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

1.1 Product identifier

- Trade name ECO2FUME® FUMIGANT GAS
- FIFRA Registration number 68387-7

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

The ® indicates a Registered Trademark in the United States and the ™ indicates a trademark in the United States. The mark may also be registered, subject of an application for registration, or a trademark in other countries.

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)

Gases under pressure, Liquefied gas	H280: Contains gas under pressure; may explode if heated.
Acute toxicity, Category 3	H331: Toxic if inhaled.
Skin irritation, Category 2	H315: Causes skin irritation.
Eye irritation, Category 2A	H319: Causes serious eye irritation.
Simple Asphyxiant	May displace oxygen and cause rapid suffocation.

2.2 Label elements

HCS 2012 (29 CFR 1910.1200)

Pictogram

Signal Word

- Danger

Hazard Statements

- H280 Contains gas under pressure; may explode if heated.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H331 Toxic if inhaled.
- May displace oxygen and cause rapid suffocation.

Precautionary Statements

Prevention

- P261 Avoid breathing gas.
- P264 Wash skin thoroughly after handling.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/ eye protection/ face protection.

Response

- P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
- P304 + P340 + P311 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor.
- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P332 + P313 If skin irritation occurs: Get medical advice/ attention.
- P337 + P313 If eye irritation persists: Get medical advice/ attention.
- P362 Take off contaminated clothing and wash before reuse.

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.

- Contact with liquid or refrigerated gas can cause cold burns and frostbite.
- Asphyxiant gas - depletes available oxygen in breathing air
- Phosphine gas may react with certain metals and cause corrosion, especially at higher temperatures and relative humidity.

SECTION 3: Composition/information on ingredients

3.1 Substance

- Not applicable, this product is a mixture.

3.2 Mixture

- Chemical nature Physical mixture of phosphine and carbon dioxide

Hazardous Ingredients and Impurities

Chemical name	Identification number CAS-No.	Concentration [%]
Carbon dioxide	124-38-9	98
Phosphine	7803-51-2	2

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.

In case of skin contact

- Remove contaminated clothing and shoes.
- Immediate medical attention is required.
- Wash off with soap and water.

- Wash off immediately with plenty of water for at least 15 minutes.

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

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

Symptoms

- pulmonary edema
- Dizziness
- Cyanosis
- Unconsciousness

Effects
- Serious effects on health can appear after exposure, even death.
- The effects will depend on target organs.
- If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.
- In case of inhalation, irritation/corrosion of the respiratory tract.
- Risk of respiratory disorder
- May cause irreversible skin damage.
- Chronic exposure may cause dermatitis.
- May cause irreversible eye damage.
- Loss of the eye

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.

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	The product is not flammable.
Autoignition temperature	Not applicable
Flammability / Explosive limit	Lower flammability/explosion limit : The product is not flammable. Upper flammability/explosion limit : The product is not flammable.

5.1 Extinguishing media

Suitable extinguishing media

- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Keep containers and surroundings cool with water spray.

5.2 Special hazards arising from the substance or mixture

- Dense white fumes are given off that may obscure the area.

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.

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

- Where exposure level is known, wear approved respirator suitable for level of exposure.
- Where exposure level is not known, wear approved, positive pressure, self-contained respirator.
- 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.
- 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.
- Ventilate the area.

6.4 Reference to other sections

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

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.
- Cylinders must be handled in accordance with industry standards for compressed gases.

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

Requirements for storage rooms and vessels

Recommended storage temperature: < 140 °F (< 60 °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)

- no data available

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
Carbon dioxide	TWA	5,000 ppm	American Conference of Governmental Industrial Hygienists
Carbon dioxide	STEL	30,000 ppm	American Conference of Governmental Industrial Hygienists
Carbon dioxide	TWA	5,000 ppm 9,000 mg/m3	National Institute for Occupational Safety and Health
Carbon dioxide	ST	30,000 ppm 54,000 mg/m3	National Institute for Occupational Safety and Health

Carbon dioxide	TWA	5,000 ppm 9,000 mg/m3	Occupational Safety and Health Administration - Table Z-1 Limits for Air Contaminants
Phosphine	TWA	0.3 ppm 0.4 mg/m3	National Institute for Occupational Safety and Health
Phosphine	ST	1 ppm 1 mg/m3	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/m3	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
Carbon dioxide	124-38-9	40000 parts per million
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
- 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

