

**Material Safety Data Sheet**

acc. to OSHA and ANSI

Printing date 05/03/2010

Reviewed on 04/30/2010

**1 Identification of substance:****Product details:****Product name:** 1-Bromobutane**Stock number:** A10696, L03399**Manufacturer/Supplier:**

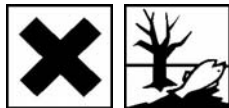
Alfa Aesar, A Johnson Matthey Company  
 Johnson Matthey Catalog Company, Inc.  
 30 Bond Street  
 Ward Hill, MA 01835-8099  
 Emergency Phone: (978) 521-6300  
 CHEMTREC: (800) 424-9300  
 Web Site: www.alfa.com

**Information Department:** Health, Safety and Environmental Department**Emergency information:**

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

**2 Composition/Data on components:****Chemical characterization:****Description: (CAS#)**

1-Bromobutane (CAS# 109-65-9)

**Identification number(s):****EINECS Number:** 203-691-9**3 Hazards identification****Hazard description:**

Xi Irritant  
 N Dangerous for the environment

**Information pertaining to particular dangers for man and environment**

R 10 Flammable.

R 36/37/38 Irritating to eyes, respiratory system and skin.

R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

**Classification system****HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

HEALTH	1
FIRE	3
REACTIVITY	1

Health (acute effects) = 1  
 Flammability = 3  
 Reactivity = 1

**GHS label elements****Danger**

2.6/2 - Highly flammable liquid and vapour.

**Warning**

3.2/2 - Causes skin irritation.

3.3/2A - Causes serious eye irritation.

3.8/3 - May cause respiratory irritation.



4.1/2 - Toxic to aquatic life with long lasting effects.

4.1/2 - Toxic to aquatic life.

**Prevention:**

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Wear protective gloves.

Avoid release to the environment.

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**Response:**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**4 First aid measures****After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice.

**After skin contact**

Immediately wash with water and soap and rinse thoroughly. Seek immediate medical advice.

**After eye contact**

Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing** Seek immediate medical advice.

**5 Fire fighting measures**

**Suitable extinguishing agents** CO2, sand, extinguishing powder. Do not use water.

**For safety reasons unsuitable extinguishing agents** Water

**Special hazards caused by the material, its products of combustion or resulting gases:**

In case of fire, the following can be released:

Hydrogen bromide (HBr)

Carbon monoxide and carbon dioxide

**Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

**6 Accidental release measures****Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources

**Measures for environmental protection:**

Do not allow material to be released to the environment without proper governmental permits.

**Measures for cleaning/collecting:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Ensure adequate ventilation.

Keep away from ignition sources.

**Additional information:**

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

**7 Handling and storage****Handling****Information for safe handling:**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

**Information about protection against explosions and fires:**

Keep ignition sources away.

Protect against electrostatic charges.

Fumes can combine with air to form an explosive mixture.

**Storage**

**Requirements to be met by storerooms and receptacles:** No special requirements.

**Information about storage in one common storage facility:**

Store away from oxidizing agents.

Store away from strong bases.

**Further information about storage conditions:**

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

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**8 Exposure controls and personal protection****Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**Components with limit values that require monitoring at the workplace:** Not required.

**Additional information:** No data

**Personal protective equipment****General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

**Breathing equipment:** Use suitable respirator when high concentrations are present.

**Protection of hands:** Impervious gloves

**Eye protection:** Safety glasses

**Body protection:** Protective work clothing.

**9 Physical and chemical properties:****General Information**

<b>Form:</b>	Liquid
<b>Color:</b>	Colorless
<b>Odor:</b>	Characteristic

**Change in condition**

<b>Melting point/Melting range:</b>	-112°C (-170°F)
<b>Boiling point/Boiling range:</b>	101-102°C (214-216°F)
<b>Sublimation temperature / start:</b>	Not determined

<b>Flash point:</b>	20°C (68°F)
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<b>Ignition temperature:</b>	265°C (509°F)
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<b>Decomposition temperature:</b>	Not determined
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**Explosion limits:**

