



MATERIAL SAFETY DATA SHEETS

46

Arsine

1. CHEMICAL IDENTITY

Chemical Name : Arsine

Chemical Classification: Toxic

Trade Name :

Synonyms: Arsenic hydride, Arsenic trihydride, Hydrogen arsenide, Arsenous hydride

Formula : AsH₃

CAS No: 7784-42-1

UN No: 2188

Regulated Identification

Shipping Name : Arsine

Hazchem Code : 2PE

Codes / Label : Class 2.3, Toxic

Hazardous Waste ID No :

HAZARDOUS INGREDIENTS	C.A.S. No.	HAZARDOUS INGREDIENTS	C.A.S. No.
1 Arsine	7784-42-1	3	
2		4	

2. PHYSICAL / CHEMICAL DATA

Boiling Pt. °C: -62.5

Physical State: Gas

Appearance: Colourless

Melting Pt °C: -111.2

Vapour Pressure @ 35°C mmHg: 11,000 mm Hg at 20 deg C

Odour: Disagreeable garlic odur.

Vapour Density(Air =1): 2.69

Solubility in water at 30°C @ 20 deg C. g/100ml: 28 mg/100 ml

Others: Soluble in benzene, chloroform.

Specific Gravity (Water =1): 3.186 g/l (gas)

pH : Neutral

3. FIRE / EXPLOSION HAZARD DATA

Flammability : Yes

LEL: 4.5

Flash Point °C in OC:

TDG Flammability: 2

UEL: 78

Flash Point °C in CC:

Autoignition Temperature °C :

Explosion sensitivity to impact: Moderately explosive

Explosion sensitivity to static Electricity:

Hazardous Combustion Products : When heated to decomposition, toxic fumes of As are released.

Hazardous Polymerization : Will not occur.

Combustible Liquid: No

Explosive Material: No

Corrosive Material No

Flammable Material: Yes

Oxidiser : No

Others:

Pyrophoric Material: No

Organic Peroxide : No

4. REACTIVITY DATA

Chemical Stability : Unstable on exposure to light

Incompatibility with other material : Chlorine, oxidising agents

Reactivity : Reacts explosively when mixed with chlorine or oxidising agents such as HNO₃

Hazardous : Toxic fumes of As

Reaction Products

5. HEALTH HAZARD DATA

Routes of entry: Inhalation, Ingestion, Skin & Eyes.

Effects of Exposure / Symptoms:

Overexposure to arsine results in massive hemolysis and associated acute renal failure. Chronic exposures lead to a hemolytic anaemia. The symptoms are persistent headache, nausea and vomiting, shortness of breath on exertion, puffiness of the jaw and eyelids, paresthesia and garlic-like odour in breath. Chronic overexposure could also produce symptoms : peripheral neuropathy, hyperkeratosis and hyperpigmentation of the skin, fatty degeneration of the heart and liver, CNS effects and peripheral vascular disease.

Emergency Treatment :

Inhalation: Move patient to fresh air. Monitor for respiratory distress. If cough or difficulty breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis. Administer oxygen and assist ventilation as required.

Skin: Remove contaminated clothing and wash exposed area thoroughly with soap and water. A physician should examine the area if irritation or pain persists.

Eyes: Irrigate exposed eyes with copious amounts of tepid water for at least 15 minutes. If irritation, pain, swelling, lacrimation, or photophobia persist, the patient should be seen in a health care facility.

Ingestion: Seek medical assistance.

LD50 (oral-rat) mg/kg:		STEL:	0.05 ppm
LC50 (rat) mg/kg:	0.67 mg/kg/2.4 min (Mouse)	Odour Threshold:	0.5 ppm (2 mg/m ³)
Permissible Exposure Limit:	0.05 ppm (0.2 mg/m ³)	TLV (ACGIH) :	0.05 ppm 0.2 mg/m ³

NFPA Hazard	Health	Flammability	Reactivity	Special
Signals	4	4	2	

6. PREVENTIVE MEASURES

Personal Protective Equipment : Wear appropriate protective gloves, clothing and goggles. Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

Handling : All chemicals should be considered hazardous. Avoid direct physical contact. Use appropriate, approved safety equipment. Untrained individuals should not handle this chemical or its container. Handling should occur in a chemical fume hood.

Storage : Store in a cool, dry, well-ventilated location away from ignition sources. Separate from oxidisers.

Precautions :

7. EMERGENCY / FIRST AID MEASURES

FIRE:

Fire Extinguishing Media : Carbon dioxide, foam, water

Special Procedure : Use water to keep the containers cool if there is fire near the containers for arsine.

Unusual Hazards : Vapours may travel to a source of ignition and flash back. Container may explode in heat of fire. When heated to decomposition, emits highly toxic fumes.

EXPOSURE: First Aid Measures:

Inhalation: Move patient to fresh air. Monitor for respiratory distress. If cough or difficulty

breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis. Administer oxygen and assist ventilation as required.

Skin: Remove contaminated clothing and wash exposed area thoroughly with soap and water. A physician should examine the area if irritation or pain persists.

Eyes: Irrigate exposed eyes with copious amounts of tepid water for at least 15 minutes. If irritation, pain, swelling, lacrimation, or photophobia persist, the patient should be seen in a health care facility.

Ingestion: Seek medical assistance.

Antidotes / Dosages: BAL (Dimercaprol) : To be given within 18 hours of acute exposure

SPILLS :

Steps To Be Taken : Stop flow of gas. Leaky cylinder is to be taken to a safe place and the leak is to be plugged or the gas is to be allowed to disperse.

Waste Disposal Method: Traces of arsine can be removed by absorbing in the solution of potassium permanganate or bromine water.

8. ADDITIONAL INFORMATION / REFERENCES

Shipped as a liquefied compressed gas.

9. MANUFACTURERS / SUPPLIERS DATA

NAME OF FIRM :	Contact person
MAILING ADDRESS :	in Emergency :
TELEPHONE / TELEX NOS :	Local Bodies involved :
TELEGRAPHIC ADDRESS :	Standard Packing :
OTHERS :	Trem Card Details / Ref :

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Total No. of Pages: 3