



Tel: 514-956-7503
Fax: 514-956-7504
Internet: www.megs.ca
Email : support@megs.ca

Montreal

St-Laurent

Tel : 514-956-7503

Fax : 514-956-7504

Ottawa

Nepean

Tel : 613-226-4228

Fax : 613-226-4229

Quebec

Quebec

Tel : 418-834-7447

Fax : 418-834-3774

MSDS: Arsine

PRODUCT INFORMATION

PRODUCT: Arsine

TRADE NAME: Arsine

CHEMICAL NAME: Arsine or Arsenic TriHydride or Hydrogen
Arsenide

SYNONYMS: None

FORMULA: AsH₃

CHEMICAL FAMILY: Nonmetal Hydride

SUPPLIER'S NAME: MEGS Inc.

SUPPLIER'S ADDRESS: 2675 De Miniac
Ville St-Laurent, Qc, H4S 1E5

EMERGENCY PHONE NUMBER: (514) 956-7503

MOLECULAR WEIGHT: 77.95

PRODUCT USE: Various

**PRODUCT IDENTIFICATION UN 2188
NUMBER:**

HAZARDOUS INGREDIENTS

CHEMICAL ID	CONCENTRATION	CAS #	LD(50)	LC(50)
Arsine	100%	7784-42-1	Unknown	Inhl-hmn 25 ppm/30 min.

PHYSICAL DATA

PHYSICAL STATE: Gas and liquid under pressure

APPEARANCE: Colorless gas

ODOR: Garlic-like odor

ODOR THRESHOLD: Unknown

SPECIFIC GRAVITY (H₂O = 1): See Vapor Density (air = 1)

VAPOR PRESSURE: @ 15°C = 1313 kPa
VAPOR DENSITY (air = 1): 2.67
EVAPORATION RATE: Not applicable (gas)
BOILING POINT: -62.48°C
FREEZING POINT: -116.9°C
pH: Not applicable (gas)
GAS DENSITY: 2.76 kg/m³ @ 15°C, 101.3 kPa
COEFFICIENT OF WATER/OIL @ 20°C, Bunsen Coefficient = 0.20
DISTRIBUTION:

FIRE OR EXPLOSION HAZARD

CONDITIONS OF FLAMMABILITY: Flammable in air

MEANS OF EXTINCTION: None; attempt to stop flow of gas and let fire burn itself out.

FLASHPOINT AND METHOD OF DETERMINATION: Not applicable (gas)

UPPER EXPLOSION LIMIT (% BY VOL): Unknown

LOWER EXPLOSION LIMIT (% BY VOL): 5.8

AUTO-IGNITION TEMPERATURE: Unknown

FLAMMABILITY CLASSIFICATION: Not established

HAZARDOUS COMBUSTION PRODUCTS: Arsenic trioxide (less toxic than arsine)

EXPLOSION DATA: Reacts violently with strong oxidizers (F₂, Cl₂, HNO₃)

SENSITIVITY TO STATIC DISCHARGE: Unknown

REACTIVITY DATA

CHEMICAL STABILITY: Stable at room temperature

INCOMPATIBLE MATERIALS: Oxidants and oxidizing agents.

CONDITIONS OF REACTIVITY: See Hazardous Decomposition Products, below.

HAZARDOUS DECOMPOSITION PRODUCTS: Decomposes above 232°C to As and H₂.

TOXICOLOGICAL PROPERTIES

ROUTES OF ENTRY:

SKIN CONTACT: None

SKIN ABSORPTION: Yes

EYE: None

INHALATION: Arsine is the most toxic of the commonly used "dopants". Symptoms may be delayed for several hours, particularly if very low concentrations have been inhaled. Symptoms may include general malaise, headache, nausea, vomiting, tightness in the chest and pain in the abdomen and loins. The urine will usually become red or darkened in color and the skin will take on a bronze or jaundiced coloration. Tingling of the face and extremities may also occur and respiration and pulse may become more rapid even though the blood pressure is normal.

INGESTION: None

ACUTE OVER EXPOSURE EFFECTS: Arsine is an extremely toxic gas which destroys the red blood cells and can cause widespread organ injury. It is a powerful reducing agent and has a strong affinity for the hemoglobin in the blood. The hemolysis of the red blood cells causes renal failure. The destruction of the red blood cells causes the appearance of hemoglobin and its degradation products in the blood plasma and in the urine. Jaundice is also a primary manifestation of hemolysis. Renal function impairment and possible complete shutdown is the most serious manifestation of arsine poisoning. Permanent injury, especially to the central nervous system or fatal consequences are also well recognized.

