


# SAFETY DATA SHEET

## BORON TRIFLUORIDE ETHERATE

### SECTION 1: Identification of the substance/mixture and of the company/undertaking Trade name:

<b>1.1 Product identifier:</b>	
<b>CAS Number:</b>	109-63-7
<b>EC number:</b>	203-689-8
<b>1.2 SYNONYMS:</b>	<ul style="list-style-type: none"> <li>• Boron trifluoride etherate</li> <li>• Boron trifluoride diethyl etherate</li> <li>• Boron trifluoride ethyl etherate</li> <li>• Boron fluoride ethyl ether</li> </ul>

### SECTION 2: Hazards identification:

<b>2.1 Classification of the substance or mixture:</b>	Classification according to Regulation (EC) No 1272/2008 The substance is classified according to the CLP regulation.
<b>2.2 Label elements:</b>	Labelling according to Regulation (EC) No 1272/2008 Flammable liquids, (Category 3) Acute toxicity, oral (Category 4) Acute toxicity, inhalation (Category 4) Skin corrosion, (Category 1B) Serious eye damage, (Category 1) Specific target organ toxicity - repeated exposure, kidney (Category 1)
<b>Hazard Pictograms:</b>	
<b>Signal Word:</b>	Danger
<b>Hazard statements:</b>	<b>H226:</b> Flammable liquid and vapor. <b>H302 + H332:</b> Harmful if swallowed or if inhaled.

	<p><b>H314:</b> Causes severe skin burns and eye damage.</p> <p><b>H372:</b> Causes damage to organs (Kidney) through prolonged or repeated exposure if inhaled.</p>
<b>Precautionary Statements:</b>	<p><b>P210:</b> Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.</p> <p><b>P280:</b> Wear protective gloves/ protective clothing/ eye protection/ face protection.</p> <p><b>P303 + P361 + P353:</b> IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.</p> <p><b>P304 + P340 + P310:</b> IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.</p> <p><b>P305 + P351 + P338:</b> IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p><b>P314:</b> Get medical advice/ attention if you feel unwell.</p> <p><b>P405:</b> Store locked up.</p> <p><b>P501:</b> Dispose of contents/ container to an approved waste disposal plant.</p>
<b>2.3 Other hazards:</b>	
<b>Inhalation:</b>	can cause respiratory irritation, coughing, and difficulty breathing, and prolonged exposure may lead to more severe respiratory damage.
<b>Ingestion:</b>	can cause severe gastrointestinal irritation, nausea, vomiting, abdominal pain, and potentially more serious systemic effects.

<b>Skin Contact:</b>	can cause severe irritation, burns, and tissue damage, especially upon prolonged exposure.
<b>Eye contact:</b>	can cause severe irritation, pain, redness, and potential damage to the cornea, leading to permanent eye injury if not promptly treated.
<b>Chronic Exposure:</b>	may lead to respiratory issues, skin sensitization, and potential damage to the eyes and mucous membranes, along with long-term effects on the central nervous system.
<b>Aggravation of pre-existing conditions:</b>	may aggravate pre-existing respiratory conditions such as asthma or bronchitis, as well as skin conditions like dermatitis, due to its irritating and corrosive properties.

### SECTION 3: Composition/information on ingredients

<b>3.1 Chemical characterisation:</b>	Substances
<b>CAS No:</b>	Description: 109-63-7 BORON TRIFLUORIDE ETHERATE
<b>Identification number(s):</b>	EC number: 203-689-8

### SECTION 4: First aid measures

<b>4.1 Description of first aid measures</b>	
<b>General information:</b>	
<b>After inhalation:</b>	If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
<b>After skin contact:</b>	Remove contaminated clothing immediately and treat with calcium gluconate paste. Wash

	with plenty of water. Consult a physician.
<b>After eye contact:</b>	Immediately flush eyes with plenty of water for at least 15 minutes. consult a physician.
<b>After swallowing:</b>	Rinse mouth with water. Immediately after ingestion. If conscious, make victim drink two glasses at most immediately. Never give anything by mouth to an unconscious person. Do not induce vomiting. Consult a physician.
<b>4.2 Most important symptoms and effects, both acute and delayed:</b>	Acute symptoms include respiratory irritation, skin burns, eye pain, and gastrointestinal distress, while delayed effects may include chronic respiratory issues, permanent eye damage, and ongoing skin sensitivity.
<b>4.3 Indication of any immediate medical attention and special treatment needed:</b>	Treat symptomatically.

