

Bromine

SECTION 1. IDENTIFICATION

Product Identifier	Bromine
Other Means of Identification	Molecular bromine, Dibromine, Diatomic bromide
Product Code(s)	BR2120
Product Family	Inorganic Solid
Recommended Use	Laboratory and industrial use.
Restrictions on Use	None known.
Supplier Identifier	Alphachem Limited, 2485 Milltower Court, Mississauga, Ontario, L5N 5Z6, (905) 821-2995
Emergency Phone No.	CANUTEC CANADA, 613-996-6666, 24 Hours
SDS No.	0902

SECTION 2. HAZARD IDENTIFICATION

Classified according to Canada's Hazardous Products Regulations (WHMIS 2015) and the US Hazard Communication Standard (HCS 2012).

Classification

Acute toxicity (Inhalation) - Category 2; Skin corrosion - Category 1A

Label Elements



Signal Word:

Danger

Fatal if inhaled.

Causes severe skin burns and eye damage.

Precautionary Statement(s):

Wear protective gloves/protective clothing/eye protection/face protection.

Wear respiratory protection.

Avoid release to the environment.

Response:

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

If exposed: Call a POISON CENTRE or doctor.

Other Hazards

Very toxic to aquatic life.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

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Substance:

Chemical Name	CAS No.	%	Other Identifiers
Bromine	7726-95-6	> 99	Molecular bromine, Dibromine, Diatomic bromide

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Immediately call a Poison Centre or doctor. Move to fresh air. Keep at rest in a position comfortable for breathing. If breathing is difficult, trained personnel should administer emergency oxygen if advised to do so by Poison Centre or doctor.

Skin Contact

Immediately wash gently and thoroughly with lukewarm, gently flowing water and mild soap for 15-20 minutes. If skin irritation occurs, get medical advice or attention.

Eye Contact

Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. Immediately call a Poison Centre or doctor.

Ingestion

Immediately call a Poison Centre or doctor. Rinse mouth with water. Do not induce vomiting.

First-aid Comments

All first aid procedures should be periodically reviewed by a doctor familiar with the material and its condition of use in the workplace. If exposed or concerned, get medical advice or attention.

Most Important Symptoms and Effects, Acute and Delayed

None known.

Immediate Medical Attention and Special Treatment

Special Instructions

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Not combustible. Use extinguishing agent suitable for surrounding fire. Use water to keep non-leaking, fire-exposed containers cool.

Unsuitable Extinguishing Media

None known.

Specific Hazards Arising from the Product

Heating increases the release of toxic vapour.

Corrosive hydrogen bromide; corrosive sulfur oxides.

Special Protective Equipment and Precautions for Fire-fighters

Use extreme caution. Evacuate area. Approach fire from upwind to avoid hazardous vapours or gases. Fight fire from a safe distance or a protected location. Knock down vapours or gases with water fog or fine water spray. For a massive fire, immediately evacuate the area and use unmanned hose holder or monitor nozzles.

Chemical protective clothing (e.g. chemical splash suit) and positive pressure SCBA may be necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Use the personal protective equipment recommended in Section 8 of this safety data sheet. Evacuate the area

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immediately. Isolate the hazard area. Keep out unnecessary and unprotected personnel. Increase ventilation to area or move leaking container to a well-ventilated and secure area. Remove or isolate incompatible materials as well as other hazardous materials.

Environmental Precautions

Do not allow into any sewer, on the ground or into any waterway.

Methods and Materials for Containment and Cleaning Up

Use non-combustible absorbent materials such as vermiculite, earth or sand to contain spilled product. Collect using shovel/scoop or approved HEPA vacuum and place in a suitable container for disposal. Cautiously dilute and neutralize with lime or soda ash. Place used absorbent into suitable, covered, labelled containers for disposal.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Wear personal protective equipment to avoid direct contact with this chemical. Avoid breathing in this product. Avoid generating vapours or mists. Only use where there is adequate ventilation. Immediately report leaks, spills or failures of the safety equipment (e.g. ventilation system). Eliminate heat and ignition sources such as sparks, open flames, hot surfaces and static discharge. Post "No Smoking" signs. Prevent accidental contact with incompatible chemicals. Never add water to a corrosive. Always add corrosives slowly to COLD water. If product is transferred to another container, ensure new container is suitable for the product. Never reuse empty containers, even if they appear to be clean. Keep containers tightly closed when not in use or empty.

Conditions for Safe Storage

Store in an area that is: cool, dry, well-ventilated, out of direct sunlight and away from heat and ignition sources, separate from incompatible materials (see Section 10: Stability and Reactivity), clear of combustible and flammable materials (e.g. old rags, cardboard). Protect from conditions listed in Conditions to Avoid in Section 10 (Stability and Reactivity). Keep amount in storage to a minimum. Store in the original, labelled, shipping container.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Chemical Name	ACGIH TLV®		OSHA PEL		AIHA WEEL	
	TWA	STEL	TWA	Ceiling	8-hr TWA	TWA
Bromine	0.1 ppm	0.2 ppm	0.1 ppm			

Appropriate Engineering Controls

Use local exhaust ventilation and enclosure, if necessary, to control amount in the air.

