

# **SAFETY DATA SHEET**

Revision Date 01-Apr-2024 Revision Number 4

# 1. Identification

Product Name Diethylmethoxyborane, 1M solution in THF

Cat No. : L15107

Synonyms No information available

Recommended Use Laboratory chemicals.

**Uses advised against** Food, drug, pesticide or biocidal product use.

### Details of the supplier of the safety data sheet

### Company

Thermo Fisher Scientific Chemicals, Inc. 30 Bond Street Ward Hill, MA 01835-8099

Tel: 800-343-0660 Fax: 800-322-4757

# **Emergency Telephone Number**

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11 Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99 **CHEMTREC** Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

# 2. Hazard(s) identification

### Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids Category 2 Pyrophoric liquids Category 1 Acute oral toxicity Category 4 Skin Corrosion/Irritation Category 1 B Serious Eye Damage/Eye Irritation Category 1 Skin Sensitization Category 1 Carcinogenicity Category 2 Specific target organ toxicity (single exposure) Category 3 Target Organs - Respiratory system, Central nervous system (CNS). Specific target organ toxicity - (repeated exposure) Category 2 Target Organs - Stomach, Liver, spleen, Adrenal gland, Adrenal cortex.

### **Label Elements**

# Signal Word

Danger

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#### **Hazard Statements**

Highly flammable liquid and vapor

Catches fire spontaneously if exposed to air

Harmful if swallowed

Causes severe skin burns and eye damage

May cause respiratory irritation

May cause an allergic skin reaction

May cause drowsiness or dizziness

Suspected of causing cancer

May cause damage to organs through prolonged or repeated exposure



### **Precautionary Statements**

#### Prevention

Obtain special instructions before use

Do not handle until all safety precautions have been read and understood

Use personal protective equipment as required

Wash face, hands and any exposed skin thoroughly after handling

Do not eat, drink or smoke when using this product

Do not breathe dust/fume/gas/mist/vapors/spray

Contaminated work clothing should not be allowed out of the workplace

Wear protective gloves

Use only outdoors or in a well-ventilated area

Keep away from heat/sparks/open flames/hot surfaces. - No smoking

Keep container tightly closed

Ground/bond container and receiving equipment

Use explosion-proof electrical/ventilating/lighting equipment

Use only non-sparking tools

Take precautionary measures against static discharge

Do not allow contact with air

Keep cool

### Response

Immediately call a POISON CENTER or doctor/physician

### Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

#### Skin

Wash contaminated clothing before reuse

If skin irritation or rash occurs: Get medical advice/attention

IF ON SKIN: Immerse in cool water/wrap with wet bandages

#### **Eves**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

### Ingestion

Rinse mouth

Do NOT induce vomiting

### Fire

In case of fire: Use CO2, dry chemical, or foam for extinction

### Storage

Store locked up

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

Store contents under inert gas

### **Disposal**

Dispose of contents/container to an approved waste disposal plant

### Hazards not otherwise classified (HNOC)

May form explosive peroxides

WARNING. Cancer - https://www.p65warnings.ca.gov/.

# 3. Composition/Information on Ingredients

Component	CAS No	Weight %
Tetrahydrofuran	109-99-9	88.75
Borinic acid, diethyl-, methyl ester	7397-46-8	11.25

# 4. First-aid measures

**General Advice** Show this safety data sheet to the doctor in attendance. Immediate medical attention is

required.

**Eye Contact**Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Immediate medical attention is required.

**Skin Contact** Wash off immediately with plenty of water for at least 15 minutes. Remove and wash

contaminated clothing and gloves, including the inside, before re-use. Call a physician

immediately.

**Inhalation** If not breathing, give artificial respiration. Remove from exposure, lie down. Do not use

mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory

medical device. Call a physician immediately.

**Ingestion** Do NOT induce vomiting. Clean mouth with water. Never give anything by mouth to an

unconscious person. Call a physician immediately.

