

**MATERIAL SAFETY DATA SHEET (MSDS)**  
**according to Regulation (EC) No. 1907/2006**  
**Version 2.1 Revision Date 01.06.2015**

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

- 1.1 Product identifiers**      Dimethyl sulfide borane  
**EINECS**                      236-313-6  
**CAS**                              13292-87-0  
**RTECS**                         PV 5080000
- 1.2 Relevant identified uses of the substance or mixture and uses advised against**  
 Used in hydroboration reactions of alkenesilanes, L-pinene and other alkenes, in selective reduction of carboxylic acids, carboxylamides, nitriles, imines and oxines.
- 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**  
 Colourless or light-amber, easily flammable liquid with characteristic unpleasant odour. Toxic at vapour inhalation, swallowing and skin contact. Do not handle or use until safety precautions recommended by the manufacturer have been 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)
Flammable liquids. 2 Water-react. 1 Skin irrit. 2 Eye Dam. 1 STOT SE. 3	H225 H260 H315 H318 H335	 Danger	H225 H260 H315 H318 H335	EUH014

- 2.2 Label elements**
- Hazard Statement**
- H225      Highly flammable liquid and vapour.  
 H260      In contact with water releases flammable gases, which may ignite spontaneously.  
 H315      Causes skin irritation.  
 H318      Causes serious eye damage.  
 H335      May cause respiratory irritation.  
 EUH014   Reacts violently with water.

**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**

**Dimethyl sulfide borane in Dimethyl sulfide:** > = 90 % wt.

Trade names/Synonyms: Borane Dimethyl sulfide Complex,  
 Borane Methyl sulfide Complex

CAS-No. : 13292-87-0

EINECS : 236-313-6

RTECS : PV 5080000

Chemical formula :  $(\text{CH}_3)_2\text{S} \cdot \text{BH}_3$

Molar weight : 75.97

**Classification** : Flam. Liq. 2; Water-react 1; Skin Irrit. 2; Eye Dam. 1; STOT SE 3;  
 H225, H315, H318, H335, H260, EUH014.

**Dimethyl sulfide** : < = 10 % wt.

CAS-No. : 75-18-3

EINECS : 200-846-2

Chemical formula :  $(\text{CH}_3)_2\text{S}$

Molar weight : 62.14

**Classification** : Flam. Liq. 2; Skin Irrit. 2; Eye Dam. 1; STOT SE 3;  
 H225, H315, H318, H335.

**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**

Wash off with soap and plenty of water. 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**

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**

During fire formation of toxic products is possible.

**5.3 Precautions for fire-fighters**

Wear full protective clothing, including protective gloves and boots. For respiratory protection, wear a self-contained breathing apparatus.

**6.0 Accidental Release Measures**

**6.1 Personal precautions, protective equipment and emergency procedures**

Leave the place. Use personal protective respiratory equipment and protective clothing.

**6.2 Environmental precautions**

Do not allow to enter sewerage system.

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

Dry the place of release with sand. Place to air-proof container and treat with a mixture of isopropyl alcohol and water (1:1) and send for fire treatment.

**6.4 Reference to other sections**

For disposal see section 13.

**7.0 Handling and Storage**

**7.1 Precautions for safe handling**

Eating, drinking, smoking as well as keeping of food in a workroom is forbidden. Use special equipment suitable for this product. If any doubts contact the supplier.

The container is supplied with handling instructions.

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

Store in closed air- and water-tight containers in an inert gas atmosphere, at the temperature less than 30 °C in a well ventilated place. VbF: A1 (German classification of storage class only).

**7.3 Specific end uses**

Dimethyl sulfide borane does not mix with water, but slowly reacts with it forming a protective crust of boric acid between water and Dimethyl sulfide borane. Is hydrolyzed in moist air. Is vigorously decomposed by a mixture of isopropyl alcohol and water (1:1) as well as by acids.

**8.0 Exposure Control and Personal Protection**

**8.1 Control parameters**

**Components with workplace control parameters**

**8.2 Exposure controls**

**Personal protection**

**Normal use & handling**

Use personal protective equipment for respiratory and skin protection.

**Technical equipment**

A leak-proof system, welded pipelines, packless valves and other leak-proof constructions.

