

Section 1: Product and Company Identification

Middlesex Gases & Technologies

292 Second Street
P.O. Box 490249
Everett, MA 02149
(617) 387-5050
(800) 649-6704
Fax (617) 387-3537
<http://www.middlesexgases.com/>

Product Code: Phosphine

Section 2: Hazards Identification



Danger

Hazard Classification:

Acute Aquatic Toxicity (Category 1)
Acute Gas Inhale Toxicity (Category 1)
Acute Vapor Inhale Toxicity (Category 4)
Gases Under Pressure
Skin Corrosion (Category 1.B)

Hazard Statements:

Causes severe skin burns and eye damage
Contains gas under pressure; may explode if heated
Fatal if inhaled
Harmful if inhaled
Very toxic to aquatic life

Precautionary Statements**Prevention:**

Wash thoroughly after handling.
Do not breathe dust/fume/gas/mist/ vapors/spray..
Use only outdoors or in a well-ventilated area.
[In case of inadequate ventilation] wear respiratory protection.
Wear protective gloves, protective clothing, eye protection and face protection.

Response:

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Immediately call a poison center or doctor.
Specific treatment is urgent.

If swallowed: Rinse mouth. Do NOT induce vomiting.
 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 If inhaled: Remove person to fresh air and keep comfortable for breathing.

Storage:

Store in a well-ventilated place. Keep container tightly closed.
 Protect from sunlight.
 Store locked up.

Disposal:

Dispose of contents and/or container in accordance with applicable regulations.

Section 3: Composition/Information on Ingredients

CAS #
7803-51-2

Chemical Substance	Chemical Family	Trade Names
PHOSPHINE	hydrides	HYDROGEN PHOSPHIDE; CELPHOS; DELICIA; DETIA; DETIA GAS EX-B; GASEX-B; PHOSPHORUS TRIHYDRIDE; RCRA P096; UN 2199

Section 4: First Aid Measures

Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.	Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.	None

Section 5: Fire Fighting Measures

Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
Let burn unless leak can be stopped immediately. Large fires: Use regular foam or flood with fine water spray.	Hydrogen, forms explosive mixtures with air	<ul style="list-style-type: none"> ▪ Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode. Use chemical resistant suit. ▪ Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode. Use chemical resistant suit.

Section 6: Accidental Release Measures

Personal Precautions	Environmental Precautions	Methods for Containment
Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering.	Avoid heat, flames, sparks and other sources of ignition.	Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition.

Methods for Cleanup	Other Information
Stop leak, evacuate area, and contact emergency personnel.	Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RG (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

Section 7: Handling and Storage

Handling	Storage
Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355.30).	Keep separated from incompatible substances.

Section 8: Exposure Controls/Personal Protection

Exposure Guidelines
PHOPHINE: 0.3 ppm (0.4 mg/m ³) OSHA TWA 1 ppm (1 mg/m ³) OSHA STEL (vacated by 58 FR 35338, June 30, 1993) 0.3 ppm ACGIH TWA 1 ppm ACGIH STEL 0.3 ppm (0.4 mg/m ³) NIOSH recommended TWA 10 hour(s) 1 ppm (1 mg/m ³) NIOSH recommended STEL

Engineering Controls

Handle only in fully enclosed systems.

Eye Protection	Skin Protection	Respiratory Protection
For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	For the gas: Wear appropriate chemical resistant clothing. For the liquid: Wear appropriate protective, cold insulating clothing.	Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode. Use chemical resistant suit.

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
Gas	Clear	Colorless	N/A	Gas, liquid	Unpleasant odor, fishy odor, garlic odor	N/A

Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
Flammable	Not available	Not available	212 F (100 C)	0.98	0.01

Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
-126 F (-87.7 C)	-208.3 F (-133.5 C)	41.9 bar @ 20 C	1.17 (Air=1)	77°F (25°C) and 1 atm: 1.18	26% @ 17 C	Neutral in solution	0.021 ppm	Not applicable	Not available

Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
34	P-H3	Not available	Not available	100%	Not applicable	Soluble: Alcohol, ether, cuprous chloride solutions, cyclohexanol

Section 10: Stability and Reactivity

Stability	Conditions to Avoid	Incompatible Materials

Stability	Conditions to Avoid	Incompatible Materials
May ignite on exposure to air.	May ignite on exposure to air.	Acids, halogens, oxidizing materials, halo carbons, metal nitrates, nitrous oxide, potassium, ammonia

Hazardous Decomposition Products	Possibility of Hazardous Reactions
Oxides of phosphorus	Will not polymerize.

Section 11: Toxicology Information

Acute Effects

Oral LD50	Dermal LD50	Inhalation
LC50, 1 hr, rat = 20 ppm	Not available	Toxic. irritation, garlic odor, tearing, nausea, vomiting, diarrhea, stomach pain, difficulty breathing, irregular heartbeat, headache, drowsiness, symptoms of drunkenness, fainting, tingling sensation, visual disturbances, dilated pupils, bluish skin color, lung congestion, kidney damage, liver damage, paralysis, convulsions, coma, death

Eye Irritation	Skin Irritation	Sensitization
Liquid: frostbite, blurred vision	Liquid: blisters, frostbite	Potentially fatal if inhaled, respiratory tract irritation, central nervous system depression

Chronic Effects

Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
Not available	Available.	Not available	No data

Section 12: Ecological Information

Fate and Transport

Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available

Section 13: Disposal Considerations

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): P096.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
Phosphine	UN2199	2.3	Not applicable	2.3; 2.1	Forbidden	Forbidden	Toxic-Inhalation Hazard Zone A

Canadian Transportation of Dangerous Goods

Shipping Name	UN Number	Class	Packing Group / Risk Group
Phosphine	UN2199	2.3; 2.1	Not applicable

Section 15: Regulatory Information

U.S. Regulations

CERCLA Sections	SARA 355.30	SARA 355.40
100 LBS RQ	500 LBS TPQ	100 LBS RQ

SARA 370.21

Acute	Chronic	Fire	Reactive	Sudden Release
Yes	No	Yes	Yes	Yes

SARA 372.65

PHOSPHINE

OSHA Process Safety

100 LBS TQ

State Regulations

CA Proposition 65
Not regulated.

Canadian Regulations

WHMIS Classification
ABD1

National Inventory Status

US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Listed on inventory.	Not listed.	Not determined.

Section 16: Other Information

NFPA Rating
HEALTH=4 FIRE=4 REACTIVITY=2

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard