BOC GASES

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: ARSENIC TRIFLUORIDE

1. Chemical Product and Company Identification

BOC Gases,
Division of
The BOC Group, Inc.
575 Mountain Avenue
Murray Hill, NJ 07974

TELEPHONE NUMBER: (908) 464-8100
24-HOUR EMERGENCY TELEPHONE NUMBER:
CHEMTREC (800) 424-9300

BOC Gases
Division of
BOC Canada Limited
5975 Falbourne Street, Unit 2
Mississauga, Ontario L5R 3W6

TELEPHONE NUMBER: (905) 501-1700
24-HOUR EMERGENCY TELEPHONE NUMBER:
(905) 501-0802
EMERGENCY RESPONSE PLAN NO: 20101

PRODUCT NAME: ARSENIC TRIFLUORIDE
CHEMICAL NAME: Arsenic Trifluoride
COMMON NAMES/SYNONYMS: Not Available
TDG (Canada) CLASSIFICATION: 6.1 (9.2)
WHMIS CLASSIFICATION: D1A, D2A, D2B

PREPARED BY: Loss Control (908)464-8100/(905)501-1700
PREPARATION DATE: 6/1/95
REVIEW DATES: 6/7/96

2. Composition, Information on Ingredients

INGREDIENT	% VOLUME	PEL-OSHA[1]	TLV-ACGIH[2]	LD_{50} or LC_{50} Route/Species
Arsenic Trifluoride FORMULA: AsF_3 CAS: 7784-35-2 RTECS #: CG5775000	100	0.01 mg/m^3 TWA as As 2.5 mg/m^3 TWA as F	0.01 mg/m^3 TWA, A1 as As 2.5 mg/m^3 TWA as F	Not Available

[1] As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

[2] As stated in the ACGIH 1994-95 Threshold Limit Values for Chemical Substances and Physical Agents

3. Hazards Identification

EMERGENCY OVERVIEW

Severely irritating to the eyes, mucous membranes and skin. Inhalation may cause digestive system disorders and liver toxicity. Certain arsenic compounds are recognized cancer-causing agents. Forms hydrofluoric acid on contact with moisture. Nonflammable.

ROUTE OF ENTRY:

Skin Contact	Skin Absorption	Eye Contact	Inhalation	Ingestion
Yes	No	Yes	Yes	Yes

HEALTH EFFECTS:

Exposure Limits	Irritant	Sensitization
No	Yes	No
Teratogen	+Reproductive Hazard	Mutagen
No	No	No
Synergistic Effects None Reported		

Carcinogenicity: -- NTP: Yes IARC: Yes OSHA: Yes

EYE EFFECTS:
Contact with the eyes causes severe irritation or burns. Burns are progressive while any unneutralized fluoride ions remain

SKIN EFFECTS:
Contact with skin causes severe irritation or burns. Certain inorganic arsenic compounds have been associated with a carcinogenic response to skin in animals and humans. Burns are progressive while any unneutralized fluoride ions remain

INGESTION EFFECTS:
Ingestion causes weakness and irritation of the mouth and stomach. An overdose can cause arsenic poisoning, although symptoms may be delayed.

INHALATION EFFECTS:
Inhalation causes irritation of the nose and throat. Symptoms include irritation, redness, and pain. Arsenic poisoning may occur from excessive exposure.

Chronic exposure to fluorides may cause fluorosis, a degenerative condition of bone tissue.

There is sufficient evidence that certain inorganic arsenic compounds are carcinogenic, although arsenic trifluoride, as such has not been shown to be a carcinogen.

NFPA HAZARD CODES	**HMIS HAZARD CODES**	**RATINGS SYSTEM**
Health: 3	Health: 3	0 = No Hazard
Flammability: 0	Flammability: 0	1 = Slight Hazard
Reactivity: 1	Reactivity: 1	2 = Moderate Hazard
		3 = Serious Hazard
		4 = Severe Hazard

4. First Aid Measures

EYES:
PERSONS WITH POTENTIAL EXPOSURE TO ARSENIC TRIFLUORIDE 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 30 minutes.
SKIN:

Remove contaminated clothing as rapidly as possible. Flush affected skin with plenty of water and mild soap. Seek immediate medical attention. Flush affected area with copious quantities of water. Remove affected clothing as rapidly as possible. Dermal burns may be treated with calcium gluconate gel or slurry in water or glycerine. This compound binds the active fluoride in an insoluble form and limits burn extension and relieves pain. Treat systemic poisoning similar to inhalation.

INGESTION:
Treat systemic poisoning similar to inhalation. Call a physician or Poison Control Center at once.

INHALATION:
PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO ARSENIC TRIFLUORIDE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF CONTAINED BREATHING APPARATUS. Regard anyone exposed to arsenic trifluoride as having 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 physician of the possible cause of the problem and that he must promptly inform himself (if not familiar with arsenic poisoning) of the toxic properties of this powerful hemolytic agent.

5. Fire Fighting Measures

Conditions of Flammability: Nonflammable		
Flash point: None	Method: Not Applicable	Autoignition Temperature: None
LEL(%): None	UEL(%): None	
Hazardous combustion products: None		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: None		

FIRE AND EXPLOSION HAZARDS:
None.

