

Section 1. Product and Company Identification

**Product Name** n-Butyl Bromide  
**CAS Number** 109-65-9

**Parchem - fine & specialty chemicals**  
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Section 2. Hazards Identification

**Classification of the substance or mixture**

**Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Flammable Liquid - Category 2 [H225]  
Skin Irritation- Category 2 [H315]  
Eye Irritation- Category 2A [H319]  
Specific Target Organ Toxicity, Single Exposure- Category 3; STOT SE 3 [H335]

**GHS Label Elements**

**Pictograms:**



**Signal word:** DANGER

**Hazard and precautionary statements**

**Hazard Statements**

H225 - Highly flammable liquid and vapor  
H315 - Causes skin irritation  
H319 - Causes serious eye irritation  
H335 - May cause respiratory irritation

**Precautionary Statements**

**Prevention**

P210- Keep away from heat, open flames and hot surfaces. -No smoking.  
P233- Keep container tightly closed.  
P240 - Ground and bond container and receiving equipment.  
P241 - Use explosion-proof electrical, ventilating, lighting and mixing equipment.  
P242 - Use only non-sparking tools.



- P243- Take precautionary measures against static discharge.
- P261 -Avoid breathing mist, fumes and vapor.
- P264 - Wash hands and other skin areas exposed to material thoroughly after handling.
- P271 - Use only outdoors or in a well-ventilated area.
- P280 - Wear protective gloves and eye protection.

**Response**

- P370 + P378 - In case of fire: Use water spray or fog, foam, dry chemical or carbon dioxide for extinction.
- P302 + P352- IF ON SKIN: Wash with plenty of soap and water.
- P304 + P340 + P312- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor if the victim feels unwell.
- P321 -Specific treatment: Seek medical attention; refer to Section 4 of this SDS.
- P332 + P313- If skin irritation occurs: Get medical attention.
- P362- Take off contaminated clothing and wash before reuse.
- P303 + P361 + P353- IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water or shower.
- P305 + P351 + P338- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present. Continue rinsing.
- P337 + P313- If eye irritation persists: Get medical attention.

**Storage**

- P403 + P235 - Store in well-ventilated place. Keep cool.
- P405 - Store locked up.

**Disposal**

- P501 - Dispose of contents in accordance with national and local regulations.

Section 3. Composition / Information on Ingredients

<b>Common Name</b>	n-Butyl Bromide
<b>Synonym(s)</b>	1-Bromobutane; 1-Butyl bromide; Butyl bromide
<b>Formula</b>	C <sub>4</sub> H <sub>9</sub> Br
<b>CAS Number</b>	109-65-9

COMPONENT	CAS NUMBER	CONCENTRATION
n-Butyl Bromide	109-65-9	> 99%

Section 4. First Aid Measures

**Description of first-aid measures**

**Inhalation:** If product vapor or mist causes respiratory irritation or distress, move the exposed person to fresh air immediately. If breathing is difficult or irregular, administer oxygen; if respiratory arrest occurs, start artificial respiration by trained personnel. Loosen tight fitting clothing such as a collar, tie, belt or waistband. If symptoms persist, seek medical attention.

**Eyes:** Immediately flush eyes with large amounts of water for 15 minutes, occasionally lifting the upper and lower lids. Remove contact lenses, if present and easy to do, after the first 2 minutes and continue rinsing. If irritation persists, seek medical attention, preferably from an ophthalmologist.



**Skin:** Flush skin with large amounts of water while removing contaminated clothing and continue rinsing for at least 15 minutes. Wash contaminated clothing and shoes thoroughly before reuse. If irritation persists, seek medical attention.

**Ingestion:** Rinse mouth with water if victim is conscious. Remove dentures, if present. Do not induce vomiting unless directed to do so by medical personnel. This material can get into the lungs during swallowing or vomiting and may cause lung inflammation and other lung damage. Never give anything by mouth to an unconscious or convulsing person. Do not leave the victim unattended. Get medical attention immediately.

### **Most important symptoms and effects, both acute and delayed**

#### **Potential health symptoms and effects**

**Eyes:** Causes eye irritation with redness, inflammation, swelling, pain and tearing.

**Skin:** Causes skin irritation with localized redness and discomfort. May be harmful if absorbed through the skin.

**Inhalation:** Causes irritation of the respiratory tract. Inhalation of high vapor concentrations may cause burning sensation, sore throat, cough, wheezing, laryngitis, shortness of breath, headache, fatigue, dizziness, nausea and vomiting. May cause pulmonary edema and severe respiratory disturbances. May be harmful if inhaled.

**Ingestion:** May cause gastrointestinal irritation with nausea, vomiting, abdominal pain and diarrhea. May cause headache, dizziness, tremors, and incoordination. May be harmful if swallowed.

