



Phosphine

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Reference number: EIGA100

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

1.1. Product identifier

Product form	: Substance
Name	: Phosphine
Trade name	: Phosphine
EC Index-No.	: 015-181-00-1
EC-No.	: 232-260-8
CAS-No.	: 7803-51-2
REACH registration No.	: 01-2120138413-64
Product code	: 000010021727
Formula	: PH ₃

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

1.2.1. Relevant identified uses

Relevant identified uses	: Industrial and professional uses. Perform risk assessment prior to use. Test gas/Calibration gas. Chemical reaction / Synthesis. Laboratory use. Use for manufacture of electronic/photovoltaic components.
Use of the substance/mixture	: Formulation of mixtures with gas in pressure receptacles. Use as an Intermediate (transported, on-site isolated). Using gas as feedstock in chemical processes.

1.2.2. Uses advised against

Uses advised against	: Consumer use. Uses other than those listed above are not supported, contact your supplier for more information on other uses.
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1.3. Details of the supplier of the safety data sheet

Linde Gas GmbH
Carl-von-Linde-Platz 1
A-4651 Stadl-Paura
Austria
T +43 50 4273
office@at.linde-gas.com

1.4. Emergency telephone number

Emergency number	: UMCO/NCEC: +44 1865 407333 (English); +49 89 220 61012 (German)
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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Physical hazards	Flammable gases, Category 1A, Pyrophoric Gas Gases under pressure : Liquefied gas	H220;H232 H280
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Health hazards	Acute toxicity (inhalation:gas) Category 1	H330
	Skin corrosion/irritation, Category 1, Sub-Category 1B	H314
	Serious eye damage/eye irritation, Category 1	H318
Environmental hazards	Hazardous to the aquatic environment – Acute Hazard, Category 1	H400

Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



Signal word (CLP)

: Danger

Hazard statements (CLP)

: H220 - Extremely flammable gas.
H232 - May ignite 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.
H400 - Very toxic to aquatic life.

EUH-statements

: EUH071 - Corrosive to the respiratory tract.

Precautionary statements (CLP)

- Prevention

: P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
No smoking.
P260 - Do not breathe gas, vapours.
P273 - Avoid release to the environment.

- Response

P280 - Wear eye protection, face protection, protective clothing, protective gloves.
: P303+P361+P353+P315 - IF ON SKIN : (or hair) Take off immediately all contaminated clothing. Rinse skin with water or shower. Get immediate medical advice.
P304+P340+P315 - IF INHALED : Remove person to fresh air and keep comfortable for breathing. Get immediate medical advice.
P305+P351+P338+P315 - IF IN EYES : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice.

- Storage

P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 - In case of leakage, eliminate all ignition sources.
: P403 - Store in a well-ventilated place.
P405 - Store locked up.

2.3. Other hazards

Other hazards

: May ignite spontaneously in contact with air. Not classified as PBT or vPvB. Not classified as PMT or vPvM . The substance/mixture has no endocrine disrupting properties.

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SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP] ATE, EUH-statements, M-Factors
Phosphine	CAS-No.: 7803-51-2 EC-No.: 232-260-8 EC Index-No.: 015-181-00-1 REACH-no: 01-2120138413-64	100	Flam. Gas 1A - Pyr. Gas, H220;H232 Press. Gas (Liq.), H280 Acute Tox. 1 (Inhalation:gas), H330 (ATE=10 ppmv/4h) Skin Corr. 1B, H314 Eye Dam. 1, H318 Aquatic Acute 1, H400 EUH071

Specific concentration limits:

Name	Product identifier	Specific concentration limits
Phosphine	CAS-No.: 7803-51-2 EC-No.: 232-260-8 EC Index-No.: 015-181-00-1 REACH-no: 01-2120138413-64	(1 ≤ C ≤ 100) STOT SE 3; H335

Full text of H- and EUH-statements: see section 16

Contains no other components or impurities which will influence the classification of the product.

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation	: Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.
First-aid measures after skin contact	: Remove contaminated clothing. Drench affected area with water for at least 15 minutes.
First-aid measures after eye contact	: Immediately flush eyes thoroughly with water for at least 15 minutes.
First-aid measures after ingestion	: Ingestion is not considered a potential route of exposure.

