

INTERNATIONAL_GASES_AND_CHEMICALS_LTD

MATERIAL SAFETY DATA SHEETS

DATE: 9/30/97

SUPPLIER ADDRESS: SPEEDWELL RD
PARKHOUSE EAST
NEWCASTLE-U-LYME

EMERGENCY PHONE: (178) 256-5556
NUMBER

1. CHEMICAL PRODUCT

PRODUCT NAME: ARSINE

SYNONYMS: Arsenic trihydride, Hydrogen
arsenide

2. COMPOSITION, INFORMATION ON INGREDIENTS

Ingredient Name	Formula	CAS#	Concentration	Exposure Limits (PPM)			
				ACGIH TLV	OSHA PEL	MAC	Other STEL
ARSINE	ASH3	7784-42-1	99+%	0.05	0.05	0.05	NE

3. HAZARD IDENTIFICATION

*** EMERGENCY OVERVIEW ***

Poisonous, flammable liquid and gas under pressure.

Cancer suspect agent.

Causes severe, blood, liver, kidney and other organ damage.

Symptoms may be delayed.

May form explosive mixtures with air.

POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY: Inhalation , Skin

ACUTE EFFECTS: Arsine is an extremely toxic gas. Symptoms of exposure may be delayed up to 2 days. Arsine causes destruction of the red blood cells and severe injury to liver, kidney and central nervous system. Symptoms of exposure include nausea, vomiting, headache, tightness in the chest, pain in the abdomen and loins and tingling sensations in the extremities and face. Dark red urine may be noticed 4 to 6 hours after exposure and jaundice may be seen 24 to 48 hours after exposure. Bone marrow depression and peripheral neuropathies may also occur. Liquid may cause frostbite. Concentrations of 250 ppm for 30 minutes are fatal, and at 30 to 100 ppm can cause symptoms in just a few hours. ANY TYPE OF EXPOSURE TO ARSINE SHOULD BE TREATED AS A POTENTIALLY DANGEROUS DOSE AND FIRST AID PROCEDURE SHOULD BE EXERCISED EVEN IF SYMPTOMS ARE NOT EVIDENT.

CHRONIC EFFECTS: At low concentrations (less than 0.5 ppm) can cause jaundice, hemolytic anemia, and bronze discoloration of the skin.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: None known

OTHER EFFECTS OF OVEREXPOSURE: None

CARCINOGENICITY (US Only):

NTP - No

Continued ...

3. HAZARD IDENTIFICATION

IARC MONOGRAPHS - No
OSHA REGULATED - No

4. FIRST AID MEASURES

INHALATION: Immediately remove victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.

EYE CONTACT: Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes.

SKIN CONTACT: Immediately flush with copious amounts of water for at least 15 minutes while removing contaminated clothing.

INGESTION: None

IN EVENT OF EXPOSURE, CONSULT A PHYSICIAN

NOTE TO PHYSICIAN: Support cardiovascular and respiratory function. Ensure adequate hydration with alkaline solutions and diuretics. Test for arsenic via plasma hemoglobin, WBC count, urinary hemoglobin counts. Dietary intake of fish, shellfish, red wine, tobacco, and contaminated drinking water may contribute to urinary arsenic findings. Patients should avoid these items 48 to 72 hours prior to urine collection for chronic exposure determination. Check BUN, creatine clearance. Dimercaprol (BAL) is of no use because it does not protect against hemolysis. Preferred treatment is exchange transfusion to remove damaged RBC's and decrease the arsenic burden and if renal failure develops, hemodialysis. As a rough guide, perform replacement transfusion if serum hemoglobin reaches levels of 1.5 g/dL or if oliguria develops.

5. FIRE FIGHTING MEASURES

FLASH POINT: N/Av

AUTOIGNITION TEMPERATURE: N/Av

FLAMMABLE LIMITS: Vol.%

LOWER: 5.1

UPPER: 78

EXTINGUISHING MEDIA: For small fires, let burn unless leak can be stopped. For large fires, use water spray, fog, or regular foam.

SPECIAL FIRE FIGHTING INSTRUCTION AND EQUIPMENT: Wear self-contained breathing apparatus and full protective clothing. Keep fire exposed cylinders cool with water spray. If possible, stop the product flow.

HAZARDOUS COMBUSTION PRODUCTS: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: If cylinders are exposed to high temperatures, arsine will decompose rapidly to form arsenic and hydrogen. Pressure can build up rapidly to cause cylinder failure. Vapors may travel a considerable distance to the source of ignition and flash back.