**Chronic:** Pre-existing disorders of the eyes, skin and respiratory system may be aggravated by exposure to this product. Chronic skin contact can cause defatting of skin and dermatitis. Prolonged and repeated exposure may have a toxic effects on the liver and kidneys.

### **Indication of any immediate medical attention and special treatment needed**

**Advice to Doctor and Hospital Personnel:** Treat symptomatically and supportively

## Section 5. Firefighting Measures

### **Extinguishable media**

**Suitable methods of extinction:** Use water spray or fog, dry chemical, carbon dioxide, or chemical foam.

**Unsuitable methods of extinction:** Water jets or streams may spread fire.

**Special hazards arising from the substance or mixture:** Highly flammable liquid and vapor! Vapors are heavier than air and can travel along the ground to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. Exposure to ignition sources, including electronic devices (e.g. cell phones), can ignite vapors causing a flash fire. Containers can explode if exposed to heat. A vapor/air mixture can create an explosion hazard in confined spaces such as sewers. During a fire, irritating and toxic gases may be generated by thermal decomposition or combustion. Symptoms may not be apparent or may be delayed. Seek medical attention.

**Explosion hazards:** Vapor/air mixtures can be explosive especially in confined spaces.



**Advice for firefighters:** Firefighters should wear full bunker gear including NIOSH-approved positive pressure self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies. Evacuate area and fight fire from a maximum distance or use unmanned hose holders or monitor nozzles. Cover pooling liquid with foam. Containers can build pressure if exposed to radiant heat; cool adjacent containers with flooding quantities of water until well after the fire is out. If possible, water contaminated by this material should be contained from being discharged to any waterway, sewer or drain to prevent environmental contamination.

#### Section 6. Accidental Release Measures

**Personal precautions, protective equipment, and emergency procedures:** Approach spill from upwind direction. Isolate the area and evacuate non-essential personnel. Ventilate the area. Avoid sources of ignition. NO SMOKING. Wear all appropriate personal equipment specified in Section 8. If normal use of material presents a respiratory hazard, use only adequate ventilation or wear an appropriate respirator.

**Environmental precautions:** Avoid dispersal of spilled material or runoff, and prevent contact with soil and entry into drains, sewers or waterways.

**Methods and materials for containment and cleaning up:** Cover drains and contain spill. Cover spill with a large quantity of inert absorbent. Do not use combustible material such as sawdust. Collect material using non-sparking tools and place into an approved container for proper disposal. Observe possible restrictions (Sections 7.2 and 10.5). Do not allow material or runoff from rinsing contaminated areas to enter floor drains or storm drains and ditches which lead to waterways. Dispose of waste via a licensed waste disposal contractor.

**Reference to other sections:** See Section 13 for additional waste treatment information.

#### Section 7. Handling and Storage

**Precautions for safe handling:** Observe label precautions. Wear all appropriate protective equipment specified in Section 8. Keep containers closed when not in use. Avoid sources of ignition. No smoking. Use explosion proof electrical equipment. Do not get in eyes or on skin or clothing. If normal use of material presents a respiratory hazard, use only adequate ventilation or wear appropriate respiratory protection.

**Advice on protection against fire and explosion:** Keep away from heat and sources of ignition. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Vapors are heavier than air and can travel along the ground to a source of ignition and flash back.

**Conditions for safe storage, including any incompatibilities:** Store in a dry, cool and well-ventilated area, away from incompatible materials, food and drink. Keep away from heat and sources of ignition. Transfer only to approved containers having correct labeling. Protect containers against physical damage. Keep containers tightly closed. Containers that have been opened must be carefully resealed and kept upright to prevent spillage. Do not reuse empty containers as they may retain product residues and vapors. Do not cut, drill, weld, braze, solder grind or perform similar



operations on or near empty containers. Ventilate closed areas. Do not take internally. Keep out of reach of children.

#### Section 8. Exposure Controls / Personal Protection

**Control parameters:** Contains no substances with occupational exposure values.

#### Exposure controls

**Engineering Measures:** Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. Use adequate ventilation. Local exhaust is preferable.

**Individual protection measures:** Wear protective clothing to prevent repeated or prolonged contact with product. Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the representative supplier.

**Hygiene measures:** Facilities storing or using this material should be equipped with an eyewash station and safety shower. Change contaminated clothing. Preventive skin protection is recommended. Wash hands thoroughly after use, before eating, drinking or using the lavatory.

**Eye/face protection:** Wear protective goggles or safety glasses with non-perforated side shields.

**Hand Protection:** Wear gloves recommended by glove supplier for protection against materials in Section 3. Gloves should be impermeable to chemicals and oil. Breakthrough time of gloves must be greater than the intended use period.