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

Most important symptoms and effects, both acute and delayed	May cause severe chemical burns to skin and cornea. Suitable first-aid treatment should be immediately available. Seek medical advice before using product. Material is destructive to tissue of the mucuous membranes and upper respiratory tract. Cough, shortness of breath, headache, nausea. See section 11.
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4.3. Indication of any immediate medical attention and special treatment needed

Obtain medical assistance. Treat with corticosteroid spray as soon as possible after inhalation.

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SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Foam. Carbon dioxide. Dry powder. Water spray or fog. Shutting off the source of the gas is the preferred method of control. Be aware of the risk of formation of static electricity with the use of CO₂ extinguishers. Do not use them in places where a flammable atmosphere may be present.
- Unsuitable extinguishing media : Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture

- Reactivity in case of fire : No reactivity hazard other than the effects described in sub-sections below.
- Specific hazards : Exposure to fire may cause containers to rupture/explode.
Escaping gas cannot be extinguished.
- Hazardous combustion products : Phosphorus oxides/acids.

5.3. Advice for firefighters

- Specific methods : Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.
Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
If possible, stop flow of product.
Use water spray or fog to knock down fire fumes if possible.
Move containers away from the fire area if this can be done without risk.
- Special protective equipment for fire fighters : Wear gas tight chemically protective clothing in combination with self contained breathing apparatus.
Standard EN 943-2: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Gas-tight chemical protective suits for emergency teams.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Emergency procedures : Act in accordance with local emergency plan. Try to stop release. Evacuate area. Ensure adequate air ventilation. Eliminate ignition sources. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Stay upwind. See section 8 of the SDS for more information on personal protective equipment.

6.1.2. For emergency responders

- Emergency procedures : Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Use chemically protective clothing. Monitor concentration of released product. Consider the risk of potentially explosive atmospheres. See section 5.3 of the SDS for more information.

6.2. Environmental precautions

Reduce vapour with fog or fine water spray. Try to stop release.

6.3. Methods and material for containment and cleaning up

- Methods and material for containment and cleaning up : Hose down area with water.
Wash contaminated equipment or sites of leaks with copious quantities of water.

6.4. Reference to other sections

See also sections 8 and 13.

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Safe use of the product

- : Take precautionary measures against static discharge.
- Keep away from ignition sources (including static discharges).
- Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
- Purge air from system before introducing gas.
- Avoid exposure, obtain special instructions before use.
- Do not smoke while handling product.
- Avoid suck back of water, acid and alkalis.
- Only experienced and properly instructed persons should handle gases under pressure.
- Ensure the complete gas system was (or is regularly) checked for leaks before use.
- Installation of a cross purge assembly between the container and the regulator is recommended.
- Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service.
- Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment.
- Consider the use of only non-sparking tools.
- The product must be handled in accordance with good industrial hygiene and safety procedures.
- Consider pressure relief device(s) in gas installations.
- Do not breathe gas.
- Avoid release of product into work area.
- Gas cabinets, rooms or indoor areas where product is stored or used shall be protected by an automatic sprinkler system.
- Ensure equipment is adequately earthed.
- Use only lubricants and sealings approved for the specific gas service.

Safe handling of the gas receptacle

- : Do not allow backfeed into the container.
- Protect containers from physical damage; do not drag, roll, slide or drop.
- When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.
- Leave valve protection caps, when provided, in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
- If user experiences any difficulty operating valve discontinue use and contact supplier.
- Never attempt to repair or modify container valves or safety relief devices.
- Damaged valves should be reported immediately to the supplier.
- Keep container valve outlets clean and free from contaminants particularly oil and water.
- Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
- Close container valve after each use and when empty, even if still connected to equipment.
- Never attempt to transfer gases from one cylinder/container to another.
- Never use direct flame or electrical heating devices to raise the pressure of a container.
- Do not remove or deface labels provided by the supplier for the identification of the content of the container.
- Suck back of water into the container must be prevented.
- Open valve slowly to avoid pressure shock.

