

# SAFETY DATA SHEET

## SECTION 1 IDENTIFICATION OF THE SUBSTANCE

**1.1 Identification of the substance:** BROMINE

**Chemical formula:** Br<sub>2</sub>

**Chemical family:** Halogens

**1.2 Use of the substance:** Manufacture of pesticide, fumigants, biocides, sanitizers, oilfield chemicals, pharmaceuticals, flame retardants, dyes, scavengers for lead anti-knock compounds, organic and inorganic compounds, halogenated rubber, chemical intermediates. Analytical reagent.

## SECTION 2 HAZARDS IDENTIFICATION

### *Human health effects*

Very toxic by inhalation

Causes severe burns

Liquid bromine rapidly attacks the skin and other tissues, producing burns, which heal very slowly.

Lachrymatory

Vapour severely irritating to respiratory system, skin and eyes

### *Environmental effects*

Very toxic to aquatic organisms

## SECTION 3 COMPOSITION

Chemical Name: BROMINE

Concentration: >99.8%

CAS No: 7726-95-6

EINECS number: 231-778-1

Annex I number: 035-001-00-5

Symbols and Risk Phrases: T+: R26  
C: R35  
N: R50

## SECTION 4 FIRST AID MEASURES

NO DECONTAMINANTS OTHER THAN WATER SHOULD BE USED ON HUMANS

### *Contact with skin*

- Immediately flush/wash affected area with plenty of water while removing all contaminated clothing and shoes. Continue flushing area for at least 30 minutes.
- Seek immediate medical attention.
- Contaminated clothing and footwear should be discarded.

### *Contact with eyes*

- Immediately flush/wash out with plenty of water for at least 30 minutes, and
- Seek immediate medical attention.

### ***Inhalation***

- Remove patient to fresh air.
- Keep them quiet and warm
- Apply artificial respiration only if patient is not breathing.
- Avoid mouth to mouth resuscitation. Use alternate methods: bottled air, bottled oxygen or a compressed air driven apparatus.
- Pursue immediate medical attention.

### ***Ingestion***

- Do not induce vomiting.
- Continually rinse mouth with water (DO NOT SWALLOW rinse water).
- Never give anything by mouth to an unconscious person.
- Obtain immediate medical attention.

### ***General***

- NOTE TO PHYSICIANS:
- Rescuers should take suitable precautions to avoid becoming casualties themselves.
- Corrosive to tissue
- No specific antidote, treat symptomatically and supportively.

## **SECTION 5 FIRE-FIGHTING MEASURES**

- Not flammable but can cause oxidizable materials to catch fire
- Use extinguishable media appropriate to surrounding conditions.
- Use water spray to keep containers cool, knock down combustion vapours and extinguish fire.
- Do not use water jet.
- Portable containers should be moved if possible and without risk.
- Wear gas-tight Chemical Protection Suit and Positive-Pressure Breathing Apparatus.

## **SECTION 6 ACCIDENTAL RELEASE MEASURES**

### ***Personal precautions***

Evacuate the area and keep personnel upwind.

Full protective clothing, including self-contained breathing apparatus, must be used. – see Section 8.

### ***Environmental precautions***

Dike for recovery or absorb liquid with sand, earth or other non-reactive material.

Covering the surface of spilled bromine with plastic sheeting or chemical foam can minimise vapour release.

Neutralise liquid bromine with slaked lime, lime water slurry or soda ash.

Knock down vapour cloud with water spray (not jets), however, note that excessive use of water can complicate spill situations.

### ***Methods for cleaning up***

Consult an expert.

Do not allow to enter public sewers and watercourses.

Where possible, contain spill control run-off.

## **SECTION 7 HANDLING AND STORAGE**

### ***Handling:***

Avoid breathing vapours and any other bodily contact.

Keep above minus 6.7°C to prevent freezing.

All personnel handling bromine should be fully trained and provided with suitable protective clothing.

Enclosed systems should be used for processes involving bromine.

Pipework and tanks should be checked regularly for leaks.

In laboratories, bromine containers should be kept closed and only handled in fume cupboards or under extraction hoods.

Warm containers should be allowed to cool to room temperature before they are opened.

