Boron Trifluoride Diethyl Etherate	Pricing >

Linear Formula	$BF_3 \bullet O(C_2H_5)_2$
Pubchem CID	8000
MDL Number	MFCD00013194
EC No.	203-689-8
IUPAC Name	ethoxyethane; trifluoroborane
Beilstein/Reaxys No.	3909607
SMILES	CC[O+](CC)[B-](F)(F)F
Inchl Identifier	InChI=1S/C4H10BF3O/c1-3-9(4-2)5(6,7)8/h3-4H2,1-2H3
Inchl Key	KZMGYPLQYOPHEL-UHFFFAOYSA-N

Signal Word	Danger
Hazard Statements	H301-H332
Hazard Codes	Xn
Precautionary Statements	P261
Flash Point	Not applicable
Risk Codes	20/22
Safety Statements	28
RTECS Number	N/A
Transport Information	UN 1564 6.1/PG 3
WGK Germany	1

GHS Pictograms	**GHS06 Skull and Crossbones**  **GHS05 Corrosive**  **GHS02 Flame**  **GHS08 Health Hazard** 

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SAFETY DATA SHEET

Date Accessed: 05/05/2024
Date Revised: 01/15/2022

SECTION 1. IDENTIFICATION

Product Identifiers: All applicable American Elements product codes for CAS #109-63-7

Relevant identified uses of the substance:
Scientific research and development

Supplier details:
American Elements
10884 Weyburn Ave.
Los Angeles, CA 90024
Tel: +1 310-208-0551
Fax: +1 310-208-0351

Emergency telephone number:
Domestic, North America +1 800-424-9300
International +1 703-527-3887

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture
GHS Classification in accordance with 29 CFR 1910

(OSHA HCS)
Flammable liquids(Category 3), H226
Acute toxicity, Oral (Category 4), H302
Acute toxicity, Inhalation (Category 2), H330
Skin corrosion(Category 1A), H314
Serious eye damage (Category 1), H318
Specific target organ toxicity -repeated exposure, Inhalation (Category 1), H372

GHS Label elements, including precautionary statements
Pictogram

Signal word
Danger
Hazard statement(s)
H226
Flammable liquid and vapor.
H302
Harmful if swallowed.
H314
Causes severe skin burns and eye damage.
H318
Causes serious eye damage.
H330
Fatal if inhaled.
H372
Causes damage to organs through prolonged or repeated exposure if inhaled.
Precautionary statement(s)
P210
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233
Keep container tightly closed.
P240
Ground/bond container and receiving equipment.
P241
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242
Use only non-sparking tools.
P243
Take precautionary measures against static discharge.
P260
Do not breathe dust/ fume/ gas/ mist/ Vapors/ spray.
P264
Wash skin thoroughly after handling.
P270
Do not eat, drink or smoke when using this product.
P271

Use only outdoors or in a well-ventilated area.
P280
Wear protective gloves/ protective clothing/ eye protection/ face protection.
P284
Wear respiratory protection.
P301 + P312 + P330
IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
P301 + P330 + P331
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P310
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.
P305 + P351 + P338 + P310
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
P314
Get medical advice/ attention if you feel unwell.
P363
Wash contaminated clothing before reuse.
P370 + P378
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P403 + P233
Store in a well-ventilated place. Keep container tightly closed.
P403 + P235
Store in a well-ventilated place. Keep cool.
P405
Store locked up.
P501
Dispose of contents/ container to an approved waste disposal plant
Hazards not otherwise classified (HNOC) or not covered by GHS
Reacts violently with water.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances
Synonyms: Boron trifluoride ethyl etherate
Formula: $BF_3 \cdot C_4H_{10}O$

Molecular weight: 141.93 g/mol
CAS-No.: 109-63-7
EC-No.: 203-689-8

SECTION 4. FIRST AID MEASURES

Description of first aid measures
General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area
If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
Continue rinsing eyes during transport to hospital.
If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5. FIREFIGHTING MEASURES

Extinguishing media
Suitable extinguishing media
Dry powder
Special hazards arising from the substance or mixture
Carbon oxides, Hydrogen fluoride, Borane/boron oxides
Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.
Further information
Water hydrolyzes material liberating acidic gas which in contact with metal surfaces can generate flammable and/or explosive hydrogen gas.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid breathing Vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of Vapors accumulating to form explosive concentrations.
Vapors can accumulate in low areas.
For personal protection see section 8
Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
Methods and materials for containment and cleaning up
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). Do not flush with water.
Reference to other sections
For disposal see section 13

