

## SAFETY DATA SHEET

Revision Date 01-Apr-2024

Revision Number 4

### 1. Identification

**Product Name** n-Tetradecylzinc bromide, 0.5M in THF

**Cat No. :** H58665

**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 2   |
| Acute oral toxicity  | Category 4   |
| Skin Corrosion/Irritation  | Category 1 B |
| Serious Eye Damage/Eye Irritation                                      | Category 1   |
| Carcinogenicity  | Category 2   |
| Specific target organ toxicity (single exposure)                       | Category 3   |
| Target Organs - Respiratory system, Central nervous system (CNS).      |              |

#### Label Elements

##### **Signal Word**

Danger

##### **Hazard Statements**

Highly flammable liquid and vapor  
In contact with water releases flammable gas  
Harmful if swallowed  
Causes severe skin burns and eye damage  
May cause respiratory irritation  
May cause drowsiness or dizziness  
Suspected of causing cancer

**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**

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**

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower  
Wash contaminated clothing before reuse  
Brush off loose particles from skin. Immerse in cool water/wrap with wet bandages

**Eyes**

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 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)**

May form explosive peroxides  
WARNING. Cancer - <https://www.p65warnings.ca.gov/>.

### 3. Composition/Information on Ingredients

| Component                | CAS No   | Weight % |
|--------------------------|----------|----------|
| Tetrahydrofuran          | 109-99-9 | 82.34    |
| n-Tetradecylzinc bromide | N/A      | 17.66    |

### 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.  |
| <b>Ingestion</b>                           | Clean mouth with water and drink afterwards plenty of water.  |
| <b>Most important symptoms and effects</b> | Difficulty in breathing. Causes burns by all exposure routes. 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 |
| <b>Notes to Physician</b>                  | Treat symptomatically   |

### 5. Fire-fighting measures

|   |  |
|---|--|
| <b>Suitable Extinguishing Media</b>     | Dry sand. Carbon dioxide (CO <sub>2</sub> ). Powder. Do not use water or foam. Water mist may be used to cool closed containers. |
| <b>Unsuitable Extinguishing Media</b>   | No information available   |
| <b>Flash Point</b>                      | -17 °C / 1.4 °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.

#### Hazardous Combustion Products

Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Hydrogen bromide. Zinc oxide.

#### 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  
3Flammability  
3Instability  
2Physical hazards  
W**6. Accidental release measures****Personal Precautions**

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

**Environmental Precautions**

Should not be released into the environment. See Section 12 for additional Ecological Information. Do not allow material to contaminate ground water system. 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. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

**7. Handling and storage****Handling**

Wear personal protective equipment/face protection. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. 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.**

Keep refrigerated. Store under an inert atmosphere. Keep container tightly closed. Keep away from heat, sparks and flame. 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. Incompatible Materials. Water. Acids. Acid chlorides. Oxidizing agent.

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

| Component       | ACGIH TLV                            | OSHA PEL   | NIOSH  | Mexico OEL (TWA)   |
|-----------------|--------------------------------------|--|--|--|
| Tetrahydrofuran | TWA: 50 ppm<br>STEL: 100 ppm<br>Skin | (Vacated) TWA: 200 ppm<br>(Vacated) TWA: 590 mg/m <sup>3</sup><br>(Vacated) STEL: 250 ppm<br>(Vacated) STEL: 735 mg/m <sup>3</sup><br>TWA: 200 ppm<br>TWA: 590 mg/m <sup>3</sup> | IDLH: 2000 ppm<br>TWA: 200 ppm<br>TWA: 590 mg/m <sup>3</sup><br>STEL: 250 ppm<br>STEL: 735 mg/m <sup>3</sup> | TWA: 200 ppm<br>TWA: 590 mg/m <sup>3</sup><br>STEL: 250 ppm<br>STEL: 735 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 eyewash 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:** Organic gases and vapours filter. Type A. Brown. conforming to EN14387.

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

## 9. Physical and chemical properties

|   |                          |
|---|--------------------------|
| <b>Physical State</b>                         | Liquid                   |
| <b>Appearance</b>                             | Yellow - Brown - Black   |
| <b>Odor</b>                                   | No information available |
| <b>Odor Threshold</b>                         | No information available |
| <b>pH</b>                                     | Not applicable           |
| <b>Melting Point/Range</b>                    | No data available        |
| <b>Boiling Point/Range</b>                    | 66 °C / 150.8 °F         |
| <b>Flash Point</b>                            | -17 °C / 1.4 °F          |
| <b>Evaporation Rate</b>                       | No information available |
| <b>Flammability (solid,gas)</b>               | Not applicable           |
| <b>Flammability or explosive limits</b>       |                          |
| <b>Upper</b>                                  | No data available        |
| <b>Lower</b>                                  | No data available        |
| <b>Vapor Pressure</b>                         | 23 hPa @ 20 °C           |
| <b>Vapor Density</b>                          | No information available |
| <b>Specific Gravity</b>                       | No information available |
| <b>Solubility</b>                             | No information available |
| <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>                  | None known, based on information available  |
| <b>Stability</b>                        | Air sensitive. Water reactive. May form precipitate.                                  |
| <b>Conditions to Avoid</b>              | Keep away from open flames, hot surfaces and sources of ignition.                     |
| <b>Incompatible Materials</b>           | Water, Acids, Acid chlorides, Oxidizing agent   |
| <b>Hazardous Decomposition Products</b> | Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> ), Hydrogen bromide, Zinc oxide |
| <b>Hazardous Polymerization</b>         | Hazardous polymerization does not occur.  |
| <b>Hazardous Reactions</b>              | 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

| Component       | LD50 Oral          | LD50 Dermal           | LC50 Inhalation                               |
|-----------------|--------------------|-----------------------|---|
| Tetrahydrofuran | 1650 mg/kg ( Rat ) | > 2000 mg/kg (Rabbit) | 180 mg/L ( Rat ) 1 h<br>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** No information available

**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         |
| n-Tetradecylzinc bromide | N/A      | Not listed | Not listed | Not listed | Not listed | Not listed |

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)

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**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** None known

**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. 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

**Endocrine Disruptor Information**

| Component       | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|-----------------|--|--|---|
| Tetrahydrofuran | Group III Chemical                       | Not applicable                                   | Not applicable                          |

**Other Adverse Effects** The toxicological properties have not been fully investigated.

## 12. Ecological information

**Ecotoxicity**

May cause long-term adverse effects in the environment. Do not allow material to contaminate ground water system.

| Component       | Freshwater Algae | Freshwater Fish   | Microtox   | Water Flea                                   |
|-----------------|------------------|---|------------|--|
| Tetrahydrofuran | Not listed       | 2160 mg/l LC50 = 96 h<br>Pimephales promelas<br>Leuciscus idus: LC50: 2820 mg/L/48h | Not listed | EC50 48 h 3485 mg/l<br>EC50: >10000 mg/L/24h |

**Persistence and Degradability** based on information available. May persist

**Bioaccumulation/ Accumulation** No information available.

**Mobility** Will likely be mobile in the environment due to its volatility.

| Component       | log Pow |
|-----------------|---------|
| Tetrahydrofuran | 0.45    |

### 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** UN3399  
**Proper Shipping Name** ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE  
**Technical Name** (n-Tetradecylzinc bromide, TETRAHYDROFURAN)  
**Hazard Class** 4.3  
**Subsidiary Hazard Class** 3  
**Packing Group** II

#### TDG

**UN-No** UN3399  
**Proper Shipping Name** Organometallic substance, liquid, water-reactive, flammable  
**Hazard Class** 4.3  
**Subsidiary Hazard Class** 3  
**Packing Group** II

#### IATA

**UN-No** UN3399  
**Proper Shipping Name** Organometallic substance, liquid, water-reactive, flammable  
**Hazard Class** 4.3  
**Subsidiary Hazard Class** 3  
**Packing Group** II

#### IMDG/IMO

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

### 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 | X    | ACTIVE  | -                           |
| n-Tetradecylzinc bromide | N/A      | -    | -   | -                           |

#### 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

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

**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 | NDL | EINECS    | PICCS | ENCS | ISHL | AICS | IECSC | KECL     |
|--------------------------|----------|-----|-----|-----------|-------|------|------|------|-------|----------|
| Tetrahydrofuran          | 109-99-9 | X   | -   | 203-726-8 | X     | X    | X    | X    | X     | KE-33454 |
| n-Tetradecylzinc bromide | N/A      | -   | -   | -         | -     | -    | -    | -    | -     | -        |

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 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) |
|-----------------|--------------------------|---|-------------------------------|
| Tetrahydrofuran | 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   |
|-----------------|----------|---------------------|--------------|------------|
| Tetrahydrofuran | 109-99-9 | Carcinogen          | -            | Carcinogen |

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

| Component       | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|-----------------|---------------|------------|--------------|----------|--------------|
| Tetrahydrofuran | 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) |
|--------------------------|----------|---|---|---|
| Tetrahydrofuran          | 109-99-9 | -   | Use restricted. See item 75.<br>(see link for restriction details)            | -   |
| n-Tetradecylzinc bromide | N/A      | -   | -   | -   |

## 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                             |
| n-Tetradecylzinc bromide | N/A      | Not applicable | Not applicable               | Not applicable            | Not applicable                             |

## Contains component(s) that meet a 'definition' of per &amp; 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) |
|--------------------------|----------|---|--|----------------------------|------------------------------------|
| Tetrahydrofuran          | 109-99-9 | Not applicable  | Not applicable   | Not applicable             | Not applicable                     |
| n-Tetradecylzinc bromide | N/A      | 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**