

MATERIAL SAFETY DATA SHEET (MSDS)
according to Regulation (EC) No. 1907/2006
Version 3.1 Revision Date 01.08.2019

1.0 Identification of substance/preparation and company/enterprise

- 1.1 Product identifiers** : Methoxydiethylborane (MDEB) 50% in Tetrahydrofuran
ELINCS : none
CAS : 7397-46-8
RTECS : none
- 1.2 Relevant identified uses of the substance or mixture and uses advised against**
 In fine organic synthesis to produce boric acid ether from organolithium agents.
- 1.3 Details of the supplier of the safety data sheet**
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2.0 Hazards Identification

2.1 Classification of the substance or mixture 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. (2)	H225	 Danger	H225	EUH019
Acute Tox. Oral. (4)	H302		H302	
Acute Tox. Derm. (4)	H312		H312	
Acute Tox. Inh. (4)	H332		H332	
Skin Corrosion/Irrit. (1B)	H314		H314	
Eye Corrosion/Irrit. (1)	H318		H318	
STOT SE (3A)	H335		H335	
Carcinogenicity (2)	H351		H351	

2.2 Label elements

Hazard statement(s)

- H225 Highly flammable liquid and vapour.
 H302 Harmful if swallowed.
 H332 Harmful if inhaled.
 H312 Harmful in contact with skin.
 H314 Causes severe skin burns and eye damage.
 H318 Causes serious eye damage.
 H335 May cause respiratory irritation.
 H351 Suspected of causing cancer.

Precautionary statement(s)

- P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 P231 Handle under inert gas.

- P240 Ground/bond container and receiving equipment.
 P273 Avoid release to the environment.
 P280 Wear protective gloves/protective clothing.
 P351 Rinse cautiously with water for several minutes.
 P330 Rinse mouth.
 P308/313 IF exposed or concerned: Get medical advice/attention.

Supplemental Hazard information (EU)

EUH019 May form explosive peroxides.

3.0 Composition/Information on Ingredients

Methoxydiethylborane	: 50 wt%
Trade names/Synonyms	: Diethylmethoxyborane; Methyl-diethylborinate
Chemical formula	: (C ₂ H ₅) ₂ BOCH ₃
Molar mass	: 99.8
CAS-No.	: 7397-46-8
ELINCS	: 425-380-9
RTECS	: none
IUPAC	: diethylmethoxy borane
Classification:	Pyr. Liq. 1, Acute Tox. Inh. 4, Acute Tox, Skin Corr. 1B, Skin Sens. 1, STOT RE 2, Aquatic Chronic 4 H250, H332, H312, H302, H373, H314, H317, H413
Tetrahydrofuran	: 50 wt%
Trade names/Synonyms	: Oxacyclopentane; Oxolane; Tetramethylene oxide; THF
Chemical formula	: C ₄ H ₈ O
Molar mass	: 72.11
CAS-No.	: 109-99-9
EINECS	: 203-726-8
RTECS	: LU5950000
IUPAC	: Furan, tetrahydro-
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 flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Discard contaminated clothing and shoes.

After eyes contact:

Immediately flush eyes with plenty of water for at least 15 minutes, holding eyes open.

After ingestion:

Give two glasses of water and permit vomiting if nauseated. Never give anything by mouth to an unconscious person.

After inhalation:

Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. 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**

Temporary control may be obtained with foam, dry chemical, or carbon dioxide. Shut off source of fire as soon as possible without risk. Control and confine fire. Use protection equipment and water spray to control heat and wear full protective clothing, including protective gloves and boots. For respiratory protection wear a NIOSH/MSHA approved self-contained breathing apparatus with full facepiece operated in a positive-pressure mode.

Unsuitable extinguishing media

If practical, allow fire to burn itself out. DO NOT use halogenated hydrocarbon fire extinguishers.

5.2 Special hazards arising from the substance or mixture

DEMB can react violently or detonate when mixed with strong oxidizing agents or halogenated hydrocarbons. DEMB solution burns with green and yellow flame and produces a dense black smoke. Work upwind if possible.

