SECTION 1: Identification

1.1 GHS Product identifier

Product name Bromine chloride

1.2 Other means of identification

Product number -
Other names Caswell No. 112AA;BrCl;Bromine chloride (BrCl)

1.3 Recommended use of the chemical and restrictions on use

Identified uses Industrial and scientific research uses.
Uses advised against no data available

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Skin corrosion, Sub-category 1A
Acute toxicity - Category 4, Inhalation

2.2 GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger
Hazard statement(s) H314 Causes severe skin burns and eye damage
H332 Harmful if inhaled

Precautionary statement(s)
Prevention
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash ... thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
Response
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P363 Wash contaminated clothing before reuse.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P316 Get emergency medical help immediately.
P321 Specific treatment (see ... on this label).
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P317 Get medical help.
Storage
P405 Store locked up.
Disposal
P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Bromine chloride	Bromine chloride	13863-41-7	237-601-4	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Half-upright position. Refer immediately for medical attention. Artificial respiration may be needed. See Notes.

Following skin contact

First rinse with plenty of water for at least 15 minutes, then remove contaminated clothes and rinse again. Refer immediately for medical attention.

Following eye contact

Rinse with plenty of water (remove contact lenses if easily possible). Refer immediately for medical attention.

Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

4.2 Most important symptoms/effects, acute and delayed

Excerpt from ERG Guide 124 [Gases - Toxic and/or Corrosive - Oxidizing]: TOXIC; may be fatal if inhaled or absorbed through skin. Fire will produce irritating, corrosive and/or toxic gases. Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite. Runoff from fire control may cause pollution. (ERG, 2016)

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Bromine, methyl bromide, and related compounds

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

If material involved in fire: extinguish fire using agent suitable for type of surrounding fire (material itself does not burn or burns with difficulty). Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Do not use water on material itself. Keep run-off water out of sewers and water sources. Do not apply water to point of leak in tank car or container.

5.2 Specific hazards arising from the chemical

Excerpt from ERG Guide 124 [Gases - Toxic and/or Corrosive - Oxidizing]: Substance does not burn but will support combustion. Vapors from liquefied gas are initially heavier than air and spread along ground. These are strong oxidizers and will react vigorously or explosively with many materials including fuels. May ignite combustibles (wood, paper, oil, clothing, etc.). Some will react violently with air, moist air and/or water. Cylinders exposed to fire may vent and release toxic and/or corrosive gas through pressure relief devices. Containers may explode when heated. Ruptured cylinders may rocket. (ERG, 2016)

5.3 Special protective actions for fire-fighters

In case of fire in the surroundings, use appropriate extinguishing media. In case of fire: keep cylinder cool by spraying with water. NO direct contact with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Personal protection: gas-tight chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Ventilation. Remove gas with fine water spray. Shut off cylinder if possible. Isolate the area until the gas has dispersed. NEVER direct water jet on liquid.

6.2 Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: gas-tight chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Ventilation. Remove gas with fine water spray. Shut off cylinder if possible. Isolate the area until the gas has dispersed. NEVER direct water jet on liquid.

6.3 Methods and materials for containment and cleaning up

Evacuate danger area! Consult an expert! Personal protection: gas-tight chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Ventilation. Remove gas with fine water spray. Shut off cylinder if possible. Isolate the area until the gas has dispersed. NEVER direct water jet on liquid.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

NO contact with flammables. NO contact with incompatible substances. See Chemical Dangers. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2 Conditions for safe storage, including any incompatibilities

Fireproof if in building. Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs. See Chemical Dangers. Cool. Dry. Keep in a well-ventilated room. Store in an area without drain or sewer access.Fireproof if in building. Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs ... Cool. Dry. Keep in a well-ventilated room. Store in an area without drain or sewer access.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

no data available

Biological limit values

no data available

8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear face shield or eye protection in combination with breathing protection.

Skin protection

Cold-insulating gloves. Protective clothing.