Physical state	gaseous
Form	Liquefied gas
Color	colorless
Odor	garlic
Odor Threshold	No data available
Melting point/freezing point	Sublimes
Initial boiling point and boiling range	Sublimes
Flammability (solid, gas)	No data available
Flammability (liquids)	No data available
Flammability / Explosive limit	Lower flammability/explosion limit: The product is not flammable. Upper flammability/explosion limit: The product is not flammable.
Flash point	The product is not flammable.
Autoignition temperature	No data available
Decomposition temperature	No data available
pH	Not applicable

Viscosity	No data available
Solubility	Water solubility: slightly soluble
Partition coefficient: n-octanol/water	Not applicable
Vapor pressure	Not applicable
Density	Not applicable
Relative density	No data available
Relative vapor density	1.53 (77 °F (25 °C))
Particle characteristics	No data available
Evaporation rate (Butylacetate = 1)	Not applicable

9.2 Other information

Oxidizing properties	Not considered as oxidizing.
Self-ignition	Not applicable
Peroxides	The substance or mixture is not classified as organic peroxide.
Corrosion of Metals	Corrosive to copper and copper alloys.

SECTION 10: Stability and reactivity

10.1 Reactivity

- No data available

10.2 Chemical stability

- Stable

10.3 Possibility of hazardous reactions

- No data available

10.4 Conditions to avoid

- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Keep away from direct sunlight.

10.5 Incompatible materials

- Copper
- Brass
- Copper alloys
- Noble metals

10.6 Hazardous decomposition products

Hazardous decomposition products
- Carbon oxides
- Oxides of phosphorus

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Acute oral toxicity	Not classified as hazardous for acute oral toxicity according to GHS. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.
Acute inhalation toxicity	LC50 - 1 h (gas) 5,011 ppm - Rat Published data This product is classified as acute toxicity category 3
Asphyxiation Hazard	This product is a simple asphyxiant.
Acute dermal toxicity	Not classified as hazardous for acute dermal toxicity according to GHS. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.
Acute toxicity (other routes of administration)	Not applicable
Skin corrosion/irritation	Skin irritation
Serious eye damage/eye irritation	Irritating to eyes.
Respiratory or skin sensitization	Does not cause skin sensitization. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data. Does not cause skin sensitization. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.

Mutagenicity

Genotoxicity in vitro	Product is not considered to be genotoxic. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.
Genotoxicity in vivo	Product is not considered to be genotoxic. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.

Carcinogenicity

The product is not considered to be carcinogenic.
According to the available data on the components.
According to the classification criteria for mixtures.
Unpublished reports and/or 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

The product is not considered to affect fertility.,According to the available data on the components.
According to the classification criteria for mixtures.
Unpublished reports and/or published data.

Developmental Toxicity/Teratogenicity

The product is not considered to be toxic for development.,According to the available data on the components.
According to the classification criteria for mixtures.
Unpublished reports and/or published data.

STOT

STOT-single exposure

The substance or mixture is not classified as specific target organ toxicant, single exposure according to GHS criteria.
According to the available data on the components.
According to the classification criteria for mixtures.
Unpublished reports and/or published data.

STOT-repeated exposure

The substance or mixture is not considered to cause damage to organs through prolonged or repeated exposure.
According to the available data on the components.
According to the classification criteria for mixtures.
Unpublished reports and/or published data.

The product itself has not been tested.

Experience with human exposure

Experience with human exposure : Inhalation

No data is available on the product itself.

Experience with human exposure : Skin contact

No data is available on the product itself.

Experience with human exposure : Eye contact

No data is available on the product itself.

Experience with human exposure : Ingestion

No data is available on the product itself.

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 aspiration toxicity classification, According to the available data on the components, According to the classification criteria for mixtures.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic Compartment

Acute toxicity to fish	The product itself has not been tested.
Acute toxicity to daphnia and other aquatic invertebrates	The product itself has not been tested.
Toxicity to aquatic plants	The product itself has not been tested.
Toxicity to microorganisms	The product itself has not been tested.
Chronic toxicity to fish	The product itself has not been tested.
Chronic toxicity to daphnia and other aquatic invertebrates	The product itself has not been tested.

Sediment compartment

Toxicity to benthic organisms	The product itself has not been tested.