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7.2. Conditions for safe storage, including any incompatibilities

Conditions for safe storage, including any incompatibilities

: Store locked up.
Segregate from oxidant gases and other oxidants in store.
All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.
Observe all regulations and local requirements regarding storage of containers.
Containers should not be stored in conditions likely to encourage corrosion.
Container valve guards or caps, when provided, should be in place.
Containers should be stored in the vertical position and properly secured to prevent them from falling over.
Stored containers should be periodically checked for general condition and leakage.
Keep container below 50°C in a well ventilated place.
Store containers in location free from fire risk and away from sources of heat and ignition.
Keep away from combustible materials.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

Phosphine (7803-51-2)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Phosphine
IOEL TWA	0.14 mg/m ³
	0.1 ppm
IOEL STEL	0.28 mg/m ³
	0.2 ppm
Regulatory reference	COMMISSION DIRECTIVE 2006/15/EC
Austria - Occupational Exposure Limits	
Local name	Phosphorwasserstoff (Phosphin)
MAK (OEL TWA)	0.15 mg/m ³
	0.1 ppm
MAK (OEL STEL)	0.3 mg/m ³ (8x 5(Mow) min)
	0.2 ppm (8x 5(Mow) min)
Regulatory reference	BGBl. II Nr. 330/2024

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

Phosphine (7803-51-2)	
DNEL/DMEL (Workers)	
Acute - systemic effects, inhalation	0.28 mg/m ³
Long-term - systemic effects, inhalation	0.14 mg/m ³

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PNEC (additional information)

Additional information

None established.

8.1.5. Control banding

No additional information available

8.2. Exposure controls

Appropriate engineering controls

Appropriate engineering controls:

Provide adequate general and local exhaust ventilation. Consider the use of a work permit system e.g. for maintenance activities. Product to be handled in a closed system and under strictly controlled conditions. Preferably use permanent leak-tight installations (e.g. welded pipes). Gas detectors should be used when toxic gases may be released. Systems under pressure should be regularly checked for leakages. Ensure exposure is below occupational exposure limits (where available).

Personal protection equipment

Personal protective equipment:

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered: PPE compliant to the recommended EN/ISO standards should be selected.

Personal protective equipment symbol(s):



Eye and face protection

Eye protection:

Wear goggles and a face shield when transfilling or breaking transfer connections. Provide readily accessible eye wash stations and safety showers. Standard EN 166 - Personal eye-protection - specifications

Skin protection

Hand protection:

Wear working gloves when handling gas containers. Wear chemically resistant protective gloves. Standard EN 374 - Protective gloves against chemicals. Standard EN 388 - Protective gloves against mechanical risks, performance level 1 or higher. Recommended types include wrist gloves from leather or synthetic material with equivalent performance, fabric gloves, fabric gloves with leather palms. Consult glove manufacturer's product information on material suitability and material thickness. The breakthrough time of the selected gloves must be greater than the intended use period.

Respiratory protection

Respiratory protection:

Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres. Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems. Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask. Consult respiratory device supplier's product information for the selection of the appropriate device. Keep self contained breathing apparatus readily available for emergency use.

Thermal hazards

Thermal hazard protection:

None in addition to the above sections.

Environmental exposure controls

Environmental exposure controls:

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

Other information:

Keep suitable chemically resistant protective clothing readily available for emergency use. Standard EN943-1 - Full protective suits against liquid, solid and gaseous chemicals. Consider the use of flame resistant anti-static safety clothing. Standard EN ISO 14116 - Limited flame spread materials. Standard EN 1149-5 - Protective clothing: Electrostatic properties. Wear safety shoes while handling containers. Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	
Physical state	: Gas
Colour	: Colourless.
Form	: Liquefied gas
Odour	: Rotten fish. Poor warning properties at low concentrations. Odour can persist. Garlic like.
Odour threshold	: Odour threshold is subjective and inadequate to warn of overexposure.
Melting point	: -134 °C
Freezing point	: Not applicable
Boiling point	: -88 °C
Flammability	: Extremely flammable gas,Pyrophoric.
Oxidising properties	: No oxidising properties.
Explosive limits	: Not available
Lower explosion limit	: Not known.
Upper explosion limit	: Not known.
Flash point	: Not applicable for gases and gas mixtures.
Auto-ignition temperature	: 38 °C
Decomposition temperature	: Not applicable.
pH	: Not applicable for gases and gas mixtures.
Viscosity, kinematic	: No reliable data available.
Viscosity, dynamic	: No reliable data available.
Solubility in water	: 300 mg/l
Partition coefficient n-octanol/water (Log Kow)	: Not applicable for inorganic products.
Partition coefficient n-octanol/water (Log Pow)	: Not applicable for gas mixtures.
Vapour pressure	: 34.6 bar(a)
Vapour pressure at 50°C	: 62 bar(a)
Critical pressure	: 6540 kPa
Density	: 0.56 g/cm ³ 20.0 °C
Relative density	: 0.74
Relative vapour density at 20°C	: Not applicable.
Relative gas density	: 1.2
Particle characteristics	: Not applicable Not applicable for gases and gas mixtures. Nanoforms are not relevant for gases and gas mixtures.