Before transferring bromine between containers, a check should be made that the receiving container has room for it.

### ***Storage:***



<b>Relative density of liquid:</b>	3.1 @ 20°C
<b>Flammability:</b>	Not flammable
<b>Oxidising properties:</b>	Strong oxidising agent
<b>Solubility:</b>	Bromine in water: 35g/L @ 20°C Water in bromine: 34g/L @ 20°C

**SECTION 10      STABILITY AND REACTIVITY**

<b>10.1</b>	<b>Conditions to avoid:</b>	Extreme temperatures.
<b>10.2</b>	<b>Materials to avoid:</b>	Contact with combustible materials may cause fire. Bromine is a very reactive substance, for example in the presence of water reacts vigorously with phenols, amines, hydrocarbons, organic acids and aromatic and aliphatic ketones,. Dry bromine reacts violently with many metals, notably aluminium, titanium, mercury and potassium and with phosphorus.
<b>10.3</b>	<b>Hazardous composition products:</b>	Stable under normal conditions. Hazardous polymerisation will not occur.

**SECTION 11      TOXICOLOGICAL INFORMATION**

**DATA**

Inhalation LC<sub>50</sub>, mouse      750ppm/9min

**EFFECTS**

Ocular	Corrosive - Causes severe burns. Vapours severely irritant to eyes. Lachrymatory (effect occurs at levels down to less than 1 ppm). Symptoms include redness, pain and blurred vision.
Dermal	Corrosive - Causes severe burns. Vapours severely irritant to skin. Symptoms include redness, pain and oedema
Inhalation	Very toxic by inhalation, may be fatal. Corrosive to respiratory tissue Vapour severely irritant to the respiratory tract. Symptoms include sore throat, dizziness, headache, nose bleed, coughing, abdominal pain and sometimes a rash. Liquid or concentrated bromine vapours may cause severe burns that ulcerate and are slow to heal
Ingestion	Very toxic by ingestion, may be fatal Corrosive to tissues of the mouth and alimentary canal.

**CARCINOGENITY**

NTP: Not included in the 11<sup>th</sup> report on carcinogens.  
IARC Category: None

**SECTION 12      ECOLOGICAL INFORMATION**

<b>12.1</b>	<b>Ecotoxicity:</b>	Very toxic to aquatic organisms
<b>12.2</b>	<b>Mobility:</b>	Sinks in water. Large volumes may penetrate soil and contaminate ground water.
<b>12.3</b>	<b>Persistence and degradability:</b>	Because of its high reactivity Br <sub>2</sub> readily photodegrades in presence of water and sunlight.
<b>12.4</b>	<b>Bioaccumulative potential:</b>	Not relevant.

12.5 **Other adverse effects:** Not available.

**SECTION 13 DISPOSAL CONSIDERATION**

Disposal can be a hazardous operation; seek specialist advice.  
Dilute and neutralise before transferring to an approved disposal facility.  
Disposal should be in accordance with local, state or national legislation.

**SECTION 14 TRANSPORT INFORMATION**

**ROAD/RAIL (ADR/RID):**

UN no. : 1744  
Proper Shipping Name: Bromine  
Class: 8  
Classification code: CT1  
Packing group: I  
Labels: 8 + 6.1  
Hazard Ident. No. 886  
CEFIC Tremcard: 80S1744

**SEA (IMDG):**

UN no. : 1744  
Proper Shipping Name: Bromine  
Class: 8  
Subsidiary risk: 6.1  
Packing group: I  
Marine pollutant: no  
EmS: F-A, S-B

**AIR (ICAO/IATA):**

Forbidden for air transport

**SECTION 15 REGULATORY INFORMATION**

**EC Label: 231-778-1**



T+



C



M

**Risk Phrase(s)**

R26 Very toxic by inhalation.  
R 35 Causes severe burns.  
R 50 Very toxic to aquatic organisms.

**Safety Phrase(s)**

S7/9 Keep container tightly closed and in a well ventilated place.  
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).  
S61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

**Other:** Water Hazard Class (WGK) 2

Classified in accordance with Directive 67/548/ECC as amended.  
Compiled in accordance with Commission Directive 2001/58/EC.