Individual Protection Measures

Eye/Face Protection

Wear chemical safety goggles and face shield when contact is possible.

Skin Protection

Wear chemical protective clothing e.g. gloves, aprons, boots.

Suitable materials are: Viton®, Trelchem® HPS, Trelchem® VPS.

The following materials should NOT be used: butyl rubber, natural rubber, neoprene rubber, nitrile rubber, polyvinyl alcohol, polyvinyl chloride, Viton®/butyl rubber, Tychem® BR/LV, Tychem® Responder, Tychem® TK.

Respiratory Protection

Wear a powered air-purifying respirator with an appropriate cartridge.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Dark red - brown fuming liquid. Lachrymator (causes tearing of the eyes).
Odour	Suffocating
Odour Threshold	< 0.0099 ppm
pH	Not available
Melting Point/Freezing Point	-7.75 °C (18.05 °F) (melting); -7.75 °C (18.05 °F) (freezing)

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Initial Boiling Point/Range	58.8 °C (137.8 °F)
Flash Point	Not applicable
Evaporation Rate	Not available
Flammability (solid, gas)	Not applicable
Upper/Lower Flammability or Explosive Limit	Not applicable (upper); Not applicable (lower)
Vapour Pressure	172 mm Hg (23 kPa) at 20 °C
Vapour Density (air = 1)	5.5
Relative Density (water = 1)	3.11 at 20 °C
Solubility	Moderately soluble in water; Soluble in all proportions in common organic solvents.
Partition Coefficient, n-Octanol/Water (Log Kow)	Not available
Auto-ignition Temperature	Not applicable
Decomposition Temperature	Not available
Viscosity	Not available (kinematic); Not available (dynamic)
Other Information	
Physical State	Liquid
Molecular Weight	159.808

SECTION 10. STABILITY AND REACTIVITY

Reactivity

None known.

Chemical Stability

Normally stable.

Possibility of Hazardous Reactions

Hazardous polymerization does not occur.

Conditions to Avoid

High temperatures. Open flames, sparks, static discharge, heat and other ignition sources. Moisture incompatible materials.

Incompatible Materials

Reducing agents (e.g. hydroquinone), aldehydes (e.g. acetaldehyde), ammonia, alcohols (e.g. ethanol), metals (e.g. aluminum), alkali metals, ozone, rubber.

Hazardous Decomposition Products

Corrosive hydrogen bromide.

SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Inhalation; skin contact; eye contact; ingestion.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Bromine	155 ppm (mouse) (4-hour exposure)	2600 mg/kg (rat)	Not available

Skin Corrosion/Irritation

Causes severe burns.

Serious Eye Damage/Irritation

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Causes serious eye damage based on skin corrosion information.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

Causes severe nose and throat irritation.

Ingestion

No information was located.

Aspiration Hazard

No information was located.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

No information was located.

Respiratory and/or Skin Sensitization

Not a respiratory sensitizer. Not a skin sensitizer.

Carcinogenicity

Chemical Name	IARC	ACGIH®	NTP	OSHA
Bromine	Not Listed	Not designated	Not Listed	Not Listed

Reproductive Toxicity

Development of Offspring

No information was located.

Sexual Function and Fertility

No information was located.

Effects on or via Lactation

No information was located.

Germ Cell Mutagenicity

No information was located.

Interactive Effects

No information was located.

SECTION 12. ECOLOGICAL INFORMATION

This section is not required by WHMIS. This section is not required by OSHA HCS 2012.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

Contact local environmental authorities for approved disposal or recycling methods in your jurisdiction. Burn in an approved incinerator according to federal, provincial/state, and local regulations.

SECTION 14. TRANSPORT INFORMATION

Regulation	UN No.	Proper Shipping Name	Transport Hazard Class(es)	Packing Group
US DOT	UN1744	Bromine	8, 6.1	I
Canadian TDG	UN1744	Bromine; or Bromine Solution	8, 6.1	I

Special Precautions Not applicable

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15. REGULATORY INFORMATION

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Safety, Health and Environmental Regulations

Canada

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

Listed on the DSL.

USA

Toxic Substances Control Act (TSCA) Section 8(b)

Listed on the TSCA Inventory.

SECTION 16. OTHER INFORMATION

NFPA Rating	Health - 3	Flammability - 0	Instability - 0
	Special Hazard - Oxidizing		
SDS Prepared By	Alphachem Limited		
Phone No.	(905)-821-2995		
Date of Preparation	February 08, 2017		
Date of Last Revision	February 22, 2017		
References	CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS). Seastar Chemicals Inc database.		
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