

**SAFETY DATA SHEET**

Creation Date 15-Sep-2009

Revision Date 14-Feb-2020

Revision Number 2

**1. Identification**

**Product Name** 4-Bromo-1-butene

**Cat No. :** A10977

**CAS-No** 5162-44-7  
**Synonyms** No information available

**Recommended Use** Laboratory chemicals.  
**Uses advised against** Food, drug, pesticide or biocidal product use.  
**Details of the supplier of the safety data sheet**

**Company**

Alfa Aesar  
Thermo Fisher Scientific Chemicals, Inc.  
30 Bond Street  
Ward Hill, MA 01835-8099  
Tel: 800-343-0660  
Fax: 800-322-4757  
**Email:** tech@alfa.com  
www.alfa.com

**Emergency Telephone Number**

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660.  
After normal business hours, call Carechem 24 at (866) 928-0789.

**2. Hazard(s) identification****Classification**

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

|                                                  |            |
|--------------------------------------------------|------------|
| Flammable liquids                                | Category 2 |
| Serious Eye Damage/Eye Irritation                | Category 2 |
| Respiratory Sensitization                        | Category 1 |
| Skin Sensitization                               | Category 1 |
| Specific target organ toxicity (single exposure) | Category 3 |
| Target Organs - Respiratory system.              |            |

**Label Elements****Signal Word**

Danger

**Hazard Statements**

Highly flammable liquid and vapor  
May cause an allergic skin reaction  
Causes serious eye irritation

May cause allergy or asthma symptoms or breathing difficulties if inhaled  
May cause respiratory irritation



### Precautionary Statements

#### Prevention

Wash face, hands and any exposed skin thoroughly after handling  
Avoid breathing dust/fume/gas/mist/vapors/spray  
In case of inadequate ventilation wear respiratory protection  
Contaminated work clothing should not be allowed out of the workplace  
Use only outdoors or in a well-ventilated area  
Keep away from heat/sparks/open flames/hot surfaces. - No smoking  
Keep container tightly closed  
Ground/bond container and receiving equipment  
Use explosion-proof electrical/ventilating/lighting/equipment  
Use only non-sparking tools  
Take precautionary measures against static discharge  
Wear protective gloves/protective clothing/eye protection/face protection  
Keep cool

#### Inhalation

If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician  
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

#### Skin

If skin irritation or rash occurs: Get medical advice/attention  
Wash contaminated clothing before reuse  
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower

#### Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
If eye irritation persists: Get medical advice/attention

#### Fire

In case of fire: Use CO<sub>2</sub>, dry chemical, or foam for extinction

#### Storage

Store in a well-ventilated place. Keep container tightly closed  
Store locked up

#### Disposal

Dispose of contents/container to an approved waste disposal plant

#### Hazards not otherwise classified (HNOC)

None identified

## 3. Composition/Information on Ingredients

| Component          | CAS-No    | Weight % |
|--------------------|-----------|----------|
| 1-Butene, 4-bromo- | 5162-44-7 | >95      |

## 4. First-aid measures

### Eye Contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Skin Contact</b>                        | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention.                                                                                                                                                                                                                                                                                                                     |
| <b>Inhalation</b>                          | Remove to fresh air. Get medical attention. If not breathing, give artificial respiration.                                                                                                                                                                                                                                                                                                                                                       |
| <b>Ingestion</b>                           | Do NOT induce vomiting. Get medical attention.                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Most important symptoms and effects</b> | Difficulty in breathing. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause allergic skin reaction. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing |
| <b>Notes to Physician</b>                  | Treat symptomatically                                                                                                                                                                                                                                                                                                                                                                                                                            |

## 5. Fire-fighting measures

|                                         |                                                                                                                                                                                                                           |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Suitable Extinguishing Media</b>     | Carbon dioxide (CO <sub>2</sub> ). Dry chemical. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Chemical foam. Water mist may be used to cool closed containers. |
| <b>Unsuitable Extinguishing Media</b>   | No information available                                                                                                                                                                                                  |
| <b>Flash Point</b>                      | 1 °C / 33.8 °F                                                                                                                                                                                                            |
| <b>Method -</b>                         | No information available                                                                                                                                                                                                  |
| <b>Autoignition Temperature</b>         | No information available                                                                                                                                                                                                  |
| <b>Explosion Limits</b>                 |                                                                                                                                                                                                                           |
| <b>Upper</b>                            | No data available                                                                                                                                                                                                         |
| <b>Lower</b>                            | No data available                                                                                                                                                                                                         |
| <b>Sensitivity to Mechanical Impact</b> | No information available                                                                                                                                                                                                  |
| <b>Sensitivity to Static Discharge</b>  | No information available                                                                                                                                                                                                  |

### Specific Hazards Arising from the Chemical

Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

### Hazardous Combustion Products

Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Hydrogen halides.

### Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

### NFPA

**Health**  
2

**Flammability**  
3

**Instability**  
0

**Physical hazards**  
N/A

## 6. Accidental release measures

|                                             |                                                                                                                                                                                                                                                                                               |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Personal Precautions</b>                 | Ensure adequate ventilation. Use personal protective equipment as required. Remove all sources of ignition. Take precautionary measures against static discharges.                                                                                                                            |
| <b>Environmental Precautions</b>            | See Section 12 for additional Ecological Information.                                                                                                                                                                                                                                         |
| <b>Methods for Containment and Clean Up</b> | Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Do not let this chemical enter the environment. |

## 7. Handling and storage

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Handling</b> | Ensure adequate ventilation. Wear personal protective equipment/face protection. Avoid contact with skin and eyes. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use spark-proof tools and explosion-proof equipment. Use only non-sparking tools. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges. Keep away from open flames, hot surfaces and sources of ignition. |
| <b>Storage</b>  | Refrigerator/flammables. Keep container tightly closed. Keep away from heat, sparks and flame.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## 8. Exposure controls / personal protection

|                                      |                                                                                                                                                                                                                                                   |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Exposure Guidelines</b>           | This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.                                                                                                     |
| <b>Engineering Measures</b>          | Use explosion-proof electrical/ventilating/lighting/equipment. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.                                  |
| <b>Personal Protective Equipment</b> |                                                                                                                                                                                                                                                   |
| <b>Eye/face Protection</b>           | Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.                                                                       |
| <b>Skin and body protection</b>      | Wear appropriate protective gloves and clothing to prevent skin exposure.                                                                                                                                                                         |
| <b>Respiratory Protection</b>        | Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. |
| <b>Hygiene Measures</b>              | Handle in accordance with good industrial hygiene and safety practice.                                                                                                                                                                            |

## 9. Physical and chemical properties

|                                               |                                         |
|-----------------------------------------------|-----------------------------------------|
| <b>Physical State</b>                         | Liquid                                  |
| <b>Appearance</b>                             | Light brown                             |
| <b>Odor</b>                                   | Odorless                                |
| <b>Odor Threshold</b>                         | No information available                |
| <b>pH</b>                                     | No information available                |
| <b>Melting Point/Range</b>                    | No data available                       |
| <b>Boiling Point/Range</b>                    | 98 - 100 °C / 208.4 - 212 °F @ 760 mmHg |
| <b>Flash Point</b>                            | 1 °C / 33.8 °F                          |
| <b>Evaporation Rate</b>                       | No information available                |
| <b>Flammability (solid,gas)</b>               | Not applicable                          |
| <b>Flammability or explosive limits</b>       |                                         |
| Upper                                         | No data available                       |
| Lower                                         | No data available                       |
| <b>Vapor Pressure</b>                         | No information available                |
| <b>Vapor Density</b>                          | No information available                |
| <b>Specific Gravity</b>                       | 1.330                                   |
| <b>Solubility</b>                             | No information available                |
| <b>Partition coefficient; n-octanol/water</b> | No data available                       |
| <b>Autoignition Temperature</b>               | No information available                |
| <b>Decomposition Temperature</b>              | No information available                |
| <b>Viscosity</b>                              | No information available                |
| <b>Molecular Formula</b>                      | C4 H7 Br                                |

Molecular Weight

135

## 10. Stability and reactivity

|                                         |                                                                                                             |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Reactive Hazard</b>                  | None known, based on information available                                                                  |
| <b>Stability</b>                        | Light sensitive.                                                                                            |
| <b>Conditions to Avoid</b>              | Keep away from open flames, hot surfaces and sources of ignition. Exposure to light. Incompatible products. |
| <b>Incompatible Materials</b>           | Strong bases, Oxidizing agent                                                                               |
| <b>Hazardous Decomposition Products</b> | Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> ), Hydrogen halides                                   |
| <b>Hazardous Polymerization</b>         | Hazardous polymerization does not occur.                                                                    |
| <b>Hazardous Reactions</b>              | None under normal processing.                                                                               |

## 11. Toxicological information

### Acute Toxicity

**Product Information** No acute toxicity information is available for this product

**Component Information** No information available

**Toxicologically Synergistic Products**

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

|                        |                                                                                          |
|------------------------|------------------------------------------------------------------------------------------|
| <b>Irritation</b>      | Irritating to eyes Irritating to respiratory system                                      |
| <b>Sensitization</b>   | May cause sensitization by skin contact                                                  |
| <b>Carcinogenicity</b> | The table below indicates whether each agency has listed any ingredient as a carcinogen. |

| Component          | CAS-No    | IARC       | NTP        | ACGIH      | OSHA       | Mexico     |
|--------------------|-----------|------------|------------|------------|------------|------------|
| 1-Butene, 4-bromo- | 5162-44-7 | Not listed | Not listed | Not listed | Not listed | Not listed |