**Other protective equipment:** Protective clothing. Protective boots, if the situation requires.

**Respiratory protection:** Always use an approved respirator when vapor/aerosols are generated. Where risk assessment shows air-purifying respirators are appropriate use a full-faced 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).

**Environmental exposure controls:** Do not empty into drains.

PPE must not be considered a long-term solution to exposure control. PPE usage must be accompanied by employer programs to properly select, maintain, clean fit and use. Consult a competent industrial hygiene resource to determine hazard potential and/or the PPE manufacturers to ensure adequate protection.

#### Section 9. Physical and Chemical Properties

#### Information on basic physical and chemical properties

**Appearance:** Clear, colorless to pale yellow liquid

**Odor:** Pleasant; sweet

**Odor Threshold:** No data available

**Molecular Weight:** 137.02 g/mol

**Chemical Formula:** C<sub>4</sub>H<sub>9</sub>Br

**pH:** No data available

**Freezing/Melting Point:** -112°C (-170°F)



**Boiling Point, Range:** 100 - 104°C (212 - 219°F)  
**Evaporation Rate:** No data available  
**Flammability (solid, gas):** Not applicable  
**Flash Point:** 10°C (50°F)  
**Auto-ignition Temperature:** No data available  
**Decomposition Temperature:** 265°C (509°F)  
**Lower Explosive Limit (LEL):** 2.6%  
**Upper Explosive Limit (UEL):** 7%  
**Vapor Pressure:** 34 mmHg (20°C)  
**Vapor Density:** 4.72  
**Specific Gravity:** 1.270  
**Viscosity:** No data available  
**Solubility in Water (30°C):** 0608 g/L  
**Partition Coefficient (n-Octanol/Water):** log Pow: 2.672  
**Volatiles by Volume (21°C):** 100%

**Other data:** No data available

#### Section 10. Stability and Reactivity

**Reactivity:** Vapor/air mixtures can be explosive.  
**Chemical stability:** This product is stable under recommended storage conditions, handling and use.  
**Possibility of hazardous reactions:** Vapors may form explosive mixtures with air. May react exothermically with incompatible materials. Hazardous polymerization does not occur.  
**Conditions to avoid:** Sources of ignition, open flames, hot surfaces; contact with incompatible materials; high temperatures; direct sunlight  
**Incompatible materials:** Strong oxidizing agents, strong bases, active metals, alkali metals, magnesium, potassium, sodium  
**Hazardous decomposition products:** Thermal decomposition products include oxides of carbon, hydrogen bromide.

#### Section 11. Toxicological Information

##### Information on toxicological effects

###### Acute Oral Toxicity

**LD50 - Rat:** > 2,761 mg/kg

###### Acute inhalation toxicity

**LC50 - Rat:** 47,000 mg/m<sup>3</sup> (2h)

**Acute dermal toxicity:** No data available

**Skin irritation/corrosion:** Causes skin irritation

**Eye irritation/corrosion:** Causes eye irritation

**Sensitization:** No data available



**Genotoxicity in vitro:** No data available

**Mutagenicity:** No data available

**Specific organ toxicity - single exposure:** May cause respiratory irritation

**Specific organ toxicity - repeated exposure:** No data available

**Aspiration hazard:** No data available

**Further information:** This material is not listed as a carcinogen by IARC, ACGIH, NTP or OSHA. No data is available regarding the mutagenicity or teratogenicity of this material in humans, nor is there available data that indicates that it causes adverse developmental effects. Chronic exposure to n-Butyl Bromide may cause liver and kidney damage. Handle in accordance with good industrial hygiene and safety practice

#### Section 12. Ecological Information

##### Toxicity

**Acute toxicity to aquatic invertebrates:** EC50 - Daphnia magna (Water flea), 48 h: 8.8 mg/l

**Persistence and degradability:** Expected to biodegrade

**Bioaccumulation potential:** Not expected to bioaccumulate

**Mobility in soil:** No data available

**Results of PBT and vPvB assessment:** No data available

##### Other adverse effects

##### Additional ecological information

Do not allow material to run into surface waters, wastewater, or soil.

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

#### Section 13. Disposal Considerations

**Waste Treatment Methods:** Dispose of product and contaminated packaging in accordance with all local, state, and federal environmental control regulations.

#### Section 14. Transport Information

**Note:** Transportation information provided is for reference only. Customer is urged to consult 49 CFR 100-177, IMDG, IATA, EC, United Nations TDG and WHMIS (Canada) TDG information manuals for detailed regulations and exceptions covering specific container sizes, packaging materials and methods of shipping.