Most important symptoms and

effects

Causes burns by all exposure routes. Difficulty in breathing. May cause allergic skin reaction. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain,

muscle pain or flushing

Notes to Physician Treat symptomatically

### Fire-fighting measures

Suitable Extinguishing Media Carbon dioxide (CO2). Powder. Foam. Water may be ineffective. CO2, dry chemical, dry

sand, alcohol-resistant foam. Water mist may be used to cool closed containers.

Unsuitable Extinguishing Media No information available

**Flash Point** -6 °C / 21.2 °F

Method - No information available

**Autoignition Temperature** 

**Explosion Limits** 

No information available

Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available

Sensitivity to Static Discharge No information available

### **Specific Hazards Arising from the Chemical**

Thermal decomposition can lead to release of irritating gases and vapors. The product causes burns of eyes, skin and mucous membranes. Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

### **Hazardous Combustion Products**

Carbon monoxide (CO). Carbon dioxide (CO2). Oxides of boron.

### **Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

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Health	Flammability	Instability	Physical hazards
3	4	0	-

### 6. Accidental release measures

**Personal Precautions** 

Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Remove all sources of ignition. Take precautionary measures against static discharges. Should not be released into the environment. See Section 12 for additional Ecological Information.

**Environmental Precautions** 

**Methods for Containment and Clean** Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. **Up**Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

# 7. Handling and storage

Handling

Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance. If peroxide formation is suspected, do not open or move container. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.

Storage.

Corrosives area. Keep containers tightly closed in a dry, cool and well-ventilated place. Containers should be dated when opened and tested periodically for the presence of peroxides. Should crystals form in a peroxidizable liquid, peroxidation may have occurred and the product should be considered extremely dangerous. In this instance, the container should only be opened remotely by professionals. Keep away from heat, sparks and flame. Incompatible Materials. Oxidizing agent.

# 8. Exposure controls / personal protection

### **Exposure Guidelines**

Component	ACGIH TLV	OSHA PEL	NIOSH	Mexico OEL (TWA)
Tetrahydrofuran	TWA: 50 ppm	(Vacated) TWA: 200 ppm	IDLH: 2000 ppm	TWA: 200 ppm
-	STEL: 100 ppm	(Vacated) TWA: 590 mg/m <sup>3</sup>	TWA: 200 ppm	TWA: 590 mg/m <sup>3</sup>
	Skin	(Vacated) STEL: 250 ppm	TWA: 590 mg/m <sup>3</sup>	STEL: 250 ppm
		(Vacated) STEL: 735 mg/m <sup>3</sup>	STEL: 250 ppm	STEL: 735 mg/m <sup>3</sup>
		TWA: 200 ppm	STEL: 735 mg/m <sup>3</sup>	1
		TWA: 590 mg/m <sup>3</sup>	_	

### Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH: NIOSH - National Institute for Occupational Safety and Health

**Engineering Measures**Ensure that evewash stations and safety showers are close to the workstation location.

Ensure adequate ventilation, especially in confined areas. Use explosion-proof

electrical/ventilating/lighting equipment.

Personal Protective Equipment

**Eye/face Protection**Wear appropriate protective eyeglasses or chemical safety goggles as described by

OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard

EN166.

**Skin and body protection**Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard

EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Recommended Filter type: Multi-purpose/ABEK. conforming to EN14387. low boiling organic solvent. Type AX. Brown.

conforming to EN371. or. Organic gases and vapours filter. Type A. Brown.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

# 9. Physical and chemical properties

Physical State Liquid

Appearance No information available
Odor No information available

Odor Threshold No information available

pH No information available

Melting Point/Range

No data available

**Boiling Point/Range**Flash Point
No information available
-6 °C / 21.2 °F

Evaporation Rate No information available

Flammability (solid,gas) Not applicable

Flammability or explosive limits

UpperNo data availableLowerNo data availableVapor Pressure23 hPa @ 20 °C

Vapor Density

No information available

Specific Gravity0.868 g/cm3SolubilityReacts with waterPartition coefficient; n-octanol/waterNo data availableAutoignition TemperatureNo information available