## SECTION 5: Firefighting measures

<b>5.1 Extinguishing media:</b>	Carbon dioxide. Dry sand or cement
<b>5.2 Special hazards arising from the substance or mixture:</b>	Hydrogen fluoride, boron oxides, carbon oxides.
<b>5.3 Advice for firefighters:</b>	Wear fully protective suit, safety glasses and respiratory device. Cool tanks/drums with water spray/remove them into safety.
<b>5.4 further information:</b>	no data available

## SECTION 6: Accidental release measures

<b>6.1 Personal precautions, protective equipment and emergency procedures:</b>	Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Avoid dust accumulation. Seek medical attention.
<b>6.2 Environmental precautions:</b>	Do not enter this chemical into drains.
<b>6.3 Methods and material for containment and cleaning up:</b>	Take up spill into absorbent material, e.g.: sand, earth, vermiculite, powdered limestone. Scoop absorbed substance into closing containers. Spill must not return in its original container. Wash clothing and equipment after handling.

## SECTION 7: Handling and storage

<b>7.1 Precautions for safe handling:</b>	For use in are with adequate ventilation. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material Do not use in confined spaces. Electrostatic discharge protection. Minimize dust generation and accumulation. Avoid ingestion and inhalation.
<b>7.2 Conditions for safe storage, including any incompatibilities:</b>	Store in original containers. Keep containers securely sealed Store in a cool, dry, well-ventilated area. Store away from incompatible materials and foodstuff containers. Protect containers against physical

	damage and check regularly for leaks. Store in a dry and dark area. Do not handle in flammable atmospheres. Keep away from moisture.
<b>Requirements to be met by storerooms and receptacles:</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.
<b>7.3 Specific end uses:</b>	no data available

## SECTION 8: Exposure controls/personal protection

<b>8.1 Control parameters</b>	
<b>Additional information about design of technical facilities:</b>	A system of local and general exhaust is recommended.
<b>8.2 Exposure controls</b>	
<b>Appropriate engineering controls</b>	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
<b>Personal protective equipment:</b>	Dust respirator, protective masks, wearing anti chemical gloves, rubber gloves, etc.
<b>General protective and hygienic measures:</b>	Eyes, body and hand protection, maintain indoor air unobstructed. Wear protective equipment.
	<b>Respiratory protection:</b> Required.
<b>Protection of hands:</b>	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. Wash and dry hands.
	<b>Eye protection:</b> Required

<b>Protection of Body:</b>	Complete suit protecting against chemicals, Flame retardant antistatic protective clothing.
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## SECTION 9: Physical and chemical properties

<b>9.1 Information on basic physical and chemical properties</b>	
<b>General Information</b>	
<b>Appearance: Form:</b>	Liquid
<b>Colour:</b>	Colourless
<b>Odour:</b>	Faint ether like.
<b>pH-value:</b>	Not determined
<b>Melting point/Melting range:</b>	-100°C
<b>Boiling point/Boiling range:</b>	155°C
<b>Flammability (solid, gaseous):</b>	Flammable
<b>Ignition temperature:</b>	390°C
<b>Decomposition temperature:</b>	Not determined
<b>Self-igniting:</b>	None
<b>Flash point:</b>	Not determined
<b>Danger of explosion:</b>	Yes
<b>Explosion limits: Lower:</b>	No data available
<b>Explosion limits: Upper:</b>	No data available
<b>Vapour pressure:</b>	15 mmHg at 20°C
<b>Density at 20 °C:</b>	1.09 g/cm <sup>3</sup>
<b>Relative density:</b>	1.09
<b>Vapour density:</b>	5.1
<b>Evaporation rate:</b>	Not determined
<b>Solubility in / Miscibility with- water at 20 °C:</b>	InSoluble (highly reactive with water and moisture)
<b>Partition coefficient:(n- octanol/water)</b>	Not determined
<b>Viscosity:</b>	Not determined

