relevant for the product.

Section 313 Toxic Chemicals (40 CFR 372.65)

The following components are subject to reporting levels established by SARA Title III, Section 313:

| Components | CAS-No. | Concentration |
|------------|-----------|---------------|
| Phosphine | 7803-51-2 | > 97% |

| Components | CAS-No. | Threshold planning quantity | Remarks |
|------------|-----------|-----------------------------|---------|
| Phosphine | 7803-51-2 | 500 lb | |

Section 302 Emergency Planning Extremely Hazardous Substance Reportable Quantity (40 CFR 355)

| Components | CAS-No. | Reportable quantity |
|------------|-----------|---------------------|
| Phosphine | 7803-51-2 | 100 lb |
| Arsine | 7784-42-1 | 100 lb |

Section 304 Emergency Release Notification Reportable Quantity (40 CFR 355)

| Components | CAS-No. | Reportable quantity |
|------------|-----------|---------------------|
| Phosphine | 7803-51-2 | 100 lb |
| Arsine | 7784-42-1 | 100 lb |

US. EPA CERCLA Hazardous Substances and Reportable Quantities (40 CFR 302.4)

| Components | CAS-No. | Reportable quantity |
|------------|-----------|---------------------|
| Phosphine | 7803-51-2 | 100 lb |

FIFRA INFORMATION

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Registration Number: 68387-8

DANGER - POISON - Skull and Crossbones

Restricted Use Pesticide (due to high acute inhalation toxicity of phosphine gas).

Keep out of reach of children.

Fatal if inhaled. The liquid may cause burns. This product is highly toxic to fish and wildlife. Phosphine gas may deaden the sense of smell. Phosphine may ignite spontaneously at levels above its lower flammability limit of 1.8% v/v (18,000 ppm). Ignition of high concentration of phosphine can produce an explosive reaction.

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15.3 State Regulations

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

Please contact your local sales representative if you have questions and need more information concerning this product under California's Proposition 65 statute (www.p65warnings.ca.gov).

SECTION 16: Other information**NFPA (National Fire Protection Association) - Classification**

| | |
|---------------------------|------------|
| Health | 4 severe |
| Flammability | 4 severe |
| Instability or Reactivity | 2 moderate |

Further information

- Distribute new edition to clients
- Update
- See section 14

Date Prepared: 08/01/2022

Key or legend to abbreviations and acronyms used in the safety data sheet

- C: Ceiling limit
- PEL: Permissible exposure limit
- ST: STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
- STEL: Short term exposure limit
- TWA: 8-hour, time-weighted average
- ACGIH: American Conference of Governmental Industrial Hygienists
- OSHA: Occupational Safety and Health Administration
- NTP: National Toxicology Program
- IARC: International Agency for Research on Cancer
- NIOSH: National Institute for Occupational Safety and Health
- ADR: European Agreement on International Carriage of Dangerous Goods by Road.
- ADN: European Agreement on the International Carriage of Dangerous Goods by Inland Waterways.
- RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
- IATA: International Air Transport Association.
- ICAO-TI: Technical Specification for Safe Transport of Dangerous Goods by Air.
- IMDG: International Maritime Dangerous Goods.
- TWA: Time weighted average
- ATE: Estimated value of acute toxicity
- EC: European Community number
- CAS: Chemical Abstracts Service.
- LD50: Substance that causes 50% (half) death in the test animals group (Median Fatal Dose).
- LC50: Substance concentration causing 50% (half) death in the test animals group.
- EC50: Effective Concentration of the substance causing the maximum of 50%.
- PBT: Persistent, Bioaccumulative and Toxic substance.
- vPvB: Very Persistent and Very Bioaccumulative.
- SEA: Classification, labeling, packaging regulation
- DNEL: Derived No Effect Level
- PNEC: Predicted No Effect Concentration
- STOT: Specific Target Organ Toxicity

Not all acronyms listed above are referenced in this SDS.

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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. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose, and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in any other manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.