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Tci	: 1.7 %
Critical temperature	: 51.6 °C

9.2.2. Other safety characteristics

Molecular mass	: 34 g/mol
Gas group	: Press. Gas (Liq.)
Additional information	: Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10: Stability and reactivity

10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Can form explosive mixture with air. May react violently with oxidants. Can ignite spontaneously in air (fire cannot be put out). Can form spontaneous, violently explosive mixture in air.

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10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Avoid moisture in installation systems.

10.5. Incompatible materials

Air, Oxidisers. For additional information on compatibility refer to ISO 11114.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity	: Fatal if inhaled.
Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Inhalation:gas: Fatal if inhaled.

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LC50 Inhalation - Rat [ppm]	20 ppm/1h (ADR) 10 ppm/4h (CLP)
Skin corrosion/irritation	: Causes severe skin burns and eye damage. pH: Not applicable for gases and gas mixtures.
Serious eye damage/irritation	: Causes serious eye damage. pH: Not applicable for gases and gas mixtures.
Respiratory or skin sensitisation	: No known effects from this product.
Germ cell mutagenicity	: No known effects from this product.
Carcinogenicity	: No known effects from this product.
Reproductive toxicity	: Not classified
Toxic for reproduction : Fertility	: No known effects from this product.
Toxic for reproduction : unborn child	: No known effects from this product.
STOT-single exposure	: Damage to central nervous system. Irritation to the respiratory tract. Severe corrosion to the respiratory tract at high concentrations.
STOT-repeated exposure	: No known effects from this product.
Aspiration hazard	: Not applicable for gases and gas mixtures.

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Viscosity, kinematic	No reliable data available.
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11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

No additional information available

11.2.2. Other information

Other information	: Delayed fatal pulmonary oedema possible, The substance/mixture has no endocrine disrupting properties.
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SECTION 12: Ecological information

12.1. Toxicity

Assessment	: Very toxic to aquatic life.
Hazardous to the aquatic environment, short-term (acute)	: Very toxic to aquatic life.
Hazardous to the aquatic environment, long-term (chronic)	: Not classified
Not rapidly degradable	

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LC50 96 h - Fish [mg/l]	No data available.
EC50 48h - Daphnia magna [mg/l]	No data available.
EC50 72h - Algae [mg/l]	No data available.

12.2. Persistence and degradability

Phosphine (7803-51-2)

Assessment	Not applicable for inorganic products.
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12.3. Bioaccumulative potential

Phosphine (7803-51-2)

Partition coefficient n-octanol/water (Log Pow)	Not applicable for gas mixtures.
Partition coefficient n-octanol/water (Log Kow)	Not applicable for inorganic products.
Assessment	No data available.

12.4. Mobility in soil

Phosphine (7803-51-2)

Assessment	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.
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12.5. Results of PBT and vPvB assessment

Assessment : Not classified as PBT or vPvB.

12.6. Endocrine disrupting properties

Other adverse effects : May cause pH changes in aqueous ecological systems. Not classified as PMT or vPvM.
Assessment : The substance/mixture has no endocrine disrupting properties.

12.7. Other adverse effects

Other adverse effects : May cause pH changes in aqueous ecological systems. Not classified as PMT or vPvM.
Effect on the ozone layer : No effect on the ozone layer.
Effect on global warming : No known effects from this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Gas may be scrubbed in alkaline solution under controlled conditions to avoid violent reaction. Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere. Contact supplier if guidance is required. Must not be discharged to atmosphere. Ensure that the emission levels from local regulations or operating permits are not exceeded. Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at <http://www.eiga.eu> for more guidance on suitable disposal methods. Return unused product in original container to supplier.

List of hazardous waste codes (from Commission Decision 2000/532/EC as amended) : 16 05 04 *: Gases in pressure containers (including halons) containing hazardous substances.