Respiratory protection

Use breathing protection. Use closed system and ventilation.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Bromine chloride is a reddish-yellow mobile liquid with an irritating odor. Toxic by ingestion or inhalation, and an irritant to skin, eyes and mucous membranes. Prolonged exposure of the containers to intense heat may result in their violent rupturing and rocketing. Used as an industrial disinfectant.
Colour	Dark red liquid (<5 deg C)
Odour	no data available
Melting point/freezing point	-66ÂºC
Boiling point or initial boiling point and boiling range	88.8 Â°C
Flammability	Not combustible but enhances combustion of other substances. Many reactions may cause fire or explosion. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit	no data available
Flash point	62 Â°F
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	Soluble in ethanol and carbon disulfide
Partition coefficient n-octanol/water	no data available
Vapour pressure	47 mm Hg (20 Â°C)
Density and/or relative density	2.172g/cm3
Relative vapour density	3.5 (vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Unstable substance. Decomposes partly at room temperature to chlorine and bromine. Decomposes on contact with moisture. This produces toxic gases including chlorine (see ICSC 0126) and bromine (see ICSC 0107). The substance is a strong oxidant. It reacts violently with combustible and reducing materials.

10.2 Chemical stability

no data available

10.3 Possibility of hazardous reactions

Noncombustible, but is an oxidizer which may react with combustible materials and generate enough heat to start and support combustion.BROMINE CHLORIDE is a strong oxidizing agent. May react vigorously with combustible materials and generate enough heat to start and support combustion. Decomposes above 50Â° F to produce highly toxic chlorine gas.

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

The substance is a strong oxidant and reacts violenty with combustible and reducing materials.

10.6 Hazardous decomposition products

Decomposes partly at room temperature to chlorine and bromine. The substance decomposes on contact with moisture producing toxic gases including chlorine and bromine.

SECTION 11: Toxicological information

Acute toxicity

- Oral: no data available
- Inhalation: no data available
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

Lachrymation. The substance is corrosive to the eyes, skin and respiratory tract. Inhalation may cause asthma-like reactions. Inhalation may cause pneumonitis. Inhalation may cause lung oedema, but only after initial corrosive effects on eyes and/or airways have become manifest. See Notes. Exposure could cause death.

STOT-repeated exposure

The substance may have effects on the respiratory tract and lungs. This may result in chronic inflammation and impaired functions.

Aspiration hazard

On loss of containment, a harmful concentration of this gas in the air will be reached very quickly, especially in confined spaces.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50; Species: Lepomis macrochirus (Bluegill sunfish); Concentration: 0.52 ppm for 96 hr; Conditions: static
- Toxicity to daphnia and other aquatic invertebrates: LC50; Species: Daphnia magna (Water flea); Concentration: 1.07 ppm for 48 hr; Conditions; static
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

no data available

12.4 Mobility in soil

no data available

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1 UN Number

ADR/RID: UN2901 (For reference only, please check.) IMDG: UN2901 (For reference only, please check.) IATA: UN2901 (For reference only, please check.)

14.2 UN Proper Shipping Name

ADR/RID: BROMINE CHLORIDE (For reference only, please check.) IMDG: BROMINE CHLORIDE (For reference only, please check.) IATA: BROMINE CHLORIDE (For reference only, please check.)

14.3 Transport hazard class(es)

ADR/RID: 2.3 (For reference only, please check.) IMDG: 2.3 (For reference only, please check.) IATA: 2.3 (For reference only, please check.)

14.4 Packing group, if applicable

ADR/RID: (For reference only, please check.) IMDG: (For reference only, please check.) IATA: (For reference only, please check.)

14.5 Environmental hazards

ADR/RID: No IMDG: No IATA: No

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
Bromine chloride	Bromine chloride	13863-41-7	237-601-4
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Not Listed.
Korea Existing Chemicals List (KECL)			Listed.

SECTION 16: Other information

Information on revision

Creation Date	July 15, 2019
Revision Date	July 15, 2019

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home
- HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm
- IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website:

http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple
- ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg
- Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp
- ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential.Immediate administration of an appropriate inhalation therapy by a doctor, or by an authorized person, should be considered.The odour warning when the exposure limit value is exceeded is insufficient.Do NOT use in the vicinity of a fire or a hot surface, or during welding.Do NOT spray water on a leaking cylinder (to prevent corrosion of the cylinder).Turn leaking cylinder with the leak up to prevent escape of gas in liquid state.See ICSCs 0107 and 0126.