<b>Lower:</b>	2.6 Vol %
<b>Upper:</b>	6.6 Vol %

<b>Vapor pressure at 20°C (68°F):</b>	43 hPa (32 mm Hg)
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<b>Density at 20°C (68°F):</b>	1.275 g/cm <sup>3</sup>
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<b>Solubility in / Miscibility with Water at 20°C (68°F):</b>	0.6 g/l
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**10 Stability and reactivity****Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

**Materials to be avoided:**

Oxidizing agents

Bases

Alkali metals

Alkaline earth metals

**Dangerous reactions** No dangerous reactions known

**Dangerous products of decomposition:**

Carbon monoxide and carbon dioxide

Hydrogen bromide

**11 Toxicological information****Acute toxicity:****LD/LC50 values that are relevant for classification:**

Oral	LD50	2761 mg/kg (rat) (RTECS)
Inhalative	LC50/2H	47000 mg/m <sup>3</sup> /2H (rat) (RTECS)
	LC50/30M	237000 mg/m <sup>3</sup> (rat) (external SDS)
Irritation of skin	moderate	unknown mg (mouse) (external SDS)
Irritation of eyes	moderate	unknown mg (rabbit) (external SDS)

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**Primary irritant effect:****on the skin:** Irritant to skin and mucous membranes.**on the eye:** Irritating effect.**Sensitization:** No sensitizing effects known.**Subacute to chronic toxicity:**

Other than potential irritation (see above), no information on illness or injury to humans from acute or chronic exposure to this product is available.

**Additional toxicological information:**

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

**12 Ecological information:****Ecotoxicical effects:****Remark:** Toxic for aquatic organisms**Additional ecological information:****General notes:**

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Also poisonous for fish and plankton in water bodies.

Do not allow material to be released to the environment without proper governmental permits.

Toxic for aquatic organisms

**13 Disposal considerations****Product:****Recommendation** Consult state, local or national regulations to ensure proper disposal.**Uncleaned packagings:****Recommendation:** Disposal must be made according to official regulations.**14 Transport information****DOT regulations:****Hazard class:**

3

**Identification number:**

UN1126

**Packing group:**

II

**Proper shipping name (technical name):** 1-BROMOBUTANE**Label**

3

**Remarks:**

Special marking with the symbol (fish and tree).

**Land transport ADR/RID (cross-border)****ADR/RID class:**

3 (F1) Flammable liquids

**Danger code (Kemler):**

33

**UN-Number:**

1126

**Packaging group:**

II

**Special marking:**

Symbol (fish and tree)

**Description of goods:**

1126 1-BROMOBUTANE

**Maritime transport IMDG:****IMDG Class:**

3

**UN Number:**

1126

**Label**

3

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<b>Packaging group:</b>	II
<b>EMS Number:</b>	F-E,S-D
<b>Marine pollutant:</b>	Yes (P)
	Symbol (fish and tree)
<b>Proper shipping name:</b>	1-BROMOBUTANE

**Air transport ICAO-TI and IATA-DGR:**

<b>ICAO/IATA Class:</b>	3
<b>UN/ID Number:</b>	1126
<b>Label</b>	3
<b>Packaging group:</b>	II
<b>Proper shipping name:</b>	1-BROMOBUTANE

**UN "Model Regulation":** UN1126, -BROMOBUTANE, 3, II**Environmental hazards:** Environmentally hazardous substance, liquid; Marine Pollutant**15 Regulations****Product related hazard informations:****Hazard symbols:**

Xi Irritant

N Dangerous for the environment

**Risk phrases:**

10 Flammable.

36/37/38 Irritating to eyes, respiratory system and skin.

51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

**Safety phrases:**

16 Keep away from sources of ignition - No smoking.

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

37 Wear suitable gloves.

61 Avoid release to the environment. Refer to special instructions/Safety data sheets

**National regulations**

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

All components of this product are listed on the Canadian Domestic Substances List (DSL).

**Information about limitation of use:** For use only by technically qualified individuals.**16 Other information:**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing MSDS:** Health, Safety and Environmental Department.**Contact:** Zachariah Holt**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

P: Marine Pollutant

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent