TCI AMERICA
SAFETY DATA SHEET

Revision number: 2
Revision date: 10/23/2019

1. IDENTIFICATION

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

Product use: For laboratory research purposes.
Restrictions on use: Not for drug or household use.

Company:
TCI America
9211 N. Harborgate Street
Portland, OR 97203 U.S.A.
Telephone:
+1-800-423-8616 / +1-503-283-1681
Fax:
+1-888-520-1075 / +1-503-283-1987
e-mail:
sales-US@TCIchemicals.com
www.TCIchemicals.com

Emergency telephone number:
Chemical Emergencies:
TCI America (8:00am - 5:00pm) PST
+1-503-286-7624
Transportation Emergencies:
Chemtrec 24-Hour
+1-800-424-9300 (U.S.A.)
+1-703-527-3887 (International)
Responsible department:
TCI America
Environmental Health Safety and Security
+1- 503-286-7624

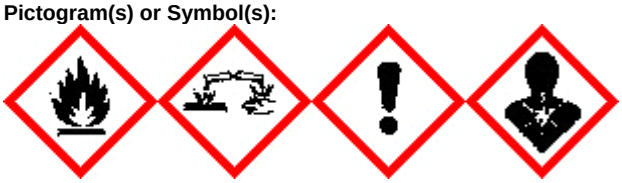
2. HAZARD(S) IDENTIFICATION

OSHA Haz Com: CFR 1910.1200:
WHMIS 2015:
Acute Toxicity - Oral [Category 4]
Eye Damage/Irritation [Category 1]
Specific Target Organ Toxicity (Single Exposure) [Category 2]
Specific Target Organ Toxicity (Single Exposure) [Category 3]
Specific Target Organ Toxicity (Repeated Exposure) [Category 1]
Flammable Liquids [Category 2]
Substances and Mixtures which, in Contact with Water, Emit Flammable Gases [Category 1]
Skin Corrosion/Irritation [Category 1B]

Signal word: Danger!

Hazard Statement(s):
Highly flammable liquid and vapor
In contact with water releases flammable gases which may ignite spontaneously
Harmful if swallowed
Causes severe skin burns and eye damage
May cause damage to organs: Nervous System
May cause respiratory irritation.
Causes damage to organs through prolonged or repeated exposure: Liver Nervous System Kidney

Pictogram(s) or Symbol(s):



Precautionary Statement(s):

[Prevention] Keep away from heat, sparks, open flames and hot surfaces. – No smoking. Do not allow contact with water. Handle under inert gas. Protect from moisture. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof electrical, ventilating and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe mist, vapors or spray. Use only outdoors or in a well-ventilated area. Do not eat, drink or smoke when using this product. Wash hands and face thoroughly after handling. Wear protective gloves, protective clothing, face protection.

[Response] If swallowed: Rinse mouth. Do NOT induce vomiting. Immediately call a poison center or doctor. 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. If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center or doctor. 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. If exposed or concerned: Call a poison center or doctor. Brush off loose particles from skin. Immerse in cool water or wrap with wet bandages. In case of fire: Use dry chemical or dry sand to extinguish.

[Storage] Store in a dry place. Store in a closed container. Store in a well-ventilated place. Keep container tightly closed. Store locked up.

[Disposal] Dispose of contents and container in accordance with local, regional, national regulations (e.g. US: 40 CFR Part 261, EU:91/156/EEC, JP: Waste Disposal and Cleaning Act, etc.).

Hazards not otherwise classified: [HNOC] May form explosive peroxides.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/mixture: Mixture
Components: Borane - Tetrahydrofuran Complex (8.5% in Tetrahydrofuran, ca. 0.9mol/L) (stabilized with Sodium Borohydride)
Percent: ....
CAS RN: 14044-65-6
Molecular Weight: 85.94
Chemical Formula: $BH_3 \cdot C_4H_8O$
Hazardous ingredient(s): Borane (8.5%) 14044-65-6
Tetrahydrofuran (91.5%) 109-99-9
Synonyms: Tetrahydrofuran Borane (8.5% in Tetrahydrofuran, ca. 0.9mol/L) (stabilized with Sodium Borohydride)
Stabilizers: Sodium Borohydride

4. FIRST-AID MEASURES

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.

Symptoms/effects:

Acute: Pain. Redness.

Delayed: May have effects on the respiratory tract.

Indication of any immediate medical attention:
Not available.
Notes to physician:
No data available

5. FIRE-FIGHTING MEASURES

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

Specific hazards arising from the chemical: Take care as it may decompose upon combustion or in high temperatures to generate poisonous fume.
Hazardous combustion products: These products include: Carbon oxides Borates
Other specific hazards: Closed containers may explode from heat of a fire.

Advice for firefighters: Wear self-contained breathing apparatus if possible.

6. ACCIDENTAL RELEASE MEASURES

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.
Environmental precautions: Prevent product from entering drains.
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.
Prevention of secondary hazards: 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.

