

**SAFETY DATA SHEET**

According to 1907/2006/EC, Article 31

Revision number: 3

Revision date: 10/24/2019

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifiers**

Product name: Borane - Tetrahydrofuran Complex (8.5% in Tetrahydrofuran, ca. 0.9mol/L) (stabilized with Sodium Borohydride)
Product code: T2346

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Reagents.

1.3 Details of the supplier of the safety data sheet**Supplier:**

TCI EUROPE N.V.
 Boerenveldseweg 6
 Haven 1063
 B-2070 Zwijndrecht
 Telephone: +32(0)3 735 07 00
 E-mail: sales-eu@tcichemicals.com

1.4 Emergency telephone number: +32(0)70 245 245

SECTION 2: Hazards identification**2.1 Classification of the substance or mixture**

Flammable liquids	Category 2
Substances and mixtures which, in contact with water, emit flammable gases	Category 1
Acute toxicity (Oral)	Category 4
Skin corrosion/irritation	Category 1B
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity - Single exposure [Category 2]	Nervous system
Specific target organ toxicity - Single exposure [Category 3]	Respiratory tract irritation
Specific target organ toxicity - Repeated exposure [Category 1]	Liver, Nervous system, Kidney

2.2 Label elements**Pictograms or hazard symbols****Signal word**

Danger

Hazard statements

H225-Highly flammable liquid and vapour.
 H260-In contact with water releases flammable gases which may ignite spontaneously.
 H302-Harmful if swallowed.
 H314-Causes severe skin burns and eye damage.
 H371-May cause damage to organs : Nervous system
 H372-Causes damage to organs through prolonged or repeated exposure : Liver Nervous system Kidney

Precautionary statements

H335-May cause respiratory irritation.
 P260-Do not breathe mist, vapours or spray.
 P301+P330+P331+P310-IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor.
 P303+P361+P353+P310+P363-IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Immediately call a POISON CENTER or doctor. Wash contaminated clothing before reuse.

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P304+P340+P310-IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor.
P305+P351+P338+P310-IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.
P370+P378-In case of fire: Use dry chemical or dry sand to extinguish.
May form explosive peroxides.

2.3 Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable
vPvB: Not applicable

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Components: Borane - Tetrahydrofuran Complex (8.5% in Tetrahydrofuran, ca. 0.9mol/L) (stabilized with Sodium Borohydride)
Percent:
CAS RN: 14044-65-6
EC-No: 237-881-8
Synonyms: Tetrahydrofuran Borane (8.5% in Tetrahydrofuran, ca. 0.9mol/L) (stabilized with Sodium Borohydride)
Chemical Formula: $BH_3 \cdot C_4H_8O$
Hazardous composition: **Chemical name: Tetrahydrofuran** Conc.: < 91.5%
CAS RN:109-99-9 EC No.: 203-726-8
Flam. Liq. 2, Acute Tox. 4, Skin Irrit. 2, Eye Irrit. 2, Carc. 2, STOT SE 2, STOT SE 3, STOT RE 1
H225: Highly flammable liquid and vapour. H302: Harmful if swallowed. H315: Causes skin irritation.
H319: Causes serious eye irritation. H351: Suspected of causing cancer. H371: May cause damage to Nervous system. H335: May cause respiratory irritation. H372: Causes damage to Liver, Nervous system and Kidney through prolonged or repeated exposure. EUH019: May form explosive peroxides.
Chemical name: Borane - Tetrahydrofuran Complex Conc.: > 8.5%
CAS RN:14044-65-6 EC No.: 237-881-8
Flam. Liq. 2, Water-react. 1, Acute Tox. 4, Skin Irrit. 2, Eye Dam. 1
H225: Highly flammable liquid and vapour. H260: In contact with water releases flammable gases which may ignite spontaneously. H302: Harmful if swallowed. H315: Causes skin irritation. H318: Causes serious eye damage. EUH014: Reacts violently with water. EUH019: May form explosive peroxides.

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.
Skin contact: Remove/Take off immediately all contaminated clothing. Gently wash with plenty of soap and water. Immediately call a POISON CENTER or doctor/physician.
Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
Ingestion: Immediately call a POISON CENTER or doctor/physician. Rinse mouth. Do NOT induce vomiting.
Protection of first-aiders: A rescuer should wear personal protective equipment, such as rubber gloves and air-tight goggles.