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of Vapor or mist.
Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
For precautions see section 2.2
Conditions for safe storage, including any incompatibilities
Store under nitrogen.
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.
Keep away from water.Never allow product to get in contact with water during storage.
Recommended storage temperature
2 - 8 °C
Store under inert gas.
Storage class (TRGS 510): Flammable liquids
Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Components with workplace control parameters
Contains no substances with occupational exposure limit values.
Exposure controls
Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.
Personal protective equipment
Eye/face protection
Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
Body Protection
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Respiratory protection
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).
Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties
a) Appearance

Form: liquid
b) Odor
No data available
c) Odor Threshold
No data available
d) pH
No data available
e) Melting point/freezing point
Melting point/range: -58 °C (-72 °F)
f) Initial boiling point and boiling range
126 -129 °C (259 -264 °F)
g) Flash point
48 °C (118 °F) - closed cup
h) Evaporation rate
No data available
i) Flammability (solid, gas)
No data available
j) Upper/lower flammability or explosive limits
Upper explosion limit: 36 %(V)
Lower explosion limit: 1.9 %(V)
k) Vapor pressure
5.6 hPa (4.2 mmHg) at 20 °C (68 °F)
l) Vapor density
4.90-(Air = 1.0)
m) Relative density
1.15 g/mL
n) Water solubility
No data available
o) Partition coefficient: n-octanol/water
No data available
p) Auto-ignition temperature
No data available
q) Decomposition temperature
No data available
r) Viscosity
No data available
s) Explosive properties
No data available
t) Oxidizing properties
No data available
Other safety information
Relative Vapor density
4.90 - (Air = 1.0)

SECTION 10. STABILITY AND REACTIVITY

Reactivity
No data available
Chemical stability
Stable under recommended storage conditions
Possibility of hazardous reactions
Reacts violently with water.
Conditions to avoid

Water hydrolyzes material liberating acidic gas which in contact with metal surfaces can generate flammable and/or explosive hydrogen gas. Do not allow water to enter container because of violent reaction.
Heat, flames and sparks. Exposure to moisture.
Incompatible materials
Metals, acids, Bases, Alcohols, Alkali metals, Oxidizing agents, Water
Hazardous decomposition products
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects
Acute toxicity
No data available
LC50 Inhalation - Rat - 4 h - 1.2 mg/l
Dermal: No data available
No data available
Skin corrosion/irritation
Serious eye damage/eye irritation
Eyes - Rabbit
Result: Corrosive to eyes
Respiratory or skin sensitisation
No data available
Germ cell mutagenicity
No data available
Carcinogenicity
IARC:
No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH:
No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP:
No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:
No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
Reproductive toxicity
No data available
No data available
Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
Inhalation - Causes damage to organs through prolonged or repeated exposure.
Aspiration hazard
No data available
Additional Information
RTECS: Not available
Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Liver - Irregularities - Based on Human Evidence
Liver - Irregularities - Based on Human Evidence

SECTION 12. ECOLOGICAL INFORMATION

Toxicity
Toxicity to fish field study LC50 - Leuciscus idus (Golden orfe) - 22 - 46 mg/l
Persistence and degradability
Biodegradability
Result: - Partially biodegradable
Bioaccumulative potential
No data available
Mobility in soil
No data available
Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted
Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods
Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care inigniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.
Contaminated packaging
Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

DOT (US)
UN number: 2604
Class: 8(3)
Packing group: I
Proper shipping name: Boron trifluoride diethyl etherate
Reportable Quantity (RQ):
Poison Inhalation Hazard: No
IMDG
UN number: 2604
Class: 8(3)
Packing group: I
EMS-No: F-E, S-C
Proper shipping name: BORON TRIFLUORIDE DIETHYL ETHERATE
IATA
UN number: 2604
Class: 8(3)
Packing group: I
Proper shipping name: Boron trifluoride diethyl etherate

SECTION 15. REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard
Massachusetts/Pennsylvania/New Jersey Right To Know Components
Diethyl ether-boron trifluoride
CAS-No.109-63-7
Revision Date
1993-04-24
California Prop. 65 Component
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm

16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). 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. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.