

## 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**            N,N-Diethylanilineborane  
**EINECS**                                236-305-2  
**CAS**                                        13289-97-9  
**RTECS**                                    none
- 1.2 Relevant identified uses of the substance or mixture and uses advised against**  
 Hydroboration and oxazaborolidine catalyzed reduction reactions.
- 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**  
 Reacts with water, moist air, alcohols, and acids releasing flammable hydrogen gas, which can ignite explosively. Rapidly absorbed through the skin and lungs - effects may be delayed. May cause eye, skin, and respiratory tract irritation; central nervous system depression with nausea, dizziness, and headache. Combustible liquid and vapor.

**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 Water-react. 2	H225 H261	 Danger	H225 H261	EUH014

### 2.2 Label elements

**Hazard statement(s)**

- H225            Highly flammable liquid and vapor.  
 H261            In contact with water releases flammable gas.  
 EUH014        Reacts violently with water.

**Precautionary statement(s)**

- P210            Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
 P231+P232    Handle under inert gas. Protect from moisture.  
 P422            Store contents under inert gas.

### 3.0 Composition / information on ingredients

Trade names/Synonyms    : DEANB, Borane-N,N-diethylaniline, Borane N,N-diethylaniline complex

**N,N-Diethylanilineborane**

- Concentration                98 wt% min  
 CAS-No.                        13289-97-9  
 EINECS                         236-305-2

Chemical formula:	C <sub>10</sub> H <sub>18</sub> BN
Molar mass	163.07 g/mol
Classification	Flam.Liq. 2; Water-react. 2; H225, H261, EUH014
<b>N,N-Diethylaniline</b>	
Concentration	2 wt% max
CAS-No.	91-66-7
EINECS	202-088-8
Chemical formula:	C <sub>10</sub> H <sub>15</sub> N
Molar mass	149.23 g/mol
IUPAC Name	N,N-diethyl-N-phenylamine
Classification	Acute Tox. Inh. 3; Acute Tox. Derm. 3; Acute Tox. Oral. 3 H301, H311, H331

#### 4.0 First-aid procedures

##### 4.1 Description of first aid measures

###### After skin contact

Immediately flush skin with plenty of water for at least 20 minutes while removing contaminated clothing and shoes. Dispose of contaminated clothing and shoes in compliance with all local, state, and federal laws and regulations.

###### After eyes contact

Immediately flush eyes with plenty of water for at least 20 minutes while holding eyelids open.

###### After ingestion

For any accidental contamination of the mouth, gargle with water and rinse mouth thoroughly for at least 20 minutes. If swallowed, do not induce vomiting. Give demulcent such as milk, olive oil, or margarine in small amounts up to 2 or 3 ounces. Never give anything by mouth to an unconscious person.

###### After inhalation

Move the subject into the fresh air. If breathing has ceased or is laboured commence artificial respiration. If breathing is difficult, give oxygen. Immediately call a doctor.

##### 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 procedures

##### 5.1 Extinguishing media

###### Suitable extinguishing media

Use carbon dioxide or dry chemical.

###### Unsuitable extinguishing media

Water, foam, halogenated extinguishing agents.

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

Flammable liquid. Emits toxic fumes under fire conditions. Material readily reacts with water generating flammable and/or explosive hydrogen gas.

##### 5.3 Precautions for fire-fighters

Full protective firefighting equipment must be worn. For respiratory protection, wear self-contained breathing apparatus with full face piece 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

Don't allow to enter sewerage system.

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

Eliminate ignition sources. Do not flush spill to drain. Mix with large amounts of dry inert absorbent material such as dry soda ash or dry sand. Using non-sparking tools, scoop solids into a dry metal container, properly label and cover. Take immediately to a waste handling area. If contaminated, flammable hydrogen gas can evolve and cause fire, explosion, or pressure buildup in container. Properly dispose of all residues immediately. 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**

Store in a well-ventilated place keeping the containers closed when not used. Do not smoke while handling.

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

Keep far away from sources of heat, flame, sparks and any possible contact with water, moist air, alcohols, acids, and other incompatible materials. Do not expose to air. Handle and store in a closed system under dry nitrogen gas.

**7.3 Special requirements**

Don't store with oxidizing and acid substances. Take precautionary measures against static discharges.

**8.0 Exposure Control / Personal Protection****8.1 Control parameters**

**Components with workplace control parameters**

**8.2 Exposure controls****Engineering controls**

Maintain a leakproof system. Handle in a closed system under dry nitrogen gas. Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits. Prevent electrostatic charge buildup by using common bonding and grounding techniques.