EXTINGUISHING MEDIA:
Do not use water on adjacent fires, which will form irritating and toxic vapors of hydrogen fluoride. Use CO_2 or dry chemical or other inert gas.

FIRE FIGHTING INSTRUCTIONS:
Wear self-contained breathing apparatus and full protective gear. Special personnel decontamination procedures are required. Consult HAZMAT specialist.

6. Accidental Release Measures

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest BOC location. Collect and place in a sealed, labeled container for disposal.

7. Handling and Storage

Use only in well-ventilated areas. Valve protection caps must remain in place unless container 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 (<500 psig) 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. 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 temperature where cylinders are stored to exceed 125 ^{o}F (52 ^{o}C). Cylinders should 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.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

8. Exposure Controls, Personal Protection

EXPOSURE LIMITS[1]:

INGREDIENT	% VOLUME	PEL-OSHA[2]	TLV-ACGIH[3]	LD_{50} or LC_{50} Route/Species
Arsenic Trifluoride FORMULA: AsF_3 CAS: 7784-35-2 RTECS #: CG5775000	100	0.01 mg/m^3 TWA as As 2.5 mg/m^3 TWA as F	0.01 mg/m^3 TWA, A1 as As 2.5 mg/m^3 TWA as F	Not Available

[1] Refer to individual state of provincial regulations, as applicable, for limits which may be more stringent than those listed here.
[2] As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)
[3] As stated in the ACGIH 1994-1995 Threshold Limit Values for Chemical Substances and Physical Agents.

ENGINEERING CONTROLS:
Use local exhaust ventilation to reduce concentrations to within current exposure limits. A laboratory type hood is suitable for handling small or limited quantities.

EYE/FACE PROTECTION:
Safety goggles or glasses, plus a face shield.

SKIN PROTECTION:
Rubber protective gloves. Consult manufacturers data for applicability.

RESPIRATORY PROTECTION:
An airline respirator with full face piece equipped with an escape bottle or a self-contained breathing apparatus should be available for emergency use. Operate this equipment in the positive pressure demand mode, PPD!

OTHER/GENERAL PROTECTION:
Protective clothing to prevent contact.

9. Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Liquid	
Vapor pressure at 70 ^{o}F	: 4	psia
Vapor density (Air = 1)	: Not Available	
Evaporation point	: Not Available	
Boiling point	: 145	^{o}F
	: 63	^{o}C
Freezing point	: 16.7	^{o}F
	: -8.5	^{o}C
pH	: Not Available	
Specific gravity (Water = 1.0)	: 2.666	
Oil/water partition coefficient	: Not Available	
Solubility (H20)	: Decomposes	
Odor threshold	: Not Available	
Odor and appearance	: An oily liquid with an acrid odor emitting fumes in moist air.	

10. Stability and Reactivity

STABILITY:
Unstable when heated.

INCOMPATIBLE MATERIALS:
Water

HAZARDOUS DECOMPOSITION PRODUCTS:
Hydrogen Fluoride, other fluorides, arsenic oxides.

HAZARDOUS POLYMERIZATION:
Will not occur.

11. Toxicological Information

MUTAGENIC:
A number of laboratory studies have reported mutagenic effects from this chemical.

TUMORIGENIC:
"Arsenic and Certain Arsenic Compounds" are listed on the National Toxicology Program Fourth Annual Report on Carcinogens and IARC Group 1A Carcinogens list, although arsenic trifluoride is not specifically listed as a carcinogen.

OTHER:
Chronic exposure to arsenic compounds commonly results in skin abnormalities including itching, pigmentation changes and sometimes cancerous lesions. Disturbances of the blood, kidneys and nervous system may also result.

12. Ecological Information

No data given.

13. Disposal Considerations

Dispose of in accordance with federal, state, and local regulations.

14. Transport Information

PARAMETER	United States DOT	Canada TDG
PROPER SHIPPING NAME:	Arsenic compounds, liquid, n.o.s. (arsenic trifluoride)	Arsenic compounds, liquid, n.o.s. (arsenic trifluoride)
HAZARD CLASS:	6.1	6.1 (9.2)
IDENTIFICATION NUMBER:	UN 1556	UN 1556
SHIPPING LABEL:	POISON	POISON

Packing Group: I

15. Regulatory Information

SARA TITLE III NOTIFICATIONS AND INFORMATION

SARA TITLE III - HAZARD CLASSES:
Acute Health Hazard
Chronic Health Hazard
Sudden Release of Pressure Hazard

SARA TITLE III-SECTION 313 SUPPLIER NOTIFICATION:
This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and 40 CFR 372:

CAS NUMBER	INGREDIENT NAME	PERCENT BY VOLUME
7784-35-2	Arsenic trifluoride	100.00

Arsenic trifluoride is included under the broad category of arsenic compounds. This information must be included on all MSDSs that are copied and distributed for this material.

Releases of arsenic trifluoride are subject to reporting to the National Response Center under CERCLA, Section 304 SARA Title III under the broad class of arsenic compounds.

16. Other Information

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

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