JSC AVIABOR

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 : 9-Borabicyclo[3.3.1]nonane solution, 0.5 M (molar) in tetrahydrofuran
EINECS : 206-000-9
CAS : 280-64-8
RTECS : not available

1.2 Relevant identified uses of the substance or mixture and uses advised against
Hydroboration reagent and polymer derivatizing 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 Hazard Identification

2.1 Classification of the substance or mixture
Reacts violently with water, moist air, alcohols, acids, and other incompatible materials releasing flammable hydrogen gas. Highly flammable liquid and vapor. Irritating to eyes, respiratory system and skin. May be absorbed through the skin. May cause liver and kidney effects.
No manipulations with the product are allowed until precautions recommended by the manufacturer 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)
Flam. Liq. Cat.2 Water-react. Cat.1 Skin Irrit. Cat.2 Eye Dam. Cat.1 Carc.Cat.2 STOT SE Cat.3	H225 H260 H315 H319 H351 H335	 Danger	H225 H260 H315 H319 H351 H335	EUH019

2.2 Label elements
Hazard Statement(s):

H225	Highly flammable liquid and vapour.
H260	In contact with water releases flammable gases which may ignite spontaneously.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H351	Suspected of causing cancer.
H335	May cause respiratory irritation
EUH019	May form explosive peroxides.

Precautionary statement(s):

P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P223	Keep away from any possible contact with water, because of violent reaction and possible flash fire.
P231+P232	Handle under inert gas. Protect from moisture.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P370+P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P422	Store contents under inert gas.

3.0 Composition/information on ingredients

3.2 Mixtures

9-Borabicyclo[3.3.1]nonane

Trade names/Synonyms	9-BBN
EINECS	206-000-9
CAS	280-64-8
Chemical formula	$C_8H_{15}B$
Molar mass	122.02 g/mole
Contents	6.5-7.0 wt%
Classification	Flam. Sol. 1; Water-react. 2; Skin Irrit. 2; Eye Irrit. 2; STOT SE 3; H228, H261, H315, H319, H335, EUH014

Tetrahydrofuran

EINECS	203-726-8
CAS	109-99-9
Index no.	603-025-00-0
Chemical formula	C_4H_8O
Molar mass	72.1 g/mole
Contents	93.0-93.5 wt%
Classification	Flam. Liq. 2; Eye Irrit. 2; Carc. 2; STOT SE 3; H225, H319, H335, H351, EUH019

4.0 First Aid Measures

4.1 Description of first aid measures

After skin contact

Immediately wash off the affected skin area with plenty of a diluted ammonia solution (~1%) with a subsequent washing by water.

After eyes contact

Rinse out the eyes with plenty of water with the eyelids wide open. Immediately summon an eye-specialist.

After ingestion

Make victim drink plenty of water, induce vomiting. Consult a doctor immediately.

After inhalation

Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Urgent admission to a hospital.

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

Powder extinguisher, inert gas.

Unsuitable extinguishing media

Water, foam, carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Development of hazardous combustion gases possible in the event of fire.

5.3 Precautions for fire-fighters
Full protective clothing including protective gloves and boots. For respiratory protection wear a self-contained breathing apparatus operated in a positive-pressure mode.

5.4 Further information
no data available

6.0 Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures
Suitable protective clothing.

6.2 Environmental precautions
Do not allow to enter sewerage system.

6.3 Methods and materials for containment and cleaning up
Cover with sand, place to air-proof containers, decompose with a mixture (1:1) of isopropyl alcohol and send for fire treatment.
Handle in compliance with all local, state and federal laws and regulations.

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.
Handle and store under inert gas. Air-sensitive.

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
Refer to section 7.
Personal protective equipment
Normal use & handling
Respiratory - breathing mask
Hand protection - rubber gloves
Eye protection - closely fitting goggles
Skin protection - protective clothing
Emergency handling
Full protective clothing, including gloves and boots, a breathing mask.
Exposure limits
No data available.
Engineering controls
A leakproof system, packless valves, welded piping and other leakproof construction.
Industrial hygiene
During processing ensure efficient exhaust ventilation in the working area. Keep working clothes separate. Wash hands before breaks of the work and after working with the substance. Change contaminated or soaked clothes. Regularly send the clothes to laundry. Shower after work is obligatory.

9.0 Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance

Form	: liquid
Odour	: specific
Colour	: colourless

Safety Related Information

pH	: no data available
Boiling point	: 65.5-66.5 °C
Flash point	: – 17 °C
Flammability	: no data available
Oxidizing properties	: no data available
Explosive properties	: no data available
Lower limit of the melting range	: no data available
Vapour pressure	: no data available
Partition coefficient	: no data available
Viscosity	: no data available
Vapor density	: no data available
Density	: 0.894 g/cm^3 at 25 °C
Bulk density	: no data available
Decomposition temp.	: no data available
Surface tension	: no data available
Conductivity	: no data available
Enthalpy of Vaporization	: no data available
Solubility in water	: hydrolyzes
Solubility	: no data available

9.2 Other safety information

Autoignition temperature	: 250 °C for THF
Melting point	: not applicable

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
Reacts violently with water.

10.4 Conditions to avoid
see Section 7

10.5 Incompatible materials
Strong acids, oxidizing agents, moisture.

10.6 Hazardous decomposition products
Tetrahydrofuran, hydrogen gas.

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: 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 harmful if inhaled. Causes respiratory tract irritation.
Ingestion Harmful if swallowed.
Skin May be harmful if absorbed through skin. Causes skin irritation.
Eyes Causes eye burns.
Additional Information
RTECS: no data 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
Burn in a chemical incinerator equipped with an afterburner and scrubber, but exert extra care in igniting, as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.
Contaminated packaging
Dispose of as unused product.

14.0 Transport Information

14.1 UN-Number
3399

14.2 UN proper shipping name
Organometallic substance, liquid, water-reactive, flammable (9-Borabicyclo[3.3.1]nonane solution in THF)

14.3 Transport hazard class(es)
GGVS/GGVE/ADR/RID: 4.3 (3), Hazard Identification: X323, Classification: WF1, Tunnel Code: (B/E)
IMO/GGVSee: 4.3(3), MFAG: 4.2, EmS: F-G, S-N, Stowage category: E
ICAO/IATA: 4.3(3), PAX: F, CAO: 494

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

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