7. HANDLING AND STORAGE

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.

Conditions for safe storage, including any incompatibilities

Storage conditions: Keep container tightly closed. Store in an explosion-poof refregerator.
Store under inert gas. Protect from moisture. Store locked up.
Store away from incompatible materials such as oxidizing agents.
Heat-sensitive Moisture-sensitive

Packaging material: Comply with laws.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits: (THF)
ACGIH TLV(TWA):50 ppm (skin)
ACGIH TLV(STEL):100 ppm (skin)
OSHA PEL(TWA):200 ppm

Appropriate engineering controls: Follow safe industrial engineering/laboratory practices when handling any chemical. Install a closed system or local exhaust. Also install safety shower and eye bath.

Personal protective equipment

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state (20°C): Liquid
Form: Clear
Colour: Colorless - Slightly pale yellow
Odour: Characteristic
Odor threshold: No data available
Odour threshold: No data available

Melting point/freezing point:	-17°C (1°F) (THF) -108°C	pH:	No data available
Boiling point/range:	No data available (THF) 65°C	**Vapour pressure:**	No data available.
Decomposition temperature:	No data available	**Vapour density:**	No data available
Relative density:	0.88	**Dynamic Viscosity:**	No data available
Kinematic viscosity:	No data available		
Log Pow:	No data available	**Evaporation rate(Butyl Acetate=1):**	No data available
Log Pow:	(THF) 0.46		
Flash point:	-22°C (-8°F)	**Autoignition temperature:**	167°C (333°F)
Flammability(solid, gas):	No data available	**Flammability or explosive limits:**	
		Lower:	1.6%
		Upper:	12.4%

Solubility(ies):

[Water] No data available

[Other solvents] No data available

10. STABILITY AND REACTIVITY

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

11. TOXICOLOGICAL INFORMATION

Acute Toxicity:
No data available

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

Carcinogenicity:
No data available

IARC: No data available **NTP:** No data available **OSHA:** No data available

Reproductive toxicity:
No data available

Target organ(s):
May cause damage to organs: Nervous System
May cause respiratory irritation.
Causes damage to organs through prolonged or repeated exposure: Liver Nervous System Kidney

12. ECOLOGICAL INFORMATION

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

Persistence / degradability: No data available
Bioaccumulative potential(BCF): No data available
Mobility in soil
Log Pow: No data available
Soil adsorption (Koc): No data available
Henry's Law (PaM ^{3}/mol): No data available

13. DISPOSAL CONSIDERATIONS

Disposal of product: Recycle to process if possible. It is the generator's responsibility to comply with Federal, State and Local rules and regulations. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. This section is intended to provide assistance but does not replace these laws, nor does compliance in accordance with this section ensure regulatory compliance according to the law. US EPA guidelines for Identification and Listing of Hazardous Waste are listed in 40 CFR Parts 261. The product should not be allowed to enter the environment, drains, water ways, or the soil.
Disposal of container: Dispose of as unused product. Do not re-use empty containers.
Other considerations: Observe all federal, state and local regulations when disposing of the substance.

14. TRANSPORT INFORMATION

DOT (US)

UN number:	Proper Shipping Name:	Class or Division:	Subrisk(s):	Packing Group:
UN3399	Organometallic substance, liquid, water-reactive, flammable	4.3 Dangerous when wet material (water reactive)	3 Flammable liquid	I

IATA

UN number:	Proper Shipping Name:	Class or Division:	Subrisk(s):	Packing Group:
UN3399	Organometallic substance, liquid, water-reactive, flammable	4.3 Dangerous when wet material (water reactive)	3 Flammable liquid	I

IMDG

UN number:	Proper Shipping Name:	Class or Division:	Subrisk(s):	Packing Group:
UN3399	Organometallic substance, liquid, water-reactive, flammable	4.3 Dangerous when wet material (water reactive)	3 Flammable liquid	I

Air Transport: Cargo Aircraft Only.
EmS number: F-G, S-N

15. REGULATORY INFORMATION

Toxic Substance Control Act (TSCA 8b.):
This product is ON the EPA Toxic Substances Control Act (TSCA) inventory.

US Federal Regulations

CERCLA Hazardous substance and Reportable Quantity:
SARA 313: Not Listed
SARA 302: Not Listed

State Regulations

State Right-to-Know
Massachusetts Not Listed
New Jersey Not Listed
Pennsylvania Not Listed
California Proposition 65: Not Listed

Other Information

NFPA Rating:
Health: 3
Flammability: 3
Instability: 2

HMIS Classification:
Health: 3
Flammability: 3
Physical: 2

International Inventories

Canada: NDSL On NDSL
EC-No: 237-881-8

16. OTHER INFORMATION

Revision date: 10/23/2019
Revision number: 2

TCI chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its affiliates or subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our SDS are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated SDS for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, face mask, fume hood). For proper handling and disposal, always comply with federal, state and local regulations.