4.2 Most important symptoms and effects, both acute and delayed

No data available

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media: Dry chemical, dry sand.
Unsuitable extinguishing media: Water

5.2 Special hazards arising from the substance or mixture

Take care as it may decompose upon combustion or in high temperatures to generate poisonous fume. Carbon dioxide, Carbon monoxide, Boron oxides

5.3 Advice for firefighters

Fire-extinguishing work is done from the windward and the suitable fire-extinguishing method according to the surrounding situation is used. Uninvolved persons should evacuate to a safe place. In case of fire in the surroundings: Keep containers cool by spraying with water but NO direct contact with water. Eliminate all ignition sources if safe to do so. When extinguishing fire, be sure to wear personal protective equipment

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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures	Use extra personal protective equipment (self-contained breathing apparatus). Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Entry to non-involved personnel should be controlled around the leakage area by roping off, etc
6.2 Environmental precautions	Prevent product from entering drains
6.3 Methods and materials for containment and cleaning up	Absorb spilled material in dry sand or inert absorbent before recovering it into an airtight container. In case of large amount of spillage, contain a spill by bunding. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations. Do not allow contact with water. Remove all sources of ignition. Fire-extinguishing devices should be prepared in case of a fire. Use spark-proof tools and explosion-proof equipment. Since there is a possibility of igniting behind when removal of a leakage thing is imperfect, it is careful enough.
6.4 Reference to other sections	For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling	Handling is performed in a well ventilated place. Wear suitable protective equipment. Prevent generation of vapour or mist. Keep away from heat/sparks/open flame/hot surfaces. -No smoking. Take measures to prevent the build up of electrostatic charge. Use explosion-proof equipment. Wash hands and face thoroughly after handling. Use a closed system if possible. Use a ventilation, local exhaust if vapour or aerosol will be generated. Avoid contact with skin, eyes and clothing. Confirm in advance if peroxides exist when operations involving heating such as distillation are carried out. Keep away from any possible contact with water, because of violent reaction and possible flash fire. Use well-dried equipment. Handle under inert gas. Don't leave used equipment or rag. This product may ignite if it is left stuck on combustibles such as paper, rags, etc.
7.2 Conditions for safe storage, including any incompatibilities	Keep container tightly closed. Store in an explosion-proof refrigerator. Store under inert gas. Protect from moisture. Store locked up. Store away from incompatible materials such as oxidizing agents. Heat-sensitive, Moisture-sensitive
7.3 Specific end use(s)	No further relevant information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters	No data available (THF) ACGIH TLV(TWA):50 ppm (skin) ACGIH TLV(STEL):100 ppm (skin) OSHA PEL(TWA):200 ppm
8.2 Exposure controls	Install a closed system or local exhaust. Also install safety shower and eye bath.
Respiratory protection:	Half or full facepiece respirator, self-contained breathing apparatus(SCBA), supplied air respirator, etc. Use respirators approved under appropriate government standards and follow local and national regulations.
Hand protection:	Impervious gloves.
Eye protection:	Safety goggles. A face-shield, if the situation requires.
Skin and body protection:	Impervious protective clothing. Protective boots, if the situation requires.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state (20°C):	Liquid
Form:	Clear
Colour:	Colorless - Slightly pale yellow
Odour:	Characteristic
pH:	No data available
Melting point/freezing point:	-17°C (THF) -108°C
Boiling point/range:	No data available (THF) 65°C
Flash point:	-22°C
Evaporation rate(Butyl Acetate=1):	No data available
Flammability(solid, gas):	No data available
Flammability or explosive limits:	
Lower:	1.6%
Upper:	12.4%
Vapour pressure:	8.1kPa/30.1°C
Vapour density:	No data available
Relative density:	0.88
Solubility(ies):	
[Water]	No data available
[Other solvents]	No data available
Partition coefficient: n-octanol/water:	No data available (THF) 0.46
Autoignition temperature:	167°C
Decomposition temperature:	No data available
Dynamic Viscosity:	No data available
Kinematic viscosity:	No data available

