

**SAFETY DATA SHEET**

Creation Date 11-Jun-2009

Revision Date 16-Aug-2023

Revision Number 8

**1. Identification**

**Product Name** Tetrahydrofuran

**Cat No. :** AC222160000; AC222160010; AC222160025; AC222162500;  
AC222162501; AC222165000

**CAS No** 109-99-9  
**Synonyms** THF

**Recommended Use** Laboratory chemicals.  
**Uses advised against** Food, drug, pesticide or biocidal product use.

**Details of the supplier of the safety data sheet****Company**

Fisher Scientific Company  
One Reagent Lane  
Fair Lawn, NJ 07410  
Tel: (201) 796-7100

Acros Organics  
One Reagent Lane  
Fair Lawn, NJ 07410

**Emergency Telephone Number**

For information **US** call: 001-800-ACROS-01 / **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 |
| Acute oral toxicity   | Category 4 |
| Serious Eye Damage/Eye Irritation                                 | Category 2 |
| 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  
Harmful if swallowed  
Causes serious eye irritation  
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  
Wear eye/face protection  
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 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**

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

**Eyes**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
If eye irritation persists: Get medical advice/attention

**Ingestion**

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

**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 | >95      |

#### 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. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Causes central nervous system depression |
| <b>Notes to Physician</b>                  | Treat symptomatically  |

#### 5. Fire-fighting measures

|   |   |
|---|---|
| <b>Suitable Extinguishing Media</b>     | Water spray, carbon dioxide (CO <sub>2</sub> ), dry chemical, alcohol-resistant foam. Water mist may be used to cool closed containers. |
| <b>Unsuitable Extinguishing Media</b>   | Water may be ineffective  |
| <b>Flash Point</b>                      | -21 °C / -5.8 °F  |
| <b>Method -</b>                         | No information available  |
| <b>Autoignition Temperature</b>         | 215 °C / 419 °F   |
| <b>Explosion Limits</b>                 |   |
| <b>Upper</b>                            | 11.8%   |
| <b>Lower</b>                            | 2.0%  |
| <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. May form explosive peroxides.

#### Hazardous Combustion Products

Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). peroxides.

#### 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  
2

Flammability  
3

Instability  
1

Physical hazards  
N/A

#### 6. Accidental release measures

|                             |  |
|-----------------------------|--|
| <b>Personal Precautions</b> | Use personal protective equipment as required. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges. |
|-----------------------------|--|

**Environmental Precautions** Should not be released into the environment.

**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** Not suitable for concentration or distillation. May form explosive peroxides on prolonged storage. If peroxide formation is suspected, do not open or move container. Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Ensure adequate ventilation. Avoid ingestion and inhalation. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Take precautionary measures against static discharges.

**Storage.** Store under an inert atmosphere. Shelf life 12 months (Unopened) or Shelf life: 3 months after opening. Containers should be dated when opened. May form explosive peroxides on prolonged storage. 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 containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks and flame. Flammables area. Incompatible Materials. Strong oxidizing agents. Acids.

## 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** Use explosion-proof electrical/ventilating/lighting equipment. Ensure that eyewash stations and safety showers are close to the workstation location. 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> | 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

|  |                           |
|--|---------------------------|
| Physical State                         | Liquid                    |
| Appearance                             | Colorless                 |
| Odor                                   | Petroleum distillates     |
| Odor Threshold                         | No information available  |
| pH                                     | 7-8 20% aq. solution      |
| Melting Point/Range                    | -108.4 °C / -163.1 °F     |
| Boiling Point/Range                    | 66 °C / 150.8 °F          |
| Flash Point                            | -21 °C / -5.8 °F          |
| Evaporation Rate                       | > 1                       |
| Flammability (solid,gas)               | Not applicable            |
| Flammability or explosive limits       |                           |
| Upper                                  | 11.8%                     |
| Lower                                  | 2.0%                      |
| Vapor Pressure                         | 170 mbar @ 20 °C          |
| Vapor Density                          | 2.5                       |
| Specific Gravity                       | 0.880                     |
| Solubility                             | miscible                  |
| Partition coefficient; n-octanol/water | No data available         |
| Autoignition Temperature               | 215 °C / 419 °F           |
| Decomposition Temperature              | No information available  |
| Viscosity                              | 0.456 mPas @ 20°C Dynamic |
| Molecular Formula                      | C4 H8 O                   |
| Molecular Weight                       | 72.11                     |