## SECTION 10: Stability and reactivity

<b>10.1 Reactivity</b>	High reactive to water and moisture
<b>10.2 Chemical stability</b>	This chemical is stable under storage conditions.
<b>10.3 Possibility of hazardous reactions</b>	Can undergo hydrolysis reaction to form boric acid and hydrofluoric acid which are hazardous.
<b>10.4 Conditions to avoid</b>	Heat, open flames, water, moisture.
<b>10.5 Incompatible materials</b>	Strong oxidizing agents, strong bases, water, alcohols.
<b>10.6 Hazardous decomposition products</b>	Hydrofluoric acid, boric acid, fluorine gas.

## SECTION 11: Toxicological information

<b>11.1 Information on toxicological effects</b>	
<b>Acute Toxicity:</b>	<b>LD50</b> (Oral, Rat): 326 mg/kg <b>LD50</b> (Dermal, Rabbit): no data available <b>LC50</b> (Inhalation Rat): 1.21 mg/l (4 hr)
<b>Skin corrosion/Irritation:</b>	Causes serious burns
<b>Serious eye damage/irritation:</b>	Causes serious eye damage
<b>Respiratory damage/irritation:</b>	No data available
<b>Ingestion:</b>	No data available
<b>Germ cell mutagenicity:</b>	No data available
<b>Carcinogenicity:</b>	No data available
<b>Reproductive toxicity:</b>	No data available
<b>Specific target organ toxicity - single exposure:</b>	No data available
<b>Specific target organ toxicity - repeated exposure:</b>	Causes serious damage to organs-kidney.
<b>Aspiration hazard:</b>	No data available
<b>Signs and Symptoms of Exposure:</b>	Refer section 2.3
<b>11.2 Additional toxicological information</b>	
<b>Biodegradability:</b>	Not Biodegradable



## SECTION 12: Ecological information

<b>12.1 Toxicity</b> <b>Aquatic toxicity:</b>	LC50(fish): no data available EC50(daphnia): 6.4 mg/l (48 hr) ErC50(algae): no data available
<b>12.2 Persistence and degradability:</b>	Not Biodegradable
<b>12.3 Bioaccumulative potential:</b>	Not bioaccumulative
<b>12.4 Mobility in soil:</b>	Not mobility
<b>12.5 Other adverse effects:</b>	No data available

## SECTION 13: Disposal considerations

<b>13.1 Waste treatment methods</b>	
<b>Uncleaned packaging Recommendation:</b>	dispose of in accordance with local hazardous waste regulations
<b>Recommended cleansing agents:</b>	Dry sand, cement, carbon dioxide foam.

## SECTION 14: Transport information

<b>14.1 UN-Number · ADR, ADN, IMDG, IATA:</b>	2604
<b>14.2 UN proper shipping name · ADR, ADN, IMDG, IATA:</b>	BORON TRIFLUORIDE ETHERATE
<b>14.3 Transport hazard class(es) · ADR, ADN, IMDG, IATA :</b>	8
<b>14.4 Packing group · ADR, IMDG, IATA:</b>	1
<b>14.5 Environmental hazards:</b>	None
<b>14.6 Special precautions for user:</b>	Handle responsibly.

## SECTION 15: Regulatory information

<b>15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture</b> <b>Directive 2012/18/EU</b>	Directive 2012/18/EU, under that this substance is classified in listed substance as toxic and dangerous substance.
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<b>Named dangerous substances:</b>	This substance is listed in the part 1 annex 1 to the directive.
<b>15.2 Chemical safety assessment:</b>	Chemical assessment has not been carried out.

## SECTION 16: Other information

The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and limitations of our knowledge, this document is only for reference. Users should make their independent judgment suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.