9.2 Other safety information No data available

SECTION 10: Stability and reactivity

10.1 Reactivity	No data available
10.2 Chemical stability	May form explosive peroxides.
10.3 Possibility of hazardous reactions	May spontaneously ignite or release flammable gases when in contact with water.
10.4 Conditions to avoid	Spark, Open flame, Static discharge, Air, Moisture
10.5 Incompatible materials	Oxidizing agents, Acids, Strong bases, Water, Halogens, Alcohols
10.6 Hazardous decomposition products	Carbon dioxide, Carbon monoxide, Boron oxides

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute Toxicity:	No data available (THF) orl-rat LD50:1650 mg/kg ihl-rat LC50:21000 ppm/3H ipr-rat LD50:2900 mg/kg
Skin corrosion/irritation:	No data available
Serious eye damage/irritation:	No data available
Respiratory or skin sensitization:	No data available
Germ cell mutagenicity:	No data available (THF) mmo-esc 1 umol/L (-S9)
Carcinogenicity:	
IARC =	No data available
NTP =	No data available (THF) ihl-rat TCLo:18900 mg/kg/105W-I
Reproductive toxicity:	No data available
STOT-single exposure:	No data available
STOT-repeated exposure:	No data available
Aspiration hazard:	No data available

SECTION 12: Ecological information

12.1 Toxicity

Fish:	No data available
Crustacea:	No data available
Algae:	No data available

12.2 Persistence and degradability No data available

12.3 Bioaccumulative potential No data available

12.4 Mobility in soil

Log Pow:	No data available
Soil adsorption (Koc):	No data available
Henry's Law (PaM³/mol):	No data available

12.5 Results of PBT and vPvB assessment

PBT:	Not applicable
vPvB:	Not applicable

12.6 Other adverse effects No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Recycle to process, if possible. Consult your local regional authorities and an expert of disposal. Take precautions against ignition. Observe all federal, state and local regulations when disposing of the substance

SECTION 14: Transport information

14.1 UN number	3399
14.2 UN proper shipping name	
ADR/RID	Organometallic substance, liquid, water-reactive, flammable
IMDG/IMO	Organometallic substance, liquid, water-reactive, flammable
ICAO/IATA	Organometallic substance, liquid, water-reactive, flammable
14.3 Transport hazard class(es)	
ADR/RID	4.3: Substance which, in contact with water, emit flammable gases
Subsidiary risk:	3: Flammable liquid.
IMDG/IMO	4.3: Substance which, in contact with water, emit flammable gases
Subsidiary risk:	3: Flammable liquid.
ICAO/IATA	4.3: Substance which, in contact with water, emit flammable gases
Subsidiary risk:	3: Flammable liquid.
14.4 Packaging group	
ADR/RID	I
IMDG/IMO	I
ICAO/IATA	I
14.5 Environmental hazards	
Marine pollutant	-
14.6 Special precautions for user	No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture	
Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No.1907/2006	Not listed
15.2 Chemical safety assessment	A chemical safety assessment has not been carried out.

SECTION 16: Other information

Prepared by:	TCI EUROPE N.V.
Issue date:	10/24/2019

This SDS was prepared sincerely on the basis of the information we could obtained, however, any warranty shall not be given regarding the data contained and the assessment of hazards and toxicity. Prior to use, please investigate not only the hazards and toxicity information but also the laws and regulations of the organization, area and country where the products are to be used, which shall be given the first priority. The products are supposed to be used promptly after purchase in consideration of safety. Some new information or amendments may be added afterwards. If the products are to be used far behind the expected time of use or you have any questions, please feel free to contact us. The stated cautions are for normal handling only. In case of special handling, sufficient care should be taken, in addition to the safety measures suitable for the situation. All chemical products should be treated with the recognition of "having unknown hazards and toxicity", which differ greatly depending on the conditions and handling when in use and/or the conditions and duration of storage. The products must be handled only by those who are familiar with specialized knowledge and have experience or under the guidance of those specialists throughout use from opening to storage and disposal. Safe usage conditions shall be set up on each user's own responsibility.

End of Safety Data Sheet

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