

## MATERIAL SAFETY DATA SHEET (MSDS)

according to Regulation (EC) No. 1907/2006

Version 2.0 Revision Date 01.06.2015

### 1.0 Identification of the substance/preparation and of the company/enterprise

**1.1 Product identifiers** : Boron Trichloride

**EINECS** : 233-658-4

**CAS** : 10294-34-5

**Index no.** : 005-002-00-5

**RTECS** : ED 1925000

**RegRus no.** : AT000514

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Reagent for preparing methyl esters of fatty acids and for transesterification of triglycerides.

**1.3 Details of the supplier of the safety data sheet**

JSC AVIABOR, Nizhny Novgorod Region

606000 Dzerzhinsk, Russia

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Only Representative – Espace Chemicals GmbH

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**1.4 Emergency telephone number** (+7)-8313-249 750/ 630

### 2.0 Hazards Identification

**2.1 Classification of the substance or mixture**

Liquified gas. Corrosive to eyes, respiratory system and skin. Very toxic by inhalation. No manipulations with the product are allowed until precautions recommended by the manufacture are read and understood.

**Regulation (EC) No 1272/2008 Annex VI Table**

Classification		Labelling		
Hazard Class and Category Code(s)	Hazard Statement Code(s)	Pictogram Signal Word Code(s)	Hazard Statement Code(s)	Suppl. Hazard statement code(s)
Press. Gas Acute Tox., Inhal. 2 Acute Tox., Oral. 2 Skin Corr. 1B	H280 H330 H300 H314	 Gas cylinder   Skull and crossbones   Corrosion Danger	H280 H330 H300 H314	EUH014

**2.2 Label elements**

**Hazard statement(s):**

H280 Contains gas under pressure; may explode if heated.

H330 Fatal if inhaled.

H300 Fatal if swallowed.

H314 Causes severe skin burns and eye damage.

EUH014 Reacts violently with water.

**Precautionary statement(s):**

P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash hands thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P284	Wear respiratory protection.
P301 + P310	IF SWALLOWED Immediately call a POISON CENTER or doctor/ physician.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**2.3 Other hazards**

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

**3.0 Composition / information on ingredients**

<b>Boron Trichloride</b>	: 100wt%
Trade names/Synonyms	: Boron Chloride
IUPAC	: trichloroborane
Chemical formula	: BCl <sub>3</sub>
Molar mass	: 117.3 g/mol
EINECS	: 233-658-4
CAS	: 10294-34-5
Index no.	: 005-002-00-5
RTECS	: ED 1925000
RegRus no.	: AT000514
Classification	: Press. Gas ; Acute Tox. 2; Skin Corr. 1B; H280, H300, H330, H314, EUH014

**4.0 First Aid Measures****4.1 Description of first aid measures**

Prompt medical attention is required in all cases of exposure to boron trichloride and its by-products. Rescue personnel should be equipped with appropriate protective equipment and must be aware of the toxic and corrosive nature of boron trichloride.

**After skin contact**

Direct contact with liquified boron trichloride may cause burns, fumes may cause irritation.

Immediately flush affected areas with large quantities of water. Remove affected clothing as rapidly as possible.

**After eyes contact**

Direct contact with liquified boron trichloride may cause severe burns (with a temporary disturbance of vision), fumes may cause irritation. Persons with potential exposure to boron trichloride should not wear contact lenses. Flush contaminated eyes with large quantities of water for at least 15 minutes. Hold eyelids wide open to ensure complete flushing.

**After inhalation**

Toxic by inhalation. Move exposed personnel to an uncontaminated area using self-contained breathing apparatus. If breathing is difficult, give oxygen. If breathing has stopped apply artificial respiration, preferably mouth-to-mouth.

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

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Cough, shortness of breath, headache, nausea.

**4.3 Indication of immediate medical attention and special treatment needed**

no data available

**5.0 Fire Fighting Measures****5.1 Extinguishing media****Suitable extinguishing media**

Dry powder Carbon dioxide (CO<sub>2</sub>)

**5.2 Special hazards arising from the substance or mixture**

Hydrogen chloride gas, Borane/boron oxides

**5.3 Precautions for fire-fighters**

Wear self-contained breathing apparatus for fire fighting if necessary.

**5.4 Further information**

no data available

**6.0 Accidental Release Measures****6.1 Personal precautions, protective equipment and emergency procedures**

Evacuate area. Use self-contained breathing apparatus and chemically protective clothing. Ensure adequate air ventilation.

**6.2 Environmental precautions**

Try to stop release. Prevent from entering sewers, basements or workpits, or any area where accumulation could be dangerous. Reduce vapour with fog or fine water spray.

**6.3 Methods and materials for containment and cleaning up**

Ventilate area. Wash contaminated equipment or site of leaks with copious quantities of water.

**6.4 Reference to other sections**

For disposal see section 13.

**7.0 Handling and Storage****7.1 Precautions for safe handling**

Use only properly specified equipment suitable for the product, its supply pressure and temperature. Contact your gas supplier if in doubt. Refer to suppliers container handling instructions.

**Incompatibilities**

Boron trichloride reacts vigorously with water generating a large amount of heat. Is hydrolyzed in moist air forming a white fog of hydrochloric and boronic acids.

**7.2 Conditions for safe storage, including any incompatibilities**

Keep container below 40 °C in a well ventilated place.

