

**MATERIAL SAFETY DATA SHEET**  
**4-BROMO-1-BUTENE 98%**

**Section 1 - Chemical Product and Company Identification**

<b>MSDS Name:</b>	4-BROMO-1-BUTENE 98%
<b>Catalog Numbers:</b>	99.6
<b>Synonyms:</b>	4-Bromobut-1-ene
Relevant identified uses of substance or mixture and uses advised against	
Identified uses	Laboratory chemicals, Manufacture of substances
<b>Company Identification:</b>	Tau-Chem, Ltd. Nobelova 34, P.O. Box 29 836 05 Bratislava, Slovak Republic Phone: +421 2 44 452 252 Fax: +421 2 44 457 645
<b>POISON CENTER:</b>	National Toxicological Information Centre Limbová 5, 833 05 Bratislava,
<b>Emergency Numbers Slovakia:</b>	Phone: +421 2 54 774 166 Fax: +421 2 54 774 605

**Section 2 - Hazards Identification**

**Classification of the substance or mixture**

**Classification according to Regulation (EC) No 1272/2008**

Flammable liquids (Category 2)

Eye irritation (Category 2)

Respiratory sensitization (Category 1)

Specific target organ toxicity – single exposure (Category 3)

According to European Directive 67/548/EEC as amended.

Highly flammable. Irritating to eyes and respiratory system. May cause sensitization by inhalation and skin contact.

**Labeling according to Regulation (EC) No 1272/2008 [CLP]**

**Label elements**

Pictogram	
Signal word	Danger
Hazard statement(s)	
H225	Highly flammable liquid and vapor.
H319	Causes serious eye irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
Precautionary statement(s)	
P210	Keep away from heat/sparks/opened flames/hot surfaces.- No

P261	smoking
P305+P351+P338	Avoid breathing dust/foam/mist/spray. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P342+P311	If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
Hazard symbol(s)	
F	Highly flammable
Xn	Harmful.
R11	Highly flammable
R-phrase(s)	
R20/21/22	Harmful by inhalation, in contact with skin and if swallowed.
R36/37	Irritating to eyes and respiratory system.
R42/43	May cause sensitization by inhalation and skin contact.
S-phrase(s)	
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39	Wear suitable protective clothing, glove and eye/face protection.
<b>Other hazards</b>	Lachrymator.

### Section 3 - Composition, Information on Ingredients

CAS#	Chemical Name:	%	EINECS#
5162-44-7	4-BROMO-1-BUTENE	98	225-937-4

**Classification** Flam Liq. 2;; Eye Irrit,2; Resp. Sens.1;STOT SE 3  
H225,H319, H334, H335,  
F; Xn, R11 - R36/37-R42/43

For the full text of the H-Statements mentioned in this Section, see Section 16.

### Section 4 – First Aid Measures

<b>General advice:</b>	Consult a physician. Show this safety data sheet to the doctor in attendance.
<b>If inhaled:</b>	If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.
<b>In case of skin contact:</b>	Wash off with soap and plenty of water. Consult a physician.
<b>In case eye contact:</b>	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
<b>If swallowed:</b>	Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

## Section 5 – Fire Fighting Measures

<b>Suitable extinguishing media:</b>	For small (incipient) fires, use media such as “alcohol” foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.
<b>Special protective equipment for fire-fighters:</b>	Wear self contained apparatus breathing apparatus for fire fighting if necessary.
<b>Further information:</b>	Use water spray to cool unopened containers.

## Section 6 – Accidental Release Measures

<b>Personal precautions:</b>	Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation.
<b>Environmental precautions:</b>	Prevent further leakage or spillage if safe to do. Do not let product enter drains.
<b>Methods and materials for containment and cleaning up</b>	Contain spillage and then collect with an electrically protected vacuum cleaner or by wet brushing and place in container for disposal according to local regulations. (See section 13)

## Section 7 – Handling and Storage

<b>Precautions for safe handling:</b>	Avoid contact with skin and eyes. Avoid inhalation of vapor, mist and gas. Ensure adequate ventilation. Keep away from sources of ignition. – No smoking. Take measures to prevent to built up of electrostatic charge.
<b>Conditions for safe storage:</b>	Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Recommended storage temperature: 2-8 °C. Light sensitive.

