

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: Arsine

Section 2: Hazards Identification



Danger

Hazard Classification:

Acute Aquatic Toxicity (Category 1)
Acute Dust Inhale Toxicity (Category 3)
Acute Gas Inhale Toxicity (Category 1)
Acute Vapor Inhale Toxicity (Category 1)
Carcinogenicity (Category 2)
Chronic Aquatic Toxicity (Category 1)
Gases Under Pressure
Specific target organ toxicity (Single Exposure) (Category 2)

Hazard Statements:

Contains gas under pressure; may explode if heated
Fatal if inhaled
May cause damage to organs
Suspected of causing cancer
Toxic if inhaled
Very toxic to aquatic life
Very toxic to aquatic life with long lasting effects

Precautionary Statements

Prevention:

Do not breathe dust/fume/gas/mist/ vapors/spray..
Do not eat, drink or smoke when using this product.
[In case of inadequate ventilation] wear respiratory protection.
Do not handle until all safety precautions have been read and understood.
Wash thoroughly after handling.

Use only outdoors or in a well-ventilated area.
 Wear protective gloves, protective clothing, eye protection and face protection.
 Obtain special instructions before use.

Response:

Specific treatment is urgent.
 If exposed or concerned: Get medical advice/attention.
 If swallowed: Rinse mouth. Do NOT induce vomiting.
 Immediately call a poison center or doctor.
 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 #
7784-42-1

Chemical Substance	Chemical Family	Trade Names
ARSINE	inorganic, gas	HYDROGEN ARSENIDE; ARSENIC TRIHYDRIDE; ARSENIC HYDRIDE; ARSENIURETTED HYDROGEN; ARSENOUS HYDRIDE; UN 2188

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.	Not applicable.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.	Arsine is the most toxic form of arsenic, capable of producing rapid, massive intravascular hemolysis. Serious arsine poisoning produces symptoms within 30 to 60 minutes; however, symptoms can be delayed for up to 48 hours. Laboratory findings include severe hemolytic anemia, hemoglobinuria, and hemoglobinemia. Acute renal failure may be an early complication. Hypotension is occasionally seen; T-wave elevations often observed. BAL (Dimercaprol) treatment will not protect against hemolysis but may prevent long-term effects from arsine (arsenic) poisoning. If major hemolysis has occurred, exchange transfusions may be performed to remove plasma hemoglobin red blood cell debris and arsine-hemoglobin complexes, in conjunction with hemodialysis to preserve renal function. Hemodialysis may also assist in decreasing arsenic levels. Contact the Poison Control Center in your area for additional information on patient management and follow-up.

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.	Arsenic	<ul style="list-style-type: none"> Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.

Section 6: Accidental Release Measures

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

Methods for Cleanup	Other Information
Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (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). Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).	None

Section 7: Handling and Storage

Handling	Storage
Store and handle in accordance with all current regulations and standards. Store in a cool, dry place. Store in a well-ventilated area. Store outside or in a detached building. 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.	Subject to handling regulations: U.S. OSHA 29 CFR 1910.119.

Section 8: Exposure Controls/Personal Protection

Exposure Guidelines
ARSINE: 0.05 ppm (0.2 mg/m ³) OSHA TWA 0.05 ppm ACGIH TWA 0.002 mg/m ³ NIOSH recommended ceiling 15 minute(s)

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 self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

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
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Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
Gas	Colorless	Colorless	N/A	Gas	Garlic odor	N/A

Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
Extremely flammable gas			Not available	0.78	0.051

Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
-81 F (-63 C)	-179 F (-117 C)	11362 mmHg @ 21.1 C	2.7 (Air=1)	1.689 @ -55 C	20% @ 20 C	Aqueous solutions are neutral	0.5 ppm	Not applicable	Not available

Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
77.95	As-H3	Not available	Not available	Not available	Not applicable	Soluble: Benzene, chloroform

Section 10: Stability and Reactivity

Stability	Conditions to Avoid	Incompatible Materials
May react on contact with light. Avoid contact with temperatures above 300 C. May decompose on contact with heat and/or storage and use above room temperature. Can build electrostatic charge due to liquid's low conductivity.	May react on contact with light. Avoid contact with temperatures above 300 C. May decompose on contact with heat and/or storage and use above room temperature. Can build electrostatic charge due to liquid's low conductivity.	Oxidizing materials, halogens, combustible materials, acids

Hazardous Decomposition Products	Possibility of Hazardous Reactions
Oxides of arsenic; on contact with light: arsenic	Will not polymerize.

Section 11: Toxicology Information

Acute Effects

Oral LD50	Dermal LD50	Inhalation
LC50 = 20 ppm, 1 hr, mouse	Not established	Garlic breath, sensitivity to light, nausea, vomiting, stomach pain, chest pain, difficulty breathing, headache, dizziness, disorientation, emotional disturbances, lung congestion, blood disorders, liver damage, nerve damage, effects on the brain, coma, death

Eye Irritation	Skin Irritation	Sensitization
Liquid: frostbite	Liquid: frostbite	Potentially fatal if inhaled, blood damage, cancer hazard (in humans)

Chronic Effects

Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
IARC: Human Sufficient Evidence, Animal Limited Evidence, Group 1	Not established	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): D001. D003. Hazardous Waste Number(s): D004. Dispose of in accordance with U.S. EPA 40 CFR 262 for concentrations at or above the Regulatory level. Regulatory level- 5.0 mg/L.

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
Arsine	UN2188	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
Arsine	UN2188	2.3; 2.1	Not applicable

Section 15: Regulatory Information

U.S. Regulations

CERCLA Sections	SARA 355.30	SARA 355.40
Not regulated.	100 LBS TPQ	100 LBS RQ

SARA 370.21

Acute	Chronic	Fire	Reactive	Sudden Release
Yes	Yes	Yes	Yes	Yes

SARA 372.65

ARSENIC AND INORGANIC COMPOUNDS (as As)

OSHA Process Safety

100 LBS TQ

State Regulations

CA Proposition 65

Known to the state of California to cause the following: ARSENIC AND INORGANIC COMPOUNDS (as As) Cancer (Feb 27, 1987) Developmental toxicity (May 01, 1997)

Canadian Regulations

WHMIS Classification

Included for disclosure at 0.1% or greater

National Inventory Status

US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDL)
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

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