**7.3 Specific end uses**

no data available

**8.0 Exposure Control and Personal Protection****8.1 Control parameters****Components with workplace control parameters****8.2 Exposure controls****Exposure limit value**

Admissible exposure limit value in air is 5 mg/m<sup>2</sup>

**Personal protection****Normal use and handling**

Ensure adequate ventilation. Protect eyes, face and skin from liquid splashes.

Do not smoke while handling the product.

**Emergency handling**

Use self-contained breathing apparatus and chemically resistant protective clothing.

**9.0 Physical and Chemical Properties****9.1 Information on basic physical and chemical properties**

Appearance : a colourless gas forming a white fog in moist air.

Odour : pungent

pH value at 10g/l H<sub>2</sub>O : not available

Critical temperature : 179 °C

Boiling point : 12.5 °C

Flash point : not available

Flammability : not available

Oxidizing properties : not available

Explosive properties : not available

Lower limit of the melting range : not available

Vapour pressure : 1.632 kg/cm<sup>2</sup> (20 °C)

Partition coefficient	: not available
Viscosity	: not available
Vapor density	: not available
Relative density	: gas 4 (air = 1)
Relative density	: liquid 1.3 (water = 1)
Bulk density	: not available
Decomposition temp	: not available
Surface tension	: not available
Conductivity	: not available
Enthalpy of Vaporization	: not available
Solubility in water	: hydrolysis

## 9.2 Other safety information

Ignition temperature	: not available
Melting point	: -107 °C
Gas/vapour is heavier than air.	
May accumulate in confined spaces, particularly at or below ground level.	

## 10.0 Stability and Reactivity

### 10.1 Reactivity

no data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

React violently with water.

### 10.4 Conditions to avoid

Fumes strongly in moist air. Do not allow water to enter container because of violent reaction.  
Exposure to moisture.

### 10.5 Incompatible materials

Strong oxidizing agents

### 10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions - Hydrogen chloride gas,  
Borane/boron oxides

## 11.0 Toxicological Information

### 11.1 Information on toxicological effects

Delayed fatal pulmonary edema possible. Severe corrosion to skin, eyes and respiratory tract at high concentrations.

#### Acute toxicity

LC<sub>50</sub>/1h = 2551 x 10<sup>-3</sup> (mg x hour)/l.

#### Skin corrosion/ irritation

No data available

#### Serious eye damage/ eye irritation

No data available

#### Respiratory or skin sensitization

No data available

#### Germ cell mutagenicity

No data available

#### Carcinogenicity

IARC: No component of this product presents at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

#### Reproductive toxicity

No data available

#### Specific target organ toxicity – single exposure

No data available

#### Specific target organ toxicity – repeated exposure

No data available

**Aspiration hazard**

No data available

**Potential Health Effects****Inhalation**

May be fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

**Skin:** May be harmful if absorbed through skin. Causes skin burns.

**Eyes:** Causes eye burns.

**Ingestion:** May be fatal swallowed. Causes burns.

**Additional information:**

RTECS: ED1925000

**12.0 Ecological Information****12.1 Toxicity**

no data available

**12.2 Persistence and degradability**

no data available

**12.3 Bioaccumulative potential**

no data available

**12.4 Mobility in soil**

no data available

**12.5 Results of PBT and vPvB assessment**

no data available

**12.6 Other adverse effects**

no data available

**13.0 Disposal Consideration****13.1 Waste treatment methods****Product**

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.

**14.0 Transport Information****14.1 UN-Number**

1741

**14.2 UN proper shipping name**

Boron trichloride

**14.3 Transport hazard class(es)**

GGVS/GGVE/ADR/RID: 2.3(8), Hazard Identification: 268, Classification: 2TC, Tunnel Code: (C/D)

IMO/GGVSee: 2.3(8), MFAG: 700, EmS: F-C, S-U, Stowage: D

ICAO/IATA: 2.3(8), PAX/CAO: Forbidden

**14.4 Packaging group**

GGVS/GGVE/ADR/RID: No                      IMO/GGVSee: No                      ICAO/IATA: No

**14.5 Environmental hazards**

GGVS/GGVE/ADR/RID: No                      IMO/GGVSee: No                      ICAO/IATA: No

**14.6 Special precautions for user**

See section 7.0

**14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**

The substance is not intended to be transported in bulk.

**14.8 Other transport information**

Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure that a vehicle driver is aware of the potential hazards of the load and knows what to do in the event of accident or emergency. Before transporting product containers ensure that they are firmly secured and:

- cylinder valve is closed and not leaking
- valve outlet cap nut or plug is correctly fitted
- valve protective device is correctly fitted.

## 15.0 Regulatory Information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

no data available

### 15.2 Chemical Safety Assessment

no data available

### 15.3 Other Information

Insure operators understand toxicity hazard of boron trichloride. Use individual protection while handling the product. Before using the product in any new process or experiment thorough material compatibility and safety study should be carried out.

Information contained in this material safety data sheet is to the best of Aviabor knowledge and is intended to describe the product only in terms of health and safety and environmental requirements. Since the conditions of use are outside our control, Aviabor disclaims any liability for loss or damage suffered from the proper or improper use of this product. Customers must satisfy themselves that the product is suitable for a particular purpose.

Furthermore, nothing contained herein shall be construed as a recommendation to use the product in conflict with existing patents.

The data does not signify any warranty with regards to the product properties.

## 16.0 Other Information

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