





**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, 1.0 M solution in toluene  
**EINECS** : none  
**CAS** : 10294-34-5  
**RTECS** : none
- 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  
 Tel: (+7)-8313-249 727, Fax: (+7)-8313-249 767  
 Only Representative - Espace Chemicals GmbH  
 Tel: + 49(0) 30 896779290-0, Fax: + 49(0) 30 896779290-1
- 1.4 Emergency telephone number:** (+7)-8313-249 750/ 630

## 2.0 Hazards Identification

- 2.1 Classification of the substance or mixture**  
 Highly flammable. Very toxic by inhalation and if swallowed. Causes burns. Harmful: may cause lung damage if swallowed. Harmful: danger of serious damage to health by prolonged exposure through inhalation. Possible risk of harm to the unborn child. Reacts violently with water.  
**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)
Flamm. Liq. 2 Acute Tox., Oral. 2 Asp. Tox. 1 Acute Tox., Ing. 3 Skin Corr. 1B Repr. 2 STOT SE 3 STOT RE 2	H225 H300 H304 H314 H331 H336 H361d H373	    Danger	H225 H300 H304 H314 H331 H336 H361d H373	EUH014

- 2.2 Label elements**  
**Hazard statement(s);**  
 H225 Highly flammable liquid and vapour.  
 H300 Fatal if swallowed.  
 H304 May be fatal if swallowed and enters airways.  
 H314 Causes severe skin burns and eye damage.  
 H331 Toxic if inhaled.  
 H336 May cause drowsiness or dizziness.  
 H361d Suspected of damaging the unborn child.  
 H373 May cause damage to organs through prolonged or repeated exposure.  
 EUH014 Reacts violently with water.

**Precautionary statement(s):**

P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash hands thoroughly after handling.
P280	Wear protective gloves/ protective clothing/ eye protection/ face 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.

**3.0 Composition/information on ingredients****3.1 Ingredient name**

<b>Boron trichloride</b>	12.9 wt%
CAS	10294-34-5
EINECS	233-658-4
Index-No.	005-002-00-5
Chemical formula	BCl <sub>3</sub>
Molecular mass	117.17 g/mol
Classification	Press. Gas; Acute Tox. 2; Skin Corr. 1B; H330, H314, H300, EUH014
<b>Toluene</b>	87.1 wt%
CAS	108-88-3
EINECS	203-625-9
Index-No.	601-021-00-3
Chemical formula	C <sub>7</sub> H <sub>8</sub> or C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub>
Molecular mass	92.1 g/mol
Classification	Flam. Liq. 2; Repr. 2; Asp. Tox. 1; STOT RE 2; Skin Irrit. 2; STOT SE 3; H225, H304, H315, H336, H361d, H373,

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

Consult a physician. Show this safety data sheet to the doctor in attendance.

**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.

**If swallowed**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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

Lung irritation, chest pain, pulmonary edema. Inhalation studies on toluene have demonstrated the development of inflammatory and ulcerous lesions of the penis, prepuce, and scrotum in animals. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, burning sensation, cough, wheezing.

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

no data available

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

**Suitable extinguishing media**

Dry powder.

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

Carbon oxides, Hydrogen chloride gas, Borane/boron oxides.

**5.3 Advice for firefighters**

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**

Wear respiratory protection. 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. Vapors can accumulate in low areas.

**6.2 Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

**6.3 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.

**6.4 Reference to other sections**

For disposal see section 13.

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

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

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

Store in cool place. 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. Never allow product to get in contact with water during storage. Handle and store under inert gas.

**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**

**Appropriate engineering controls**

General industrial hygiene practice.

**Personal protective equipment**

**Eye/face protection**

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.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

**Body Protection**

Impervious 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**

Respiratory protection not required. For nuisance exposures use type OV/AG (US) or type ABEK (EU EN 14387) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

## 9.0 Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

Appearance	: Colourless to brown liquid
Odour	: Specific odour
pH value at 10g/l H <sub>2</sub> O	: not available
Critical temperature	: not available
Boiling point	: not available
Flash point	: -18.9 °C
Flammability	: not available
Oxidizing properties	: not available
Explosive properties	: not available
Lower limit of the melting range	: not available
Vapour pressure	: not available
Partition coefficient	: not available
Viscosity	: not available
Relative density	: 0.909 g/cm <sup>3</sup> at 25 °C
Decomposition temp	: not available
Surface tension	: not available
Conductivity	: not available
Enthalpy of Vaporization	: not available
Solubility	: Soluble with hydrocarbons, aromatic solvents. Reacts with water, alcohols and phenols, ethers.

### 9.2 Other safety information

Ignition temperature	: not available
Melting point	: not available

## 10.0 Stability and Reactivity

### 10.1 Reactivity

no data available

### 10.2 Chemical stability

no data available

### 10.3 Possibility of hazardous reactions

Reacts violently with water.

### 10.4 Conditions to avoid

Heat, flames and sparks. Extremes of temperature and direct sunlight. Exposure to moisture.

### 10.5 Incompatible materials

Strong oxidizing agents

### 10.6 Hazardous decomposition products

Other decomposition products - no data available

## 11.0 Toxicological Information

### 11.1 Information on toxicological effects

#### Acute toxicity

no data available

#### 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: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Toluene)

**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** Harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. Vapours may cause drowsiness and dizziness.

**Ingestion** May be fatal if swallowed. Causes burns. Aspiration hazard if swallowed – can enter lungs and cause damage.

**Skin** Harmful if absorbed through skin. Causes skin burns.

**Eyes** Causes eye burns.

**Signs and Symptoms of Exposure**

Lung irritation, chest pain, pulmonary edema. Inhalation studies on toluene have demonstrated the development of inflammatory and ulcerous lesions of the penis, prepuce, and scrotum in animals. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, burning sensation, cough, wheezing.

**Additional Information**

RTECS: Not available

**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**

3286

**14.2 UN proper shipping name**

Flammable liquid, toxic, corrosive, n.o.s. (Boron trichloride, 1M solution in toluene)

**14.3 Transport hazard class(es)**

GGVS/GGVE/ADR/RID: 3 (6.1+8), Hazard Identification: 368, Classification: FTC, Tunnel code: (C/E);  
IMO/GGVSee: 3 (6.1+8), EmS: F-E, S-C; MFAG: see 4.2, Stowage: E;

Segregation: as for class 3, but “away from” class 4.1

ICAO/IATA: 3 (6.1+8), PAX: F, CAO: 360;

**14.4 Packaging group**

GGVS/GGVE/ADR/RID: I      IMO/GGVSee: I      ICAO/IATA: I

**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.

**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

**16.0 Other Information**

This information is to the best of Aviabor's current 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, any recommendations or suggestions are made without guarantee and we disclaim any liability for loss or damage suffered from use of this information. 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 any product in conflict with existing patents.