**Industrial hygiene**

When handling the product provide an effective exhaust ventilation in a working place. Keep working clothes in a separate place. Wash hands before breaks and after handling the product. Change the contaminated clothes, take it to laundry regularly. Shower after work is obligatory.

**9.0 Physical and Chemical Properties**

**9.1 Information on basic physical and chemical properties**

Colourless or light-amber readily flammable liquid with a characteristic unpleasant odour.

pH : not available

Boiling point : not available; decomposes into diborane and dimethyl sulfide at the temperature of 44 °C.

Flash point : + 18 °C

Ignition temperature	: not available
Self-ignition temperature	: + 91 °C
Temperature limits of fire spreading	: lower : + 2 °C higher : + 13 °C
Oxidizing properties	: not available
Explosive properties	: not available
Lower limit of the melting range	: not available
Vapour pressure at 22.2 °C	: 19.1 mm Hg, dependence on the temperature Log P (mm Hg) = 9.22-2346/T (T=0)
Partition coefficient	: not available
Viscosity	: not available
Vapor density	: not available
Relative density of the liquid (at water density 1)	: 0.801
Bulk density	: not available
Decomposition temp	: not available
Surface tension	: not available
Conductivity	: not available
Enthalpy of Vaporization	: not available
Solubility in water	: hydrolysis
Solubility	: Soluble in diethyl ether, methylene chloride, hexane, petroleum ether, THF, diglyme, benzene, toluene, xylene.

## 10.0 Stability and Reactivity

### 10.1 Reactivity

Hydrolyses under moist air exposure. React with water, alcohols and their water solutions, organic and mineral acids evolving hydrogen - extremely fuel gas. May reduce nitriles, ketones, amides and borohydrolyze olefins.

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

Reacts violently with water.

### 10.4 Conditions to avoid

Heat, flames and sparks. Exposure to moisture.

### 10.5 Incompatible materials

no data available

### 10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Sulphur oxides, Borane/boron oxides.

## 11.0 Toxicological Information

### 11.1 Information on toxicological effects

#### Acute toxicity

No data available

#### Irritation and corrosion

Eyes – rabbit – Moderate eye irritation

#### 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

**Route of exposure**

- After skin contact : may be harmful if absorbed through skin. Causes skin irritation.
- After eye contact : causes serious eye irritation
- After inhalation : may be harmful if inhaled. Causes respiratory tract irritation.
- After ingestion : may be harmful if swallowed.

**Additional information**

RTECS : PV 5080000

**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 Consideration****13.1 Waste treatment methods**

Dissolving in water solution of isopropyl alcohol (1:1) with a further fire treatment.  
Dispose in compliance with all local, state, and federal laws and regulations.

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

3399

**14.2 UN proper shipping name**

Organometallic substance, liquid, water-reactive, flammable (Dimethyl sulfide borane)

**14.3 Transport hazard class(es)**

GGVS/GGVE/ADR/RID: 4.3(3), Hazard Identific.: X323, Classification: WF1, Tunnel Code: (B/E)  
IMDG/GGVSee: 4.3(3), MFAG: 4.2, EmS: F-G, S-N, Stowage: E  
ICAO/IATA: 4.3(3), PAX: F, CAO: 494

**14.4 Packaging group**

GGVS/GGVE/ADR/RID: I                      IMDG/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 users**

Avoid transport in vehicles where the load space is not separated from the driver's compartment. Ensure that the vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or emergency. Before transporting product containers ensure that they are firmly secured and the valve is closed and not leaking; the valve outlet cap nut or plug is fitted; the valve protective device is correctly fitted. Also 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**

Ensure that the personnel working with the product is aware and understands the toxicity and fire danger of Dimethyl sulfide borane. Before using this product in any new process or experiment study the compatibility of substances and exclude the possibility of evaporation of the product.

**WARNING:** This is a Dangerous chemical product. By following the directions and warnings on this material safety data sheet, product label and any publication referred to thereon, the danger can be greatly reduced, but never entirely eliminated. JSC AVIABOR makes no warranties, expressed or implied, with respect to this product and expressly disclaims the warranty of merchantability and any warranty of fitness for a particular purpose.

Users assume all risk in handling, using or storing this product, even if they do so in accordance with the information and instructions given.

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