Terrestrial Compartment

Toxicity to soil dwelling organisms	The product itself has not been tested.
Toxicity to terrestrial plants	The product itself has not been tested.
Toxicity to above ground organisms	The product itself has not been tested.

M-Factor
Phosphine — Acute aquatic toxicity = 100
(according to the Globally Harmonized System (GHS))

12.2 Persistence and degradability

Abiotic degradation

Stability in water	Conclusion is not possible for a mixture as a whole.
Photodegradation	Conclusion is not possible for a mixture as a whole.
Other Physicochemical reactions	Conclusion is not possible for a mixture as a whole.

Physical- and photo-chemical elimination

Physico-chemical removability	Conclusion is not possible for a mixture as a whole.

Biodegradation

Biodegradability	As (bio)degradability is not relevant for mixtures, all the components of the mixture were assessed individually (rapid degradability assessment available below).
Ratio BOD / COD	Conclusion is not possible for a mixture as a whole.
Ratio BOD / ThOD	Conclusion is not possible for a mixture as a whole.
Biochemical Oxygen Demand (BOD)	Conclusion is not possible for a mixture as a whole.
Dissolved organic carbon (DOC)	Conclusion is not possible for a mixture as a whole.
Chemical Oxygen Demand (COD)	Conclusion is not possible for a mixture as a whole.
Adsorbed organic bound halogens (AOX)	Conclusion is not possible for a mixture as a whole.

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)	Conclusion is not possible for a mixture as a whole.
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

Global warming potential

Carbon dioxide	Regulatory basis: Global Warming Potentials - 40CFR Part 98 -Table A-1 to SubPart A. 100-year global warming potential: 1 Additional Information: Chemical-Specific GWPs
	Regulatory basis: Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) of the United Nations Framework Convention on Climate Change (UNFCCC) 20-year global warming potential: 1 100-year global warming potential: 1 500-year global warming potential: 1 Radiative efficiency: 0.000013 Wm2ppb Additional Information: Major Greenhouse Gases

Ecotoxicity assessment

Short-term (acute) aquatic hazard	Very toxic to aquatic life. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.
Long-term (chronic) aquatic hazard	No chronic environmental hazard identified. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published 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.

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 3162
14.2 Proper shipping name	LIQUEFIED GAS, TOXIC, N.O.S. (Phosphine)
14.3 Transport hazard class Label(s)	2.3 2.3 -TOXIC INHALATION HAZARD
14.4 Packing group Packing group ERG No	 123
14.5 Environmental hazards **Marine pollutant**	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 3162
14.2 Proper shipping name	LIQUEFIED GAS, TOXIC, N.O.S. (Phosphine)
14.3 Transport hazard class Label(s)	2.3 2.3
14.4 Packing group Packing group ERG No	 123
14.5 Environmental hazards **Marine pollutant**	YES Marine Pollutant

NOM

14.1 UN number	UN 3162
14.2 Proper shipping name	LIQUEFIED GAS, TOXIC, N.O.S. (Phosphine)
14.3 Transport hazard class Label(s)	2.3 2.3
14.4 Packing group Packing group ERG No	 123
14.5 Environmental hazards **Marine pollutant**	YES

IMDG

14.1 UN number	UN 3162
14.2 Proper shipping name IMDG Code segregation group	LIQUEFIED GAS, TOXIC, N.O.S. (Phosphine) Not Relevant
14.3 Transport hazard class Label(s)	2.3 2.3
14.4 Packing group Packing group	
14.5 Environmental hazards **Marine pollutant**	YES
14.6 Special precautions for user EmS	 F-C , 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 3162
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.

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	- 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: Listed introduction
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 Syensqo 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 Syensqo 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.

15.2 Federal Regulations

US. EPA EPCRA SARA Title III

SARA Hazard Designation Sections 311/312 (40 CFR 370)

Gases under pressure	Yes
Simple Asphyxiant	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. This information must be included in all SDSs that are copied and distributed for this material.

Components	CAS-No.	Concentration
Phosphine	7803-51-2	2- 2.2%

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

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

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

Components	CAS-No.	Reportable quantity
Phosphine	7803-51-2	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: 68387-7
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.

15.3 State Regulations

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

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

SECTION 16: Other information

Further information

- Distribute new edition to clients
- Update
- See section 1

Date Prepared: 10/07/2024

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.

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.