6. ACCIDENTAL RELEASE MEASURES

CLEAN UP PROCEDURES: Evacuate and ventilate area. Remove leaking cylinder to exhaust hood or safe outdoor area. Shut off source if possible and remove source of heat.

SPECIALIZED EQUIPMENT: None

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING: Secure cylinder when using to protect from falling. Use suitable hand truck to move cylinders.

PRECAUTIONS TO BE TAKEN IN STORAGE: Store in well ventilated areas. Store away from heat, flame, and sparks. Keep valve protection cap on cylinders when not in use.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide adequate general and local exhaust ventilation to maintain concentrations below exposure and flammable limits.

PERSONAL PROTECTION

EYE/FACE PROTECTION: Safety glasses

SKIN PROTECTION: Impervious gloves, coveralls, boots, and/or other resistant protective clothing.

RESPIRATORY PROTECTION: In case of leakage, use self-contained breathing apparatus.

OTHER PROTECTIVE EQUIPMENT: Safety shoes when handling cylinders.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless
ODOR: Garlic like odor.
PHYSICAL STATE: Gas
VAPOR PRESSURE: @20 deg.C: 11000 mm Hg
VAPOR DENSITY (AIR=1): 2.69
BOILING POINT (C): -62
SOLUBILITY IN WATER: 20 cm³/100 cm³
SPECIFIC GRAVITY (H₂O=1): Gas
EVAPORATION RATE: Gas
ODOR THRESHOLD: 0.05 ppm

10. STABILITY AND REACTIVITY

STABILITY: Unstable.

CONDITIONS TO AVOID: Storage in poorly ventilated areas. Storage near a heat source. Avoid temperatures exceeding 300

deg. C.

MATERIALS TO AVOID: Oxidants such as oxygen and chlorine. Contact with brass and aluminum fittings should be avoided. Reacts violently with fluorine, chlorine, ammonia and nitric acid.

HAZARDOUS POLYMERIZATION: Will not occur.

HAZARDOUS DECOMPOSITION: Arsenic and hydrogen.

11. TOXICOLOGICAL INFORMATION

LETHAL CONCENTRATION (LC₅₀): 20 ppm, rat 1 hour.

LETHAL DOSE 50 (LD₅₀): N/Ap

TERATOGENICITY: N/Ap

REPRODUCTIVE EFFECTS: N/Ap

MUTAGENICITY: N/Ap

12. ECOLOGICAL INFORMATION

No adverse ecological effects are expected.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Dispose of non-refillable cylinders in accordance with federal, state and local regulations. Allow gas to vent slowly to atmosphere in an unconfined area or exhaust hood. If the cylinders are the refillable type, return cylinders to supplier with any valve outlet plugs or caps secured and valve protection caps in place. All system exhaust should be piped into a neutralizing solution such as aqueous solution of permanganate or iodine.

14. TRANSPORT INFORMATION

CONCENTRATION: 99+%

DOT DESCRIPTION (US ONLY):

PROPER SHIPPING NAME: Arsine

HAZARD CLASS: 2.3 (poison), Packing Group II

IDENTIFICATION NUMBER: UN2188

REPORTABLE QUANTITIES: 1 lb.

LABELING: POISON GAS, FLAMMABLE GAS

ADR/RID (EU Only): Class 2, 1tf

SPECIAL PRECAUTIONS: Cylinders should be
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transported in a secure upright position in a well ventilated truck.

15. REGULATORY INFORMATION

OSHA: Process Safety Management:
Materials are not listed in appendix A of 29 CFR 1910.119 as highly hazardous chemicals.

TSCA: Material is listed in TSCA inventory.

SARA: The threshold planning quantity for this material is 100 lbs.

EU NUMBER: 232-066-3

NUMBER IN ANNEX 1 OF DIR 67/548:
Material is listed in annex 1.

EU CLASSIFICATION: N/Av

R: 23/25

S: 1/2-20/21-28-44

16. OTHER INFORMATION

OTHER PRECAUTIONS: Protect containers from physical damage. Do not deface cylinders or labels. Cylinders should be refilled by qualified producers of compressed gas. Shipment of a compressed gas cylinder which has not been filled by the owner or with his written consent is a violation of federal law (49 CFR).

ABBREVIATIONS:

N/Ap - Not Applicable
N/Av - Not Available
SA - Simple Asphyxiant
NE - None Established

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