



## MATERIAL SAFETY DATA SHEET

CONTACT : **LEONID CHEMICALS**  
Leonid Chemicals Pvt Ltd  
62/A-2 1st Stage, Yeshwanthpur Industrial Suburb  
Ashokpuram School Road  
Bangalore-560 022, Karnataka, INDIA  
Ph: +91-80-2337 8354, Fax: +91-80-2357 4827

### SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**MSDS Name:** 4-Bromo-1,1,2-trifluoro-1-butene, 97%

**Catalog Numbers:**

178

**Synonyms:**

**Company Identification**

LEONID CHEMICALS

62/A-2 2nd Stage, Industrial Suburb

Yeshwanthpur, Bangalore -22, INDIA

Ph- +91-80-23378354

### SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS

CAS#	:	10493-44-4
Chemical Name	:	4-Bromo-1,1,2-trifluoro-1-butene
%	:	97
EINECS#	:	234-019-2
Haz Symbols	:	XI F
Risk Phrases	:	11 36/37/38

### SECTION 3 - HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

Highly flammable. Irritating to eyes, respiratory system and skin. Air sensitive.

#### Potential Health Effects

Eye:

Causes eye irritation.

Skin:

Causes skin irritation. May be harmful if absorbed through the skin.

Ingestion:

May cause irritation of the digestive tract. May be harmful if swallowed.

Inhalation:

Causes respiratory tract irritation. May be harmful if inhaled.

Chronic:

Not available.

### SECTION 4 - FIRST AID MEASURES

Eyes:



Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:**

Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

**Ingestion:**

Get medical aid. Wash mouth out with water.

**Inhalation:**

Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:**

Treat symptomatically and supportively.

---

## SECTION 5 - FIRE FIGHTING MEASURES

---

**General Information:**

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors can travel to a source of ignition and flash back. Will burn if involved in a fire. Containers may explode in the heat of a fire. Flammable liquid and vapor.

**Extinguishing Media:**

Use water spray, dry chemical, carbon dioxide, or chemical foam.

---

## SECTION 6 - ACCIDENTAL RELEASE MEASURES

---

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:**

Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. Use a spark-proof tool.

---

## SECTION 7 - HANDLING and STORAGE

---

**Handling:**

Use spark-proof tools and explosion proof equipment. Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes. Store and handle protected from air.

**Storage:**

Keep away from sources of ignition. Store in a cool, dry place. Store in a tightly closed container. Keep under a nitrogen blanket. Flammables-area.

---

## SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

---

**Engineering Controls:**

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local explosion-proof ventilation to keep airborne levels to acceptable levels.

#### Personal Protective Equipment

**Eyes:**

Wear chemical goggles.

**Skin:**

Wear appropriate protective gloves to prevent skin exposure.

**Clothing:**

Wear appropriate protective clothing to prevent skin exposure.

**Respirators:**

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

---

### SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

---

Physical State: Liquid

Color: Clear colourless to yellow liquid

Odor: organohalide-like

pH: Not available.

Vapor Pressure: Not available.

Viscosity: Not available.

Boiling Point: 95 - 98 deg C @ 760mmHg

Freezing/Melting Point: Not available.

Autoignition Temperature: Not available.

Flash Point: 17 deg C ( 62.60 deg F)

Explosion Limits, lower: Not available.

Explosion Limits, upper: Not available.

Decomposition Temperature:

Solubility in water:

Specific Gravity/Density: 1.6390g/cm<sup>3</sup>

Molecular Formula: C<sub>4</sub>H<sub>4</sub>BrF<sub>3</sub>

Molecular Weight: 188.97

---

### SECTION 10 - STABILITY AND REACTIVITY

---

**Chemical Stability:**

Not available.

**Conditions to Avoid:**

Incompatible materials, ignition sources, exposure to air.

**Incompatibilities with Other Materials:**

Strong oxidizing agents, strong reducing agents, strong acids, strong bases.

**Hazardous Decomposition Products:**

Carbon monoxide, carbon dioxide, hydrogen fluoride gas, hydrogen

bromide.  
Hazardous Polymerization: Has not been reported.

---

#### SECTION 11 - TOXICOLOGICAL INFORMATION

---

RTECS#:  
CAS# 10493-44-4 unlisted.  
LD50/LC50:  
Not available.  
Carcinogenicity:  
4-Bromo-1,1,2-trifluoro-1-butene -  
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.  
See actual entry in RTECS for complete information.

---

#### SECTION 12 - ECOLOGICAL INFORMATION

---

---

#### SECTION 13 - DISPOSAL CONSIDERATIONS

---

Dispose of in a manner consistent with federal, state, and local regulations.

---

#### SECTION 14 - TRANSPORT INFORMATION

---

IATA  
Shipping Name: FLAMMABLE LIQUID, N.O.S.\*  
Hazard Class: 3  
UN Number: 1993  
Packing Group: II  
IMO  
Shipping Name: FLAMMABLE LIQUID, N.O.S.  
Hazard Class: 3  
UN Number: 1993  
Packing Group: II  
RID/ADR  
Shipping Name: FLAMMABLE LIQUID, N.O.S.  
Hazard Class: 3  
UN Number: 1993  
Packing group: II

---

#### SECTION 15 - REGULATORY INFORMATION

---

European/International Regulations  
European Labeling in Accordance with EC Directives  
Hazard Symbols: XI F  
Risk Phrases:  
R 11 Highly flammable.  
R 36/37/38 Irritating to eyes, respiratory system

and skin.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.

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

S 37/39 Wear suitable gloves and eye/face protection.

WGK (Water Danger/Protection)

CAS# 10493-44-4: No information available.

United Kingdom Occupational Exposure Limits

United Kingdom Maximum Exposure Limits

Canada

None of the chemicals in this product are listed on the DSL/NDSL list.

CAS# 10493-44-4 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

US FEDERAL

TSCA

CAS# 10493-44-4 is not listed on the TSCA inventory.

It is for research and development use only.

---

**SECTION 16 - ADDITIONAL INFORMATION**

---

MSDS Creation Date: 8/05/1996 Revision #2 Date: 3/20/2002

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.