## Section 8 – Exposure Controls, Personal Protection

<b>Personal protective equipment:</b>	
<b>Respiratory protection:</b>	Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
<b>Hand protection</b>	The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. Handle with gloves.
<b>Eye protection:</b>	Face shield and safety glasses.
<b>Skin and body protection:</b>	Choose body protection according to the amount and concentration of the dangerous substance at the work place.
<b>Hygiene measures:</b>	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

## Section 9 – Physical and Chemical Properties

### Appearance

Form: Liquid  
Color: Colorless to yellow

### Safety data:

pH Not available  
Melting Point: Not available  
Boiling Point: 98-100 °C  
Flash Point: 1 °C closed cup  
Ignition temperature: Not available  
Explosion Limits: Lower: Not available  
Explosion Limits: Upper: Not available  
Solubility in water: Not available  
Density: 1.33 g/cm<sup>3</sup> at 25°C  
Molecular Formula: C<sub>4</sub> H<sub>7</sub>Br  
Molecular Weight: 135.00 g/mol

## Section 10 – Stability and Reactivity

Chemical Stability: Stable under recommended storage conditions.  
Conditions to Avoid: Heat, flames and sparks. Extremes of temperature and sunlight.  
Materials to avoid: Strong bases.  
Hazardous Decomposition Products: Hazardous decomposition products under fire conditions.  
– Carbon oxides, Hydrogen bromide gas.

## Section 11 – Toxicological Information

Acute toxicity No data available  
No data available  
Skin corrosion/irritation No data available  
Serious eye damage/eye irritation No data available  
Respiratory or skin sensitization May cause allergic respiratory reaction.  
Germ cell mutagenicity No data available  
Carcinogenicity:

IARC: No component of this product presents at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity: No data available  
Specific target organ toxicity – single exposure Inhalation – May cause respiratory irritation.  
Specific target organ toxicity – repeated exposure No data available

<b>Aspiration hazard</b>	No data available
<b>Potential health effect:</b>	
<b>Inhalation</b>	Harmful if inhaled. Causes respiratory tract irritation.
<b>Ingestion</b>	Harmful if swallowed.
<b>Skin</b>	Harmful if absorbed through skin. May cause skin irritation.
<b>Eyes</b>	Causes serious eye irritation

**Signs and Symptoms of Exposure**

Burning sensation, Cough, Wheezing, Laryngitis, Shortness of breath, Headache, Nausea, Vomiting. Repeated exposure may cause asthma. To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

**Additional Information**

RTECS: Data not available.

**Section 12 – Ecological Information**

<b>Toxicity:</b>	No data available
<b>Persistence and degradability</b>	No data available
<b>Bioaccumulative potential</b>	No data available
<b>Mobility in soil</b>	No data available
<b>PBT and vPvB assessment</b>	No data available
<b>Other adverse effects</b>	No data available

**Section 13 – Disposal Considerations**

<b>Product</b>	Burn in a chemical incinerator equipped with an afterburner and a scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.
<b>Contaminated packaging</b>	Dispose of as unused product.

**Section 14 – Transport Information**

	<b>IATA</b>	<b>IMDG</b>	<b>RID/ADR</b>
<b>Shipping Name:</b>	FLAMMABLE LIQUID, N.O.S.	FLAMMABLE LIQUID, N.O.S.	FLAMMABLE LIQUID, N.O.S.
<b>Hazard Class:</b>	3	3	3
<b>UN Number:</b>	1993	1993	1993
<b>Packing Group:</b>	II	II	II
		EMS No: F-E; S-E	
		Marine pollutant: No	

## Section 15 – Regulatory Information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006

## Section 16 – Other Information

### Text of H-code(s) and R-phrase(s) mentioned in Section 3

Flam. Liq.	Flammable liquid.
Eye Irrit.	Eye irritation.
Resp. Sens.	Respiratory sensitization.
STOT SE	Specific target organ toxicity – single exposure.
H225	Highly flammable liquid and vapour.
H319	Causes serious eye irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
F	Flammable.
Xn	Harmful.
R11	Highly flammable.
R20/21/22	Harmful by inhalation, in contact with skin and if swallowed.
R36/37	Irritating to eyes and respiratory system.

**MSDS Creation Date:** 05/2/2007

**Revision #1 Date:** 17/06/2010

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

Disclaimer:

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.