JSC AVIABOR

MATERIAL SAFETY DATA SHEET (MSDS)
according to Regulation (EC) No. 1907/2006
Version 2.0 Revision Date 04.04.2016

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

1.1 Product identifiers tert-Butylamine borane (TBAB)
EINECS 230-851-5
CAS 7337-45-3
RTECS EO 3900000

1.2 Relevant identified uses of the substance or mixture and uses advised against
As a reducing agent.

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
Toxic if swallowed. Harmful by inhalation. Irritating to eyes.

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)
Acute Tox. Derm. 3 Acute Tox. Oral. 3 Skin Irrit. 2 Eye Irrit. 2 Specific target organ toxicity-single exposure 3	H301 H311 H315 H319 H335	 Dgr	H301 H311 H315 H319 H335	-

2.2 Label elements

Hazard Statement

H301 Toxic if swallowed.
H311 Toxic in contact with skin.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Precautionary statement(s)

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing.
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.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.

3.0 Composition/Information on Ingredients

tert-Butylamine borane	100 wt%
Synonyms	Boron hydryde tert-butylamine, Borane-tert-butylamine-complex
IUPAC	Boron; 2-methylpropan-2-amine
Formula	$C_4H_{14}BN$
CAS	7337-45-3
EINECS	230-851-5
RTECS	EO 3900000
Molar mass	86.97
Classification:	Acute Tox. Derm. 3; Acute Tox. Oral. 3; Skin Irrit. 2; Eye Irrit. 2; STOT SE 3; H301, H311, H315, H319, H335

4.0 First-aid procedures

4.1 Description of first aid measures

After skin contact : Wash off immediately with plenty of water for at least 15 minutes.
After eyes contact : Rinse out the eyes with plenty of water with the eyelids held open. Immediately summon eye specialist.
After ingestion : Wash mouth out with water. Consult a doctor immediately.
After inhalation : Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

4.2 Most important symptoms and effects, both acute and delayed

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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 : Water spray, dry chemical, carbon dioxide.
Unsuitable extinguishing media : Don't use halogenated agents.

5.2 Special hazards arising from the substance or mixture

Development of hazardous combustion gases or vapours possible in the event of fire.

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

Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel.
Keep in suitable, closed containers for disposal.

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 formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

7.2 Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end uses

no data available

8.0 Control of exposure / Personal protection

8.1 Control parameters

Components with workplace control parameters

8.2 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

Face shield and safety glasses. 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

Complete suit protecting against chemicals. 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 particle respirator. If the respirator is the sole means of protection, use a full-face supplied air respirator.

9.0 Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Form	: powder, crystalline powder or crystalline flakes or chunks
Colour	: white
Odour	: specific
pH	: not available
Boiling point	: not available
Flash point	: not available
Flammability	: not available
Oxidizing properties	: not available
Explosive properties	: not available
Lower limit of the melting range	: 97 °C
Vapour pressure	: 363 mmHg at 25°C
Partition coefficient	: not available
Viscosity	: not available
Vapor density	: not available
Density	: not available

Bulk density	: 300-400 kg/m^3
Decomposition temp.	: > 100 °C
Surface tension	: not available
Conductivity	: not available
Enthalpy of Vaporization	: 28.27 kJ/mol
Solubility in water	: 20 g/l at 20 °C
Solubility in toluene	: 73 g/l at 20 °C

9.2 Other safety information

Ignition temperature	: Not available
Melting point	: 98-100 °C (dec.)

10.0 Stability and Reactivity

10.1 Reactivity
no data available

10.2 Chemical stability
no data available

10.3 Possibility of hazardous reactions
no data available

10.4 Conditions to avoid
Stable under normal temperatures and pressures. Thermal decomposition. Decomposition rate increases at 80 °C.

10.5 Incompatible materials
Strong oxidizing agents, acids.

10.6 Hazardous decomposition products
Carbon monoxide, carbon dioxide, nitrogen oxides, borane/boron oxides, hydrogen.

11.0 Toxicological Information

11.1 Information on toxicological effects

Acute toxicity
LD_{50} (oral, mouse) 25 mg/kg
LD_{50} (oral, rat) 96 mg/kg
LD_{50} (skin, rabbit) 820 mg/kg

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

Chronic exposure
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
Skin contact : Irritant. Harmful if absorbed through the skin.
Eye contact : Irritant.
Inhalation : Harmful.
Ingestion : Toxic
Additional Information
RTECS EO 3900000

12.0 Ecological Information

12.1 Toxicity : not available

12.2 Persistence and degradability : not available

12.3 Bioaccumulative potential : not available

12.4 Mobility in soil : not available

12.5 PBT and vPvB assessment : not available

12.6 Other adverse effects : not available

13.0 Disposal Considerations

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. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14.0 Transport Information

14.1 UN-Number
2811

14.2 UN proper shipping name
Toxic solid, organic, n.o.s. (tert-Butylamine-borane)

14.3 Transport hazard class(es)
GGVS/GGVE/ADR/RID: 6.1, Hazard Identification: 60, Classification: T2, Tunnel Code: (E)
IMO/GGVSee: 6.1, MFAG: 4.2, EmS: F-A, S-A, Stowage: A
ICAO/IATA: 6.1, PAX 670, CAO 677

14.4 Packaging group
GGVS/GGVE/ADR/RID: III IMO/GGVSee: III ICAO/IATA: III

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

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 material safety data sheet was prepared in compliance with laws, regulations and administrative provisions relative to classification, packaging and labelling of dangerous substances and preparations.

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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.