##### U.S. DOT (Domestic Ground Transportation)

**Proper Shipping Name:** 1-Bromobutane

**Hazard Class:** 3

**UN/NA:** UN1126

**Packing Group:** II

**NAERG:** Guide #130

**Packaging Authorization:** Non-Bulk: 49 CFR 173.202; Bulk: 173.242





**Packaging Exceptions:** 49 CFR 173.150

**IMO/IMDG (Water Transportation)**

**Proper Shipping Name:** 1-Bromobutane

**Hazard Class:** 3

**UN/NA:** UN1126

**Packing Group:** II

**Marine Pollutant:** No

**EMS Number:** F-E, S-D

**ICAO/IATA (Air Transportation)**

**Proper Shipping Name:** 1-Bromobutane

**Hazard Class:** 3

**UN/NA:** UN1126

**Packing Group:** II

**Quantity Limitations:** 49 CFR 173.27 and 175.75- Cargo Aircraft Only: 60 l; Passenger Aircraft: 5 l

**RID/ADR (Rail Transportation)**

**Proper Shipping Name:** 1-Bromobutane

**Hazard Class:** 3

**UN/NA:** UN1126

**Packing Group:** II

Section 15. Regulatory Information

**Safety, health, and environmental regulations/legislation specific for substance or mixture**

**US Federal Regulations**

**OSHA Hazard Communication Standard:** This material is classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

**OSHA Process Safety Management Standard:** This substance is not regulated under OSHA PSM Standard 29 CFR 1910.119.

**EPA Risk Management Planning Standard:** This substance is not regulated under EPA RMP Standard (RMP) 40 CFR Part 68.

**EPA Federal Insecticide, Fungicide and Rodenticide Act:** This substance is not a registered Pesticide under the FIFRA, 40 CFR Part 150.

**TSCA Status:** n-Butyl Bromide (CAS #109-65-9) is listed on the TSCA Inventory. It is not subject to TSCA 12(b) Export Notification.

**Superfund Amendments and Reauthorization Act (SARA)**

**SARA 313 Information:** None of the chemicals in this product are subject to reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986.

**SARA Section 311/312 Hazard Categories:** Fire Hazard, Acute Health Hazard





**SARA 302/304 Extremely Hazardous Substance:** None of the chemicals in this product are subject to reporting requirements of these sections of Title III of SARA.

**SARA 302/304 Emergency Planning & Notification:** None of the chemicals in this product are subject to reporting requirements of these sections of Title III of SARA.

**Comprehensive Response Compensation and Liability Act (CERCLA):** This product contains no CERCLA reportable substances.

#### **Clean Air Act (CAA)**

This product does not contain any substances that listed as Hazardous Air Pollutants (HAPs) designated in CAA Section 112 (b).

This product does not contain any Class 1 Ozone depletors.

This product does not contain any Class 2 Ozone depletors.

#### **Clean Water Act (CWA)**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

#### **US State Regulations**

**California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986:** None of the chemicals in this product are known to the State of California to cause cancer, birth defects or other reproductive harm.

**Other U.S. State Inventories:** n-Butyl Bromide (CAS #1 09-65-9) is listed on the following State Hazardous Substance Inventories, Right-to-Know lists and/or Air Quality/Air Pollutants lists: MA, MJ, PA.

#### **Canada**

##### **WHMIS Hazard Symbol and Classification**

B2 - Flammable liquid with flash points less than 38°C (100°F)

**Canadian National Pollutant Release Inventory (NPRI):** None of the substances in this product are listed on the NPRI.

#### **European Economic Community Labeling (67/548/EEC or 1999/45/EC)**

F - Flammable

Xi - Irritant

##### **Risk Phrases**

R11 - Highly flammable.

R36/37/38- Irritating to eyes, respiratory system and skin.

R67 - Vapors may cause drowsiness or dizziness.

##### **Safety Phrases**

S2- Keep out of the reach of children.

S16- Keep away from sources of ignition.

S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.



**WGK, Germany (Water danger/protection): 2**

**Global Chemical Inventory Lists**

Country	Inventory Name	Inventory Listing
Canada	Domestic Substance List (DSL)	Yes
Canada	Non-Domestic Substance List (NDSL)	No
Europe	Inventory of New and Existing Chemicals (EINECS)	Yes
United States	Toxic Substance Control Act (TSCA)	Yes
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
New Zealand	New Zealand Inventory of Chemicals (NZioC)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes

\*"Yes" indicates that all components of this product are in compliance with the inventory requirements administered by the governing country.

\*"No" indicates that one or more components of this product are not on the inventory or are exempt from listing.

**Chemical safety assessment:** For this product a chemical safety assessment was not carried out.

**HMIS Rating**

**Health:** 2

**Flammability:** 3

**Reactivity:** 0

**Personal Protection:** C

**NFPA Rating**

**Health:** 2

**Flammability:** 3

**Reactivity:** 0

Section 16. Other Information

**Disclaimer:** The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product.

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