MATERIAL
SAFETY
DATA SHEET

PRODUCT NAME	CAS#
Arsine	7784-42-1
TRADE NAME AND SYNONYMS	**DOT I.D. NO.**
Arsine	UN 2188
CHEMICAL NAME AND SYNONYMS	**DOT HAZARD CLASS**
Arsenic Hydride, Arsenic Trihydride, Hydrogen Arsenide	Division 2.3 (Poison Gas and Flammable Gas)
ISSUE DATE AND REVISIONS	**FORMULA**
Revised August 2007	AsH_3

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_{LO}: 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 FIRST AID 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 ahs 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

PHYSICAL DATA

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

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	**EXTINGUISHING MEDIA**	**FLAMMABLE LIMITS % BY VOLUME**
Gas	None	LEL 5.8% UEL 64%

SPECIAL FIRE FIGHTING PROCEDURES

Stop the flow of gas and allow fire to burn itself out. The products of combustion are water arsenic trioxide (As_2O_3). As_2O_3 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.

UNUSUAL FIRE AND EXPLOSION HAZARDS

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

STABILITY		**CONDITIONS TO AVOID**
Unstable		N/A
Stable	X	

INCOMPATIBILITY (Materials to avoid)

Oxidants and Oxidizer agents

HAZARDOUS POLYMERIZATION		**HAZARDOUS THERMAL DECOMPOSITION PRODUCTS**
May Occur		Arsenic, Arsenic Oxides and Hydrogen at about 232°C.
Will Not Occur	X	

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

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.

WASTE DISPOSAL METHOD

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

RESPIRTORY PROTECTION (Specify type)

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.

MECHANICAL (Gen.)	OTHER	SPECIAL
N/A	N/A	N/A

PROTECTIVE GLOVES

Latex or Neoprene.

EYE PROTECTION

Safety goggles or glasses are required and select in accordance with OSHA 29-CFR 1910.132 and 1910.133.

OTHER PROTECTIVE EQUIPMENT

Safety shoes, safety shower, eyewash “fountain”.

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION

DOT Shipping Name: Arsine
DOT Shipping Label: Poison Gas and Flammable Gas
DOT Hazard Class: Division 2.3
I.D. No.: UN 2188

SPECIAL HANDLING RECOMMENDATIONS

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.

SPECIAL STORAGE RECOMMENDATIONS

Keep valve-output plug tightly installed. Store away from heat, sparks, and open flame. Store with adequate ventilation.

OTHER RECOMMENDATIONS OR PRECAUTIONS

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.