**General hygiene measures**

During processing ensure efficient exhaust ventilation in the working area. Wash hands before breaks of the work and after working with the substance. Keep working clothes separate. Wash thoroughly after handling. Wash contaminated clothing before reuse. Discard contaminated shoes.

**Personal protective equipment**

Respiratory	: breathing mask
Hand protection	: rubber gloves
Eye protection	: closely fitting goggles
Skin protection	: protective clothing

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

Form	: liquid
Colour	: colourless to yellow
Odour	: slight amine
pH	: decomposition by water
BP/BP Range	: decomposition
MP/MP Range	: -30 °C ÷ -27 °C
Flash Point	: 21 °C for N,N-Diethylanilineborane; 88 °C for N,N-Diethylaniline
Flammability	: N/A
Autoignition Temp	: 630 °C for N,N-Diethylaniline
Oxidizing Properties	: N/A
Explosive Properties	: N/A
Explosion Limits Lower	: N/A
Vapor Pressure	: N/A
SG/Density	: 0.91-0.92 g/ml

Partition Coefficient	: N/A
Viscosity	: N/A
Vapor Density	: N/A
Saturated Vapor Conc.	: N/A
Evaporation Rate	: N/A
Bulk Density	: N/A
Decomposition Temp.	: N/A
Solvent Content	: Absence
Water Content	: Absence
Surface Tension	: N/A
Conductivity	: N/A
Miscellaneous Data	: N/A
Solubility	: N/A

## 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

The product is stable in normal conditions of use and storage. Keep away from heat, sparks, and flame.

### 10.5 Incompatible materials

Water, moist air, alcohols, acids, and strong oxidizing agents.

### 10.6 Hazardous decomposition products

Hydrogen, carbon monoxide, carbon dioxide, nitrogen oxides, boron oxides, boranes.

## 11.0 Toxicological Information

### 11.1 Information on toxicological effects

No information found for the product.

N,N-Diethylaniline is an expected metabolite of N,N-diethylanilineborane and is also an impurity of this product. N,N-Diethylaniline can be irritating to eyes, skin, and mucous membranes of the upper respiratory tract; may have central nervous system depressant effects; can be absorbed rapidly by all routes; and can induce methemoglobinemia. Methemoglobinemia, an anemic hypoxia, results when the heme iron of hemoglobin undergoes a true chemical oxidation from the ferrous to the ferric state. Methemoglobin (MetHb) is greenish-brown to black in colour and cannot combine reversibly with oxygen. The occurrence of methemoglobinemia has been associated with exposure to aniline and related chemical structures; therefore, while no industrial cases have been reported, exposure to N,N-diethylaniline should be regarded as having the potential to cause the anoxia which results in methemoglobinemia. N,N-Diethylaniline is an in vitro mutagen.

LC<sub>50</sub> (inhalation, rat): 1920 mg/m<sup>3</sup> for N,N-diethylaniline.

#### 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. May cause respiratory tract irritation.

**Ingestion** May be harmful if swallowed.

**Skin** May be harmful if absorbed through skin. May cause skin irritation.

**Eyes** May cause eye irritation.

**Signs and Symptoms of Exposure**

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

**Additional Information**

RTECS: Not available

## 12.0 Ecological Information

<b>12.1 Toxicity:</b>	no data available
<b>12.2 Persistence and degradability:</b>	no data available
<b>12.3 Bioaccumulative potential:</b>	no data available
<b>12.4 Mobility in soil:</b>	no data available
<b>12.5 Results of PBT and vPvB assessment:</b>	no data available
<b>12.6 Other adverse effects:</b>	no data available

## 13.0 Observation Concerning Disposal

### 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. 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

1993

### 14.2 UN proper shipping name

Flammable liquid, n.o.s. (N,N-Diethylanilineborane)

### 14.3 Transport hazard class(es)

GGVS/GGVE/ADR/RID: 3, Hazard Identification: 33, Classification Code: F1, Tunnel Code: (D/E)

IMO/GGVSee: 3, MFAG: 340, EmS: F-E, S-E, Stowage: B;

ICAO/IATA: 3, PAX: 353, CAO: 364

### 14.4 Packaging group

GGVS/GGVE/ADR/RID: II

IMO/GGVSee: II

ICAO/IATA: II

### 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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