|                                                   |                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Mutagenic Effects</b>                          | No information available                                                                                                                                                                                                                                                                                   |
| <b>Reproductive Effects</b>                       | No information available.                                                                                                                                                                                                                                                                                  |
| <b>Developmental Effects</b>                      | No information available.                                                                                                                                                                                                                                                                                  |
| <b>Teratogenicity</b>                             | No information available.                                                                                                                                                                                                                                                                                  |
| <b>STOT - single exposure</b>                     | Respiratory system                                                                                                                                                                                                                                                                                         |
| <b>STOT - repeated exposure</b>                   | None known                                                                                                                                                                                                                                                                                                 |
| <b>Aspiration hazard</b>                          | No information available                                                                                                                                                                                                                                                                                   |
| <b>Symptoms / effects, both acute and delayed</b> | Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing |
| <b>Endocrine Disruptor Information</b>            | No information available                                                                                                                                                                                                                                                                                   |
| <b>Other Adverse Effects</b>                      | The toxicological properties have not been fully investigated.                                                                                                                                                                                                                                             |

## 12. Ecological information

**Ecotoxicity**

Do not empty into drains.

**Persistence and Degradability** No information available**Bioaccumulation/ Accumulation** No information available.**Mobility** No information available.**13. Disposal considerations****Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.**14. Transport information****DOT**

UN-No UN1993  
 Proper Shipping Name Flammable liquid, n.o.s.  
 Technical Name 1-Butene, 4-bromo-  
 Hazard Class 3  
 Packing Group II

**TDG**

UN-No UN1993  
 Proper Shipping Name Flammable liquid, n.o.s.  
 Hazard Class 3  
 Packing Group II

**IATA**

UN-No UN1993  
 Proper Shipping Name Flammable liquid, n.o.s.  
 Hazard Class 3  
 Packing Group II

**IMDG/IMO**

UN-No UN1993  
 Proper Shipping Name Flammable liquid, n.o.s.  
 Hazard Class 3  
 Packing Group II

**15. Regulatory information****United States of America Inventory**

| Component          | CAS-No    | TSCA | TSCA Inventory notification - Active/Inactive | TSCA - EPA Regulatory Flags |
|--------------------|-----------|------|-----------------------------------------------|-----------------------------|
| 1-Butene, 4-bromo- | 5162-44-7 | X    | ACTIVE                                        | -                           |

**Legend:****TSCA** - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

- - Not Listed

**TSCA 12(b)** - Notices of Export Not applicable**International Inventories**

Canada (DSL/NDL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

| Component          | CAS-No    | DSL | NDL | EINECS    | PICCS | ENCS | AICS | IECSC | KECL |
|--------------------|-----------|-----|-----|-----------|-------|------|------|-------|------|
| 1-Butene, 4-bromo- | 5162-44-7 | X   | -   | 225-937-4 | -     | -    | -    | -     | -    |

**U.S. Federal Regulations**

|                                                             |                                                             |
|-------------------------------------------------------------|-------------------------------------------------------------|
| <b>SARA 313</b>                                             | Not applicable                                              |
| <b>SARA 311/312 Hazard Categories</b>                       | See section 2 for more information                          |
| <b>CWA (Clean Water Act)</b>                                | Not applicable                                              |
| <b>Clean Air Act</b>                                        | Not applicable                                              |
| <b>OSHA - Occupational Safety and Health Administration</b> | Not applicable                                              |
| <b>CERCLA</b>                                               | Not applicable                                              |
| <b>California Proposition 65</b>                            | This product does not contain any Proposition 65 chemicals. |
| <b>U.S. State Right-to-Know Regulations</b>                 | Not applicable                                              |
| <b>U.S. Department of Transportation</b>                    |                                                             |
| Reportable Quantity (RQ):                                   | N                                                           |
| DOT Marine Pollutant                                        | N                                                           |
| DOT Severe Marine Pollutant                                 | N                                                           |
| <b>U.S. Department of Homeland Security</b>                 | This product does not contain any DHS chemicals.            |
| <b><u>Other International Regulations</u></b>               |                                                             |
| <b>Mexico - Grade</b>                                       | No information available                                    |

## 16. Other information

|                         |                                                                                     |
|-------------------------|-------------------------------------------------------------------------------------|
| <b>Prepared By</b>      | Health, Safety and Environmental Department<br>Email: tech@alfa.com<br>www.alfa.com |
| <b>Creation Date</b>    | 15-Sep-2009                                                                         |
| <b>Revision Date</b>    | 14-Feb-2020                                                                         |
| <b>Print Date</b>       | 14-Feb-2020                                                                         |
| <b>Revision Summary</b> | SDS authoring systems update, replaces ChemGes SDS No. 5162-44-7.                   |

### Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of SDS**