CHRONIC OVER EXPOSURE EFFECTS: Arsine has recently been classified as a cancer suspect agent.

EXPOSURE LIMITS: TWA = 0.05 molar ppm (ACGIH 1995-1996).

IRRITANCY OF PRODUCT: Not known

SENSITIZATION TO MATERIAL: Not known

CARCINOGENICITY, REPRODUCTIVE EFFECTS: See Chronic Over Exposure Effects

TERATOGENICITY, MUTAGENICITY: Unknown

TOXICOLOGICALLY SYNERGISTIC PRODUCTS: None known

PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT: Teflon® or Kel-F® Gloves. Safety

goggles or glasses Safety shoes, safety shower

SPECIFIC ENGINEERING CONTROLS: Carbon steel, Monel® and Hastelloy® are preferred materials for handling arsine. Brass and aluminum should be avoided Kel-F® and Teflon® are preferred gasket materials; Viton® and Nylon® are acceptable.

LEAK AND SPILL PROCEDURES: EVACUATE ALL PERSONNEL FROM AFFECTED AREA.

Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is on container or container valve, contact the closest MEGS location.

WASTE DISPOSAL: Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to MEGS for proper disposal. For emergency disposal, contact the closest MEGS location.

HANDLING PROCEDURES AND EQUIPMENT: USE ONLY IN WELL-VENTILATED AREAS.

Valve protection caps must remain in place unless container is secured with valve outlet piped to the point of use. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Installation of a cross purge assembly between the cylinder and the regulator is recommended. Close valve after each use and when empty.

STORAGE REQUIREMENTS: Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 52°C. Cylinders must be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no sources of ignition in the storage or use area.

TDG CLASSIFICATION: 2.3 (2.1).

WHMIS CLASSIFICATION: A, B, D1

SPECIAL SHIPPING INFORMATION: Always secure cylinders in an upright position before transporting them. NEVER transport cylinders in trunks of

vehicles, enclosed vans, truck cabs or in passenger compartments. Transport cylinders secured in open flatbed or in open pick-up type vehicles.

FIRST AID MEASURES

SPECIFIC FIRST AID PROCEDURES: PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO ARSINE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

INHALATION: Regard anyone exposed to arsine as having had a potentially toxic dose. Move the victim to an uncontaminated atmosphere. Keep the victim warm, quiet and at rest. Provide assisted respiration if breathing has stopped. Administer oxygen if breathing is labored and when assisted respiration is given. Medical attention is imperative. Advise the physician of the possible cause of the problem and that he must promptly inform himself (if not familiar with arsine) of the toxic properties of this powerful hemolytic agent.

Note to Physician: The principal clinical manifestation of arsine intoxication is acute intravascular hemolysis and consequent acute renal failure. Bronze pigmentation of the skin may be confused with jaundice. Elevated T-wave changes on electrocardiography may reflect release of intracellular potassium into the plasma.

Management of arsine intoxication is dependent upon treatment of the hemolytic episode and its consequences. Dimercaprol (BAL) does not appear to alter the course of the hemolyses; however, this agent may be useful in the treatment of arsenic neuropathy that appears to have followed some cases of arsine poisoning (Ref: Wilkinson, S.P., et al; Arsine Toxicity Aboard the Asiafreighter, Brit. Med. J. 3:559, 1975). Severe hemolytic anemia may require transfusion of red cells. Alkalinization of the urine with small doses of oral sodium transfusion of red cells. Alkalinization of the urine with small doses of oral sodium bicarbonate has been recommended by some clinicians in the management of hemoglobinuria. An osmotic diuretic (mannitol) has also been recommended. Exchange transfusions may be indicated.

The physician responsible for treatment of arsine intoxication should obtain the advice of a competent nephrologist as soon as possible since electrolyte imbalance and renal failure will pose the problems most difficult to manage.

EYE CONTACT: PERSONS WITH POTENTIAL EXPOSURE TO ARSINE SHOULD NOT WEAR CONTACT LENSES.

Flush contaminated eye(s) with copious quantities of water. Part eyelids to assure complete flushing. Continue for a minimum of 15 minutes.

SKIN CONTACT: Flush affected area with copious quantities of water. Remove affected clothing as rapidly as possible.

PREPARATION INFORMATION

PREPARED BY: Safety Department

DATE PREPARED: 01/01/1999

LAST REVISION DATE: 05/21/2002

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, MEGS INC. MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.