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**

See Section 5. FIRE FIGHTING MEASURES. Properly dispose of all residues immediately. Handle in compliance with all local, state and federal laws and regulations.

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

Cover with dry lime, sand, or soda ash. Place in covered containers using non-sparking tools and transport outdoors. Ventilate area and wash spill site after material pickup is complete.

6.4 Reference to other sections

For disposal see section 13.

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

Directions for Safe Handling: Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

7.2 Conditions for safe storage, including any incompatibilities

Conditions of Storage: Keep tightly closed. Keep away from heat, sparks, and open flame. Store in a cool dry place. Handle and store in a closed system under dry nitrogen or dry argon gas.

7.3 Specific end uses

no data available

8.0 Exposure Control / Personal Protection**8.1 Control parameters****Components with workplace control parameters****8.2 Exposure controls****Normal use & handling:**

When exposure to eyes or skin is possible, wear chemical protective goggles with face-shield, fire-retardant protective clothing, and leather gloves. Exposure limits have not been established for MDEB. When inhalation of vapor is possible, wear a NIOSH/MSHA approved self-contained breathing apparatus with full face-piece operated in a positive-pressure mode. High volume safety showers and eye wash facility should be convenient to operating personnel.

Emergency handling:

Wear full protective clothing, including protective gloves and boots. For respiratory protection, wear a NIOSH/MSHA approved self-contained breathing apparatus with full face-piece operated in a positive-pressure mode.

Exposure guidelines:

None established for the methoxydiethylborane.

Engineering controls:

Maintain a leak-proof system. Use packless valves, welded piping, and other leak-proof equipment.

Provide adequate local exhaust ventilation to minimize operator exposure.

Maintain a nitrogen blanket on vessels containing MDEB.

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

Form	: water-white to pale yellow liquid
Odour	: unique, sweet odor
pH	: not available
Boiling point	: not available
Flash point	: – 18 °C -closed cup
Flammability	: not available
Oxidizing properties	: not available
Explosive properties	: not available
Lower limit of the melting range:	not available
Vapour pressure	: 58.2 kPa at 50 °C (or 17.1 kPa at 20 °C)
Partition coefficient	: not available
Viscosity	: not available
Vapor density	: not available
Density	: 0.85 g/ml at 20 °C
Bulk density	: not available
Decomposition temp.	: not available
Surface tension	: not available
Conductivity	: not available
Enthalpy of vaporization	: not available
Solubility in water	: reacts slowly
Solubility	: not available
Air reactivity	: catches fire if exposed to air

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

Stable if stored and handled as recommended. Catches fire if exposed to air.

Keep away from heat, sparks and flame.

10.3 Possibility of hazardous reactions

Reacts with water.

10.4 Conditions to avoid

Exposure to moisture.

10.5 Incompatible materials

Oxidizing agents, organic peroxides, halogenated hydrocarbons.

10.6 Hazardous decomposition products

Carbon monoxide, carbon dioxide, boron oxides.

11.0 Toxicological Information**11.1 Information on toxicological effects****Acute toxicity**

No data available

Irritation and corrosion

No data available

Skin corrosion/ irritation

No data available

Serious eye damage/ eye irritation

No data available

Respiratory or skin sensitization

May cause sensitization by skin contact

Germ cell mutagenicity

No data available

Carcinogenicity

IARC: No component of this product contained 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 : harmful
- After eye contact : causes eye burns
- After inhalation : harmful
- After ingestion : harmful

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**

Dispose in compliance with all local, state and federal laws and regulations.

14.0 Transport Information**14.1 UN-Number**

2920

14.2 UN proper shipping name

Corrosive liquid, flammable, n.o.s. (Diethylmethoxyborane in THF, 50% solution)

14.3 Transport hazard class(es)

GGVS/GGVE/ADR/RID: 8(3), Hazard Identification: 883, Classification: CF1, Tunnel Code: (D/E)

IMO/GGVSee: 8(3), MFAG: 760, EmS: F-E, S-C, Stowage: C

ICAO/IATA: 8(3), PAX: 850 CAO: 854

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

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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