Decomposition Temperature

No information available

Viscosity

No information available

No information available

Molecular FormulaC5 H13 BOMolecular Weight99.97

# 10. Stability and reactivity

Reactive Hazard Yes

**Stability** Air sensitive. Moisture sensitive.

**Conditions to Avoid** Keep away from open flames, hot surfaces and sources of ignition.

Incompatible Materials Oxidizing agent

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO2), Oxides of boron

Hazardous Polymerization Hazardous polymerization does not occur.

**Hazardous Reactions** None under normal processing.

# 11. Toxicological information

**Acute Toxicity** 

**Product Information** 

Oral LD50 Category 4. ATE = 300 - 2000 mg/kg.

**Dermal LD50** Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg. Vapor LC50 Based on ATE data, the classification criteria are not met. ATE > 20 mg/l.

Component Information

omponent information					
Component	LD50 Oral	LD50 Dermal	LC50 Inhalation		
Tetrahydrofuran	1650 mg/kg ( Rat )	> 2000 mg/kg (Rabbit)	180 mg/L (Rat) 1 h		
			53.9 mg/L (Rat) 4 h		

**Toxicologically Synergistic** 

**Products** 

No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization May cause sensitization by skin contact

Carcinogenicity Limited evidence of a carcinogenic effect. The table below indicates whether each agency

has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Tetrahydrofuran	109-99-9	Group 2B	Not listed	A3	X	A3
Borinic acid, diethyl-,	7397-46-8	Not listed				
methyl ester						

IARC (International Agency for Research on Cancer)

IARC (International Agency for Research on Cancer)

Group 1 - Carcinogenic to Humans

Group 2A - Probably Carcinogenic to Humans Group 2B - Possibly Carcinogenic to Humans

A1 - Known Human Carcinogen

A2 - Suspected Human Carcinogen

A3 - Animal Carcinogen

ACGIH: (American Conference of Governmental Industrial Hygienists)

**Mutagenic Effects** No information available

ACGIH: (American Conference of Governmental Industrial

**Reproductive Effects** No information available.

No information available. **Developmental Effects** 

**Teratogenicity** No information available.

STOT - single exposure Respiratory system Central nervous system (CNS) STOT - repeated exposure Stomach Liver spleen Adrenal gland Adrenal cortex

No information available Aspiration hazard

delayed

Hygienists)

Symptoms / effects,both acute and Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain,

muscle pain or flushing

### **Endocrine Disruptor Information**

Component	EU - Endocrine Disrupters	EU - Endocrine Disruptors -	Japan - Endocrine Disruptor
	Candidate List	Evaluated Substances	Information

Tetrahydrofuran	Group III Chemical	Not applicable	Not applicable
Other Adverse Effects	The toxicological properties ha	ve not been fully investigated.	

# her Adverse Effects The toxicological properties have not been fully investigated.

# 12. Ecological information

**Ecotoxicity** 

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Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Tetrahydrofuran	Not listed	2160 mg/l LC50 = 96 h	Not listed	EC50 48 h 3485 mg/l
		Pimephales promelas		EC50: >10000 mg/L/24h
		Leuciscus idus: LC50: 2820		_
		mg/L/48h		
Borinic acid, diethyl-, methyl	Not listed	LC50 > 100 mg/L	Not listed	EC50 > 100 mg/L 48H
ester		Cyprinus carpio 96h		

Persistence and Degradability Pe

Persistence is unlikely

**Bioaccumulation/ Accumulation** 

No information available.

**Mobility** 

Is not likely mobile in the environment due its low water solubility.

Component	log Pow
Tetrahydrofuran	0.45
Borinic acid, diethyl-, methyl ester	>5

# 13. Disposal considerations

**Waste Disposal Methods** 

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Tetrahydrofuran - 109-99-9	U213	-

# 14. Transport information

DOT

UN-No UN2924

**Proper Shipping Name** Flammable liquid, corrosive, n.o.s.

Technical Name (diethylmethoxyborane, TETRAHYDROFURAN)

Hazard Class 3
Subsidiary Hazard Class 8
Packing Group ||

**TDG** 

UN-No UN2924

**Proper Shipping Name** Flammable liquid, corrosive, n.o.s.

Hazard Class 3 Subsidiary Hazard Class 8 Packing Group II

<u>IATA</u>

UN-No UN2924

**Proper Shipping Name** Flammable liquid, corrosive, n.o.s.

Hazard Class 3 Subsidiary Hazard Class 8 Packing Group II

IMDG/IMO

UN-No UN2924

**Proper Shipping Name** Flammable liquid, corrosive, n.o.s.

Hazard Class 3
Subsidiary Hazard Class 8
Packing Group ||

# 15. Regulatory information

### **United States of America Inventory**

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Tetrahydrofuran	109-99-9	Χ	ACTIVE	-
Borinic acid, diethyl-, methyl ester	7397-46-8	X	ACTIVE	PMN

#### Legend:

TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

'-' - Not Listed

PMN - Indicates a commenced PMN substance

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT)

Not applicable

TSCA 12(b) - Notices of Export

Component	CAS No	TSCA 12(b) - Notices of Export
Tetrahydrofuran	109-99-9	Section 4, 1 % de minimus concentration

### **International Inventories**

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Tetrahydrofuran	109-99-9	Χ	-	203-726-8	Х	Χ	Χ	Χ	Χ	KE-33454
Borinic acid, diethyl-, methyl ester	7397-46-8	-	Х	-	-	-	Х	-	Χ	-

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

### U.S. Federal Regulations

### **SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

# SARA 311/312 Hazard Categories

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

**OSHA** - Occupational Safety and Not applicable

Health Administration

### **CERCLA**

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

Component	Hazardous Substances RQs	CERCLA Extremely Hazardous Substances RQs	SARA Reportable Quantity (RQ)
Tetrahydrofuran	1000 lb	-	1000 lb

	454 ka

### **California Proposition 65**

This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
Tetrahydrofuran	109-99-9	Carcinogen	-	Carcinogen

# U.S. State Right-to-Know

# Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Tetrahydrofuran	X	X	Χ	=	Х

### **U.S. Department of Transportation**

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

### U.S. Department of Homeland

Security

This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

# Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Tetrahydrofuran	109-99-9	-	Use restricted. See item 75. (see link for restriction details)	
Borinic acid, diethyl-, methyl ester	7397-46-8	-	Use restricted. See item 75. (see link for restriction details)	-

# **REACH links**

https://echa.europa.eu/substances-restricted-under-reach

# Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Tetrahydrofuran	109-99-9	Listed	Not applicable	Not applicable	Not applicable
Borinic acid, diethyl-, methyl ester	7397-46-8	Not applicable	Not applicable	Not applicable	Not applicable

### Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?

Not applicable

# Other International Regulations

		Component	CAS No	Seveso III Directive	Seveso III Directive	Rotterdam	Basel Convention
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		, , ,	(2012/18/EC) - Qualifying Quantities	Convention (PIC)	(Hazardous Waste)
		for Major Accident Notification	for Safety Report Requirements		
Tetrahydrofuran	109-99-9	Not applicable	Not applicable	Not applicable	Not applicable
Borinic acid, diethyl-, methyl ester	7397-46-8	Not applicable	Not applicable	Not applicable	Not applicable

# 16. Other information

Prepared By Health, Safety and Environmental Department

Email: chem.techinfo@thermofisher.com

www.thermofisher.com

Revision Date 01-Apr-2024 Print Date 01-Apr-2024

**Revision Summary** New emergency telephone response service provider.

### **Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of SDS**