

**HONG KONG SPECIALTY GASES CO., LTD.**

2/F., Blk. B, Wing Cheong Fty. Bldg., 121 King Lam St.,  
Cheung Sha Wan, Kln., Hong Kong.

MATERIAL  
SAFETY  
DATA SHEET

<b>PRODUCT NAME</b> Arsine	<b>CAS#</b> 7784-42-1
<b>TRADE NAME AND SYNONYMS</b> Arsine	<b>DOT I.D. NO.</b> UN 2188
<b>CHEMICAL NAME AND SYNONYMS</b> Arsenic Hydride, Arsenic Trihydride, Hydrogen Arsenide	<b>DOT HAZARD CLASS</b> Division 2.3 (Poison Gas and Flammable Gas)
<b>ISSUE DATE AND REVISIONS</b> Revised August 2000	<b>FORMULA</b> AsH <sub>3</sub>

**HEALTH HAZARD DATA****EMERGENCY OVERVIEW**

Arsine is poisonous, flammable liquid and gas under pressure. It is a cancer suspect agent and may cause fatal if inhaled. It can result in severe damage to liver, kidney and other organ while symptoms may be delayed if very low concentrations are inhaled. It may form explosive mixtures with air.

**SYMPTOMS OF EXPOSURE**

Inhalation: Expected to cause general malaise, headache, nausea, vomiting, tightness in the chest and pain in the abdomen and loins. Pulse may become more rapid with normal blood pressure. Tingling of face and extremities may also occur. May be fatal if inhaled.

Skin Contact: Not expected to have adverse effects when it is at gas state at room temperature. Liquid contact may cause frostbite.

Eye Contact: Expected to cause frostbite only through liquid contact.

**TOXICOLOGICAL PROPERTIES**

Inhalation human TC<sub>LO</sub>: 3 Molar PPM. Arsine is extremely toxic which destroys the red blood cells. It is a powerful reducing agent which has a strong affinity for the hemoglobin in the blood. The most serious manifestation of Arsine poisoning is renal function impairment and possible complete shutdown. Permanent injury to CNS or fatal consequences are also well recognized.

**RECOMMENDED FIRSTAID TREATMENT**

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

Inhalation: Victim should be assisted to an uncontaminated area. Assisted respiration is required if breathing has stopped. Administer oxygen if breathing is labored and when assisted respiration is given. Keep the victim warm and quiet, and under medical observation.

Eye Contact: Flush contaminated eye(s) with water for minimum of 15 minutes.

Skin Contact: Avoid Breathing vapor if exposed to liquid. Wash clothing and shoes with warm water not exceeding 105°F.

**HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES**

None
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**PHYSICAL DATA**

<b>BOILING POINT</b> -62.48 °C	<b>CRITICAL TEMPERATURE</b> 99.9 ° C
<b>MOLAR SPECIFIC HEAT (25 oC, 1 bar abs, contact pressure)</b> N/A	<b>CRITICAL PRESSURE</b> N/A
<b>SOLUBILITY IN WATER</b> 0.064% by weight	<b>SPECIFIC VOLUME(21.1 oC, 1 bar abs)</b> 312.1 dm <sup>3</sup> /kg
<b>EVAPORATION RATE</b> N/A	<b>SPECIFIC GRAVITY (AIR=1)</b> 2.69 at 70°F
<b>APPEARANCE AND ODOR</b> Colorless gas with a garlic-like odor.	

**FIRE AND EXPLOSION HAZARD DATA**

<b>FLASHPOINT (Method used)</b> Gas	<b>EXTINGUISHING MEDIA</b> None	<b>FLAMMABLE LIMITS % BY VOLUME</b> LEL 5.8%      UEL 64%
<b>SPECIAL FIRE FIGHTING PROCEDURES</b> Stop the flow of gas and allow fire to burn itself out. The products of combustion are water arsenic trioxide (As <sub>2</sub> O <sub>3</sub> ). As <sub>2</sub> O <sub>3</sub> is less toxic than Arsine and it is safer to allow the fire to burn than to extinguish it. A water spray should be aimed at the “smoke” from an Arsine fire so as to “wash” the aerosol particles from the air and prevent them from being distributed.		
<b>UNUSUAL FIRE AND EXPLOSION HAZARDS</b> Ground water contamination with arsenic trioxide can occur if water spray is used to “wash” this aerosol from an arsenic fire. The cylinder can rupture under intense heat and / or flame.		

**REACTIVITY DATA**

<b>STABILITY</b>		<b>CONDITIONS TO AVOID</b> N/A
Unstable		
Stable	X	
<b>INCOMPATIBILITY (Materials to avoid)</b> Oxidants and Oxidizer agents		
<b>HAZARDOUS POLYMERIZATION</b>		<b>HAZARDOUS THERMAL DECOMPOSITION PRODUCTS</b> Arsenic, Arsenic Oxides and Hydrogen at about 232°C.
May Occur		
Will Not Occur	X	

**SPILL OR LEAK PROCEDURES**

<b>STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED</b> Evacuate all personnel from affected area. Use appropriate protective equipment. Purge piping with an inert gas prior to attempting repairs if leak is in user’s equipment. Contact HSG if leak is in container or container valve.
<b>WASTE DISPOSAL METHOD</b> Waste disposal must be in accordance with appropriate Federal, State, and local regulations. For emergency disposal assistance, contact HSG for specific advice.

**SPECIAL PROTECTION INFORMATION**

<b>RESPIRATORY PROTECTION (Specify type)</b> Positive pressure supplied air line respirator with full face mask ( except in IDLH atmospheres) or self-contained breathing apparatus should be available for emergency use.		
<b>MECHANICAL (Gen.)</b> N/A	<b>OTHER</b> N/A	<b>SPECIAL</b> N/A
<b>PROTECTIVE GLOVES</b> Latex or Neoprene.		
<b>EYE PROTECTION</b> Safety goggles or glasses are required and select in accordance with OSHA 29-CFR 1910.132 and 1910.133.		
<b>OTHER PROTECTIVE EQUIPMENT</b> Safety shoes, safety shower, eyewash “fountain”.		

**SPECIAL PRECAUTIONS\***

<b>SPECIAL LABELING INFORMATION</b> DOT Shipping Name: Arsine DOT Shipping Label: Poison Gas and Flammable Gas	DOT Hazard Class: Division 2.3 I.D. No.: UN 2188
<b>SPECIAL HANDLING RECOMMENDATIONS</b> Use only in well-ventilated areas. Valve protection caps must remain in place unless cylinder is secured with valve outlet piped to use point. 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 system. 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.	
<b>SPECIAL STORAGE RECOMMENDATIONS</b> Keep valve-output plug tightly installed. Store away from heat, sparks, and open flame. Store with adequate ventilation.	
<b>OTHER RECOMMENDATIONS OR PRECAUTIONS</b> Flammable and toxic gas. Continuous monitoring analytical system with alarm is recommended to install. Earth-ground and bond all lines and equipment associated with the Arsine system. Compressed gas cylinders should be refilled only by qualified producers of compressed gases. Make sure the electrical equipment is non-sparking or explosion proof.	

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