

## SAFETY DATA SHEET

Revision Date 25-Mar-2024

Revision Number 5

### 1. Identification

**Product Name** Borane-dimethyl sulfide complex, 2M in toluene

**Cat No. :** 42963

**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  |
| Substances/mixtures which, in contact with water, emit flammable gases | Category 1  |
| Acute oral toxicity  | Category 4  |
| Acute dermal toxicity  | Category 4  |
| Skin Corrosion/Irritation  | Category 2  |
| Serious Eye Damage/Eye Irritation                                      | Category 1  |
| Reproductive Toxicity  | Category 1B |
| 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 - Neurological effects, Eyes, Ears.                      |             |
| Aspiration Toxicity  | Category 1  |

#### Label Elements

**Signal Word**

Danger

**Hazard Statements**

Highly flammable liquid and vapor

In contact with water releases flammable gases which may ignite spontaneously

May be fatal if swallowed and enters airways

Causes skin irritation

Causes serious eye damage

May cause drowsiness or dizziness

May damage fertility. May damage the unborn child

May cause damage to organs through prolonged or repeated exposure

Harmful if swallowed or in contact with skin

**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

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

Keep away from any possible contact with water, because of violent reaction and possible flash fire

Handle under inert gas. Protect from moisture

Keep cool

**Response**

IF exposed or concerned: Get medical attention/advice

**Inhalation**

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

**Skin**

Call a POISON CENTER or doctor/physician if you feel unwell

If skin irritation occurs: Get medical advice/attention

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower

Brush off loose particles from skin. Immerse in cool water/wrap with wet bandages

Wash contaminated clothing before reuse

**Eyes**

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/physician

**Ingestion**

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician

Do NOT induce vomiting

Rinse mouth

**Fire**In case of fire: Use CO<sub>2</sub>, dry chemical, or foam for extinction**Storage**

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

**Disposal**

Dispose of contents/container to an approved waste disposal plant

**Hazards not otherwise classified (HNOC)**

Harmful to aquatic life with long lasting effects

Reacts violently with water

**Other hazards**

Stench.

WARNING. Reproductive Harm - <https://www.p65warnings.ca.gov/>.

### 3. Composition/Information on Ingredients

| Component                                  | CAS No     | Weight % |
|--|------------|----------|
| Toluene                                    | 108-88-3   | 82.25    |
| Boron, trihydro[thiobis[methane]]-, (T-4)- | 13292-87-0 | 17.75    |

### 4. First-aid measures

|  |   |
|--|---|
| <b>General Advice</b>                      | If symptoms persist, call a physician.  |
| <b>Eye Contact</b>                         | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.   |
| <b>Skin Contact</b>                        | Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.   |
| <b>Inhalation</b>                          | Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur. Risk of serious damage to the lungs (by aspiration).                                   |
| <b>Ingestion</b>                           | Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Call a physician or poison control center immediately. If vomiting occurs naturally, have victim lean forward. |
| <b>Most important symptoms and effects</b> | Causes severe eye damage. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting   |
| <b>Notes to Physician</b>                  | Treat symptomatically   |

### 5. Fire-fighting measures

|   |   |
|---|---|
| <b>Suitable Extinguishing Media</b>     | CO <sub>2</sub> , dry chemical, dry sand, alcohol-resistant foam. Water mist may be used to cool closed containers. |
| <b>Unsuitable Extinguishing Media</b>   | No information available  |
| <b>Flash Point</b>                      | 7 °C / 44.6 °F  |
| <b>Method -</b>                         | No information available  |
| <b>Autoignition Temperature</b>         | No information available  |
| <b>Explosion Limits</b>                 |   |
| <b>Upper</b>                            | No data available   |
| <b>Lower</b>                            | No data available   |
| <b>Sensitivity to Mechanical Impact</b> | No information available  |
| <b>Sensitivity to Static Discharge</b>  | No information available  |

**Specific Hazards Arising from the Chemical**

Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Reacts violently with water.

**Hazardous Combustion Products**

Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Sulfur oxides. Oxides of boron. Hydrogen.

**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.

**NFPA**

**Health**  
3

**Flammability**  
3

**Instability**  
2

**Physical hazards**  
N/A W

**6. Accidental release measures****Personal Precautions**

Use personal protective equipment as required. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.

**Environmental Precautions**

Do not flush into surface water or sanitary sewer system.

**Methods for Containment and Clean Up**

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Do not expose spill to water. 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. Avoid ingestion and inhalation. Ensure adequate ventilation. Do not allow contact with water. Handle under an inert atmosphere. 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.**

Flammables area. Keep away from heat, sparks and flame. Keep container tightly closed in a dry and well-ventilated place. Keep refrigerated. Keep away from water or moist air. Store under an inert atmosphere. Protect from moisture. Incompatible Materials. Strong oxidizing agents.

**8. Exposure controls / personal protection****Exposure Guidelines**

| Component | ACGIH TLV   | OSHA PEL   | NIOSH   | Mexico OEL (TWA) |
|-----------|-------------|--|---|------------------|
| Toluene   | TWA: 20 ppm | (Vacated) TWA: 100 ppm<br>(Vacated) TWA: 375 mg/m <sup>3</sup><br>Ceiling: 300 ppm<br>(Vacated) STEL: 150 ppm<br>(Vacated) STEL: 560 mg/m <sup>3</sup><br>TWA: 200 ppm | IDLH: 500 ppm<br>TWA: 100 ppm<br>TWA: 375 mg/m <sup>3</sup><br>STEL: 150 ppm<br>STEL: 560 mg/m <sup>3</sup> | TWA: 20 ppm      |

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**

Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting equipment. Ensure adequate ventilation, especially in confined areas.

**Personal Protective Equipment**

|                                 |   |
|---------------------------------|---|
| <b>Eye/face Protection</b>      | 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.   |
| <b>Skin and body protection</b> | Wear appropriate protective gloves and clothing to prevent skin exposure.   |
| <b>Respiratory Protection</b>   | 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. |
| <b>Recommended Filter type:</b> | low boiling organic solvent. Type AX. Brown. conforming to EN371. or. Organic gases and vapours filter. Type A. Brown. conforming to EN14387.   |
| <b>Hygiene Measures</b>         | Handle in accordance with good industrial hygiene and safety practice.  |

## 9. Physical and chemical properties

|   |  |
|---|--|
| <b>Physical State</b>                         | Liquid                                 |
| <b>Appearance</b>                             | No information available               |
| <b>Odor</b>                                   | Stench                                 |
| <b>Odor Threshold</b>                         | No information available               |
| <b>pH</b>                                     | No information available               |
| <b>Melting Point/Range</b>                    | No data available                      |
| <b>Boiling Point/Range</b>                    | No information available               |
| <b>Flash Point</b>                            | 7 °C / 44.6 °F                         |
| <b>Evaporation Rate</b>                       | No information available               |
| <b>Flammability (solid,gas)</b>               | Not applicable                         |
| <b>Flammability or explosive limits</b>       |  |
| Upper   | No data available                      |
| Lower   | No data available                      |
| <b>Vapor Pressure</b>                         | No information available               |
| <b>Vapor Density</b>                          | No information available               |
| <b>Specific Gravity</b>                       | 0.856                                  |
| <b>Solubility</b>                             | Immiscible Reacts violently with water |
| <b>Partition coefficient; n-octanol/water</b> | No data available                      |
| <b>Autoignition Temperature</b>               | No information available               |
| <b>Decomposition Temperature</b>              | No information available               |
| <b>Viscosity</b>                              | No information available               |

## 10. Stability and reactivity

|   |   |
|---|---|
| <b>Reactive Hazard</b>                  | Yes   |
| <b>Stability</b>                        | Moisture sensitive.   |
| <b>Conditions to Avoid</b>              | Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition. Exposure to moist air or water. Exposure to moisture. |
| <b>Incompatible Materials</b>           | Strong oxidizing agents   |
| <b>Hazardous Decomposition Products</b> | Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> ), Sulfur oxides, Oxides of boron, Hydrogen   |
| <b>Hazardous Polymerization</b>         | Hazardous polymerization does not occur.  |
| <b>Hazardous Reactions</b>              | None under normal processing. Reacts violently with water.  |

## 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 &gt; 2000 mg/kg. Category 4.

ATE = 1000 - 2000 mg/kg.

**Vapor LC50**

Based on ATE data, the classification criteria are not met. ATE &gt; 20 mg/l.

**Component Information**

| Component                                  | LD50 Oral            | LD50 Dermal            | LC50 Inhalation       |
|--|----------------------|------------------------|-----------------------|
| Toluene                                    | > 5000 mg/kg ( Rat ) | 12000 mg/kg ( Rabbit ) | 26700 ppm ( Rat ) 1 h |
| Boron, trihydro[thiobis[methane]]-, (T-4)- | <500 mg/kg (Rat)     | >2000 mg/kg (Rabbit)   | Not listed            |

**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**

No information available

**Carcinogenicity**

The table below indicates whether each agency has listed any ingredient as a carcinogen.

| Component                                  | CAS No     | IARC       | NTP        | ACGIH      | OSHA       | Mexico     |
|--|------------|------------|------------|------------|------------|------------|
| Toluene                                    | 108-88-3   | Not listed | Not listed | Not listed | Not listed | Not listed |
| Boron, trihydro[thiobis[methane]]-, (T-4)- | 13292-87-0 | Not listed | Not listed | Not listed | Not listed | Not listed |

**Mutagenic Effects**

No information available

**Reproductive Effects**

No information available.

**Developmental Effects**

No information available.

**Teratogenicity**

No information available.

**STOT - single exposure**

Respiratory system Central nervous system (CNS)

**STOT - repeated exposure**

Neurological effects Eyes Ears

**Aspiration hazard**

No information available

**Symptoms / effects, both acute and delayed**

Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

**Endocrine Disruptor Information**

No information available

**Other Adverse Effects**

The toxicological properties have not been fully investigated.

## 12. Ecological information

**Ecotoxicity**

The product contains following substances which are hazardous for the environment. Contains a substance which is: Toxic to aquatic organisms. Reacts with water so no ecotoxicity data for the substance is available.

| Component | Freshwater Algae   | Freshwater Fish  | Microtox                | Water Flea   |
|-----------|--|--|-------------------------|--|
| Toluene   | EC50: = 12.5 mg/L, 72h static (Pseudokirchneriella subcapitata)<br>EC50: > 433 mg/L, 96h (Pseudokirchneriella subcapitata) | 50-70 mg/L LC50 96 h<br>5-7 mg/L LC50 96 h<br>15-19 mg/L LC50 96 h<br>28 mg/L LC50 96 h<br>12 mg/L LC50 96 h | EC50 = 19.7 mg/L 30 min | EC50: = 11.5 mg/L, 48h (Daphnia magna)<br>EC50: 5.46 - 9.83 mg/L, 48h Static (Daphnia magna) |

**Persistence and Degradability**

Persistence is unlikely

**Bioaccumulation/ Accumulation**

No information available.

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

| Component | log Pow |
|-----------|---------|
| Toluene   | 2.73    |

### 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 |
|--------------------|------------------------|------------------------|
| Toluene - 108-88-3 | U220                   | -                      |

### 14. Transport information

#### DOT

UN-No UN3399  
 Proper Shipping Name ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE  
 Technical Name Toluene, Boron, trihydro[thiobis[methane]]-, (T-4)-  
 Hazard Class 4.3  
 Subsidiary Hazard Class 3  
 Packing Group I  
 TDG Forbidden

#### IATA

UN-No UN3399  
 Proper Shipping Name ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE  
 Hazard Class 4.3  
 Subsidiary Hazard Class 3  
 Packing Group I

#### IMDG/IMO

UN-No UN3399  
 Proper Shipping Name ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE  
 Hazard Class 4.3  
 Subsidiary Hazard Class 3  
 Packing Group I

### 15. Regulatory information

#### United States of America Inventory

| Component                                  | CAS No     | TSCA | TSCA Inventory notification - Active-Inactive | TSCA - EPA Regulatory Flags |
|--|------------|------|---|-----------------------------|
| Toluene                                    | 108-88-3   | X    | ACTIVE  | -                           |
| Boron, trihydro[thiobis[methane]]-, (T-4)- | 13292-87-0 | X    | ACTIVE  | -                           |

#### Legend:

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

X - Listed

- - Not Listed

**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

Not applicable

#### International Inventories

Canada (DSL/NDL), 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       |
|--|------------|-----|------|-----------|-------|------|------|------|-------|------------|
| Toluene                                    | 108-88-3   | X   | -    | 203-625-9 | X     | X    | X    | X    | X     | KE-33936   |
| Boron, trihydro[thiobis(methane)]-, (T-4)- | 13292-87-0 | -   | X    | 236-313-6 | -     | -    | X    | -    | X     | 2008-1-560 |

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)**U.S. Federal Regulations****SARA 313**

| Component | CAS No   | Weight % | SARA 313 - Threshold Values % | SARA 313 - Reporting thresholds |
|-----------|----------|----------|-------------------------------|---------------------------------|
| Toluene   | 108-88-3 | 82.25    | 1.0 %                         | -                               |

**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)**

| Component | CWA - Hazardous Substances | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants |
|-----------|----------------------------|-----------------------------|------------------------|---------------------------|
| Toluene   | X                          | 1000 lb                     | X                      | X                         |

**Clean Air Act**

| Component | HAPS Data | Class 1 Ozone Depletors | Class 2 Ozone Depletors |
|-----------|-----------|-------------------------|-------------------------|
| Toluene   | X         |                         | -                       |

OSHA - Occupational Safety and Health Administration      Not applicable

**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) |
|-----------|--------------------------|---|-------------------------------|
| Toluene   | 1000 lb                  | -   | 1000 lb<br>454 kg             |

**California Proposition 65**

This product contains the following Proposition 65 chemicals.

| Component | CAS No   | California Prop. 65 | Prop 65 NSRL | Category      |
|-----------|----------|---------------------|--------------|---------------|
| Toluene   | 108-88-3 | Developmental       | -            | Developmental |

**U.S. State Right-to-Know Regulations**

| Component | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|-----------|---------------|------------|--------------|----------|--------------|
| Toluene   | X             | X          | X            | X        | X            |

**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) |
|--|------------|---|--|---|
| Toluene                                    | 108-88-3   | -   | Use restricted. See item 48.<br>(see link for restriction details)<br>Use restricted. See item 75.<br>(see link for restriction details) | -   |
| Boron, trihydro[thiobis[methane]]-, (T-4)- | 13292-87-0 | -   | -  | -   |

**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) |
|--|------------|----------------|------------------------------|---------------------------|--|
| Toluene                                    | 108-88-3   | Listed         | Not applicable               | Not applicable            | Not applicable                             |
| Boron, trihydro[thiobis[methane]]-, (T-4)- | 13292-87-0 | 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 (2012/18/EC) - Qualifying Quantities for Major Accident Notification | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements | Rotterdam Convention (PIC) | Basel Convention (Hazardous Waste) |
|--|------------|---|--|----------------------------|------------------------------------|
| Toluene                                    | 108-88-3   | Not applicable  | Not applicable   | Not applicable             | Annex I - Y42                      |
| Boron, trihydro[thiobis[methane]]-, (T-4)- | 13292-87-0 | Not applicable  | Not applicable   | Not applicable             | Not applicable                     |

**16. Other information****Prepared By**

Health, Safety and Environmental Department  
 Email: [chem.techinfo@thermofisher.com](mailto:chem.techinfo@thermofisher.com)  
[www.thermofisher.com](http://www.thermofisher.com)

|                         |  |
|-------------------------|--|
| <b>Revision Date</b>    | 25-Mar-2024  |
| <b>Print Date</b>       | 25-Mar-2024  |
| <b>Revision Summary</b> | 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**