HP Code : HP6 - "Acute Toxicity:" waste which can cause acute toxic effects following oral or dermal administration, or inhalation exposure.
HP8 - "Corrosive:" waste which on application can cause skin corrosion.
HP14 - "Ecotoxic:" waste which presents or may present immediate or delayed risks for one or more sectors of the environment

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13.2. Additional information

External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
UN 2199	UN 2199	UN 2199	UN 2199	UN 2199
14.2. UN proper shipping name				
PHOSPHINE	PHOSPHINE	Phosphine	PHOSPHINE	PHOSPHINE
Transport document description				
UN 2199 PHOSPHINE, 2.3 (2.1), (D), ENVIRONMENTALLY HAZARDOUS	UN 2199 PHOSPHINE, 2.3 (2.1), MARINE POLLUTANT/ENVIRONMENTALLY HAZARDOUS	UN 2199 Phosphine, 2.3 (2.1), ENVIRONMENTALLY HAZARDOUS	UN 2199 PHOSPHINE, 2.3 (2.1), ENVIRONMENTALLY HAZARDOUS	UN 2199 PHOSPHINE, 2.3 (2.1), ENVIRONMENTALLY HAZARDOUS
14.3. Transport hazard class(es)				
2.3 (2.1)	2.3 (2.1)	2.3 (2.1)	2.3 (2.1)	2.3 (2.1)
				
14.4. Packing group				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards				
Dangerous for the environment: Yes	Dangerous for the environment: Yes Marine pollutant: Yes	Dangerous for the environment: Yes	Dangerous for the environment: Yes	Dangerous for the environment: Yes
No supplementary information available				

14.6. Special precautions for user

Special transport precautions

: Avoid transport on vehicles where the load space is not separated from the driver's compartment, Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency, Before transporting product containers: - Ensure there is adequate ventilation, - Ensure that containers are firmly secured, - Ensure valve is closed and not leaking, - Ensure valve outlet cap nut or plug (where provided) is correctly fitted, - Ensure valve protection device (where provided) is correctly fitted.

Overland transport

Classification code (ADR) : 2TF
Special provisions (ADR) : 632
Limited quantities (ADR) : 0
Excepted quantities (ADR) : E0

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Packing instructions (ADR) : P200
Mixed packing provisions (ADR) : MP9
Transport category (ADR) : 1
Special provisions for carriage - Loading, unloading and handling (ADR) : CV9, CV10, CV36
Special provisions for carriage - Operation (ADR) : S2, S14
Tunnel restriction code (ADR) : D

Transport by sea

Limited quantities (IMDG) : 0
Excepted quantities (IMDG) : E0
Packing instructions (IMDG) : P200
EmS-No. (Fire) : F-D
EmS-No. (Spillage) : S-U
Stowage category (IMDG) : D
Stowage and handling (IMDG) : SW2
Properties and observations (IMDG) : Flammable, toxic, colourless gas with a garlic odour. Ignites spontaneously in air. Heavier than air (1.2). Irritating to skin, eyes and mucous membranes.

Air transport

PCA Limited quantities (IATA) : FORBIDDEN
PCA limited quantity max net quantity (IATA) : FORBIDDEN
PCA packing instructions (IATA) : FORBIDDEN
PCA max net quantity (IATA) : FORBIDDEN
CAO packing instructions (IATA) : FORBIDDEN
CAO max net quantity (IATA) : FORBIDDEN
Special provisions (IATA) : A2
ERG code (IATA) : 10P

Inland waterway transport

Classification code (ADN) : 2TF
Special provisions (ADN) : 632
Limited quantities (ADN) : 0
Excepted quantities (ADN) : E0
Equipment required (ADN) : PP, EP, EX, TOX, A
Ventilation (ADN) : VE01, VE02
Number of blue cones/lights (ADN) : 2

Rail transport

Classification code (RID) : 2TF
Special provisions (RID) : 632
Limited quantities (RID) : 0
Excepted quantities (RID) : E0
Packing instructions (RID) : P200
Mixed packing provisions (RID) : MP9
Transport category (RID) : 1
Special provisions for carriage - Loading, unloading and handling (RID) : CW9, CW10, CW36
Hazard identification number (RID) : 263

14.7. Maritime transport in bulk according to IMO instruments

IBC code : Not applicable.

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SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

REACH Annex XVII (Restriction List)

EU restriction list (REACH Annex XVII)

Reference code	Applicable on	Entry title or description
40.	Phosphine	Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not.

REACH Annex XIV (Authorisation List)

Not listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Contains no substance(s) listed on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

Not listed on the PIC list (Regulation EU 649/2012)

POP Regulation (Persistent Organic Pollutants)

Not listed on the POP list (Regulation EU 2019/1021)

Ozone Regulation (1005/2009)

Not listed on the Ozone Depletion list (Regulation EU 2024/590)

VOC Directive (2004/42)

Restrictions on use : None.

Seveso Directive (Disaster Risk Reduction)

Seveso Directive : 2012/18/EU (Seveso III) : Listed.

Seveso III Part II (Named dangerous substances)	Qualifying quantity (tonnes)	
	Lower-tier	Upper-tier
Phosphine (phosphorus trihydride)	0.2	1

Explosives Precursors Regulation (EU 2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (EC 273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

15.1.2. National regulations

Ensure all national/local regulations are observed.

Safety data sheet in accordance with commission regulation (EU) No 2020/878.

Council Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work

Directive 2016/425/EEC on personal protective equipment

Directive 2014/34/EU on equipment and protective systems intended for use in potentially explosive atmospheres (ATEX)

Only products that comply with the food regulations (EC) No. 1333/2008 and (EU) No. 231/2012 and are labelled as such may be used as food additives.

This Safety Data Sheet has been produced to comply with Regulation (EU) 2015/830.

15.2. Chemical safety assessment

A CSA has not yet been carried out.

Phosphine

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

SECTION 16: Other information

Indication of changes:

Safety data sheet in accordance with commission regulation (EU) No 2020/878.

Abbreviations and acronyms:

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	ADR - Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	ATE - Acute Toxicity Estimate
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
CAO	Cargo Aircraft only / Cargo Aircraft only
CAS-No.	Chemical Abstract Service number
CLP	CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
COD	Chemical oxygen demand (COD)
CSA	CSA - Chemical Safety Assessment
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC50	Median effective concentration
EC	European Inventory of Existing Commercial Chemical Substances
ED	Endocrine disruptor
EINECS	EINECS - European Inventory of Existing Commercial Chemical Substances
EN	European Standard
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
IOELV	Indicative Occupational Exposure Limit Value
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
N.O.S.	Not Otherwise Specified
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PCA	Passenger and Cargo Aircraft / Passenger and Cargo Aircraft
PNEC	Predicted No-Effect Concentration
PPE	PPE - Personal Protection Equipment
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006

Phosphine

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Abbreviations and acronyms:	
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
RMM	RMM - Risk Management Measures
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
TRGS	Technical Rules for Hazardous Substances
STOT-RE	Specific Target Organ Toxicity-Repeated Exposure
STOT-SE	Specific Target Organ Toxicity-Single Exposure
UFI	Unique Formula Identifier
UN	UN - United Nations
VOC	Volatile Organic Compounds
vPvB	Very Persistent and Very Bioaccumulative
WGK	Water Hazard Class

Training advice : Users of breathing apparatus must be trained. Ensure operators understand the flammability hazard. Ensure operators understand the toxicity hazard.

Other information : Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP). Key literature references and sources of data are maintained in EIGA doc 169 : 'Classification and Labelling Guide', downloadable at <http://www.Eiga.eu>.

Full text of H- and EUH-statements:	
Acute Tox. 1 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 1
Aquatic Acute 1	Hazardous to the aquatic environment – Acute Hazard, Category 1
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Flam. Gas 1A - Pyr. Gas	Flammable gases, Category 1A, Pyrophoric Gas
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
Skin Corr. 1B	Skin corrosion/irritation, Category 1, Sub-Category 1B
STOT SE 3	Specific target organ toxicity – Single exposure, Category 3, Respiratory tract irritation
H220	Extremely flammable gas.
H232	May ignite spontaneously if exposed to air.
H280	Contains gas under pressure; may explode if heated.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H330	Fatal if inhaled.
H335	May cause respiratory irritation.
H400	Very toxic to aquatic life.
EUH071	Corrosive to the respiratory tract.

The classification complies with : ATP 12

Phosphine

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

DISCLAIMER OF LIABILITY

: Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.
Details given in this document are believed to be correct at the time of going to press.
Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

Safety Data Sheet (SDS), EU AT

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.

End of document