## 10. Stability and reactivity

|                                  |   |
|----------------------------------|---|
| Reactive Hazard                  | Yes.  |
| Stability                        | Stable under recommended storage conditions. Reacts with air to form peroxides. May form explosive peroxides on prolonged storage. Hygroscopic. |
| Conditions to Avoid              | Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition. Exposure to moist air or water.           |
| Incompatible Materials           | Strong oxidizing agents, Acids  |
| Hazardous Decomposition Products | Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> ), peroxides  |
| Hazardous Polymerization         | Hazardous polymerization may occur.   |
| Hazardous Reactions              | None under normal processing.   |

## 11. Toxicological information

### Acute Toxicity

#### Product Information 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    | Irritating to eyes May cause irritation of respiratory tract |
| Sensitization | No information available                                     |

**Carcinogenicity** Limited evidence of a carcinogenic effect.

| Component       | CAS No   | IARC     | NTP        | ACGIH | OSHA | Mexico |
|-----------------|----------|----------|------------|-------|------|--------|
| Tetrahydrofuran | 109-99-9 | Group 2B | Not listed | A3    | X    | A3     |

ACGIH: (American Conference of Governmental Industrial Hygienists)

A1 - Known Human Carcinogen  
A2 - Suspected Human Carcinogen  
A3 - Animal Carcinogen

ACGIH: (American Conference of Governmental Industrial Hygienists)

**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** Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting:  
Causes central nervous system depression

#### 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

Do not empty into drains.

| 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** Persistence is unlikely based on information available.

**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

UN2056

|                             |                 |
|-----------------------------|-----------------|
| <b>Proper Shipping Name</b> | TETRAHYDROFURAN |
| <b>Hazard Class</b>         | 3               |
| <b>Packing Group</b>        | II              |
| <b>TDG</b>                  |                 |
| <b>UN-No</b>                | UN2056          |
| <b>Proper Shipping Name</b> | TETRAHYDROFURAN |
| <b>Hazard Class</b>         | 3               |
| <b>Packing Group</b>        | II              |
| <b>IATA</b>                 |                 |
| <b>UN-No</b>                | UN2056          |
| <b>Proper Shipping Name</b> | TETRAHYDROFURAN |
| <b>Hazard Class</b>         | 3               |
| <b>Packing Group</b>        | II              |
| <b>IMDG/IMO</b>             |                 |
| <b>UN-No</b>                | UN2056          |
| <b>Proper Shipping Name</b> | TETRAHYDROFURAN |
| <b>Hazard Class</b>         | 3               |
| <b>Packing Group</b>        | 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  | -                           |

#### 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 |

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

### U.S. Federal Regulations

|   |                                    |
|---|------------------------------------|
| <b>SARA 313</b>   | Not applicable                     |
| <b>SARA 311/312 Hazard Categories</b>                       | See section 2 for more information |
| <b>CWA (Clean Water Act)</b>                                | Not applicable                     |
| <b>Clean Air Act</b>  | Not applicable                     |
| <b>OSHA - Occupational Safety and Health Administration</b> | 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)

| Component       | Hazardous Substances RQs | CERCLA EHS RQs |
|-----------------|--------------------------|----------------|
| Tetrahydrofuran | 1000 lb                  | -              |

**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**

Serious risk, Grade 3

**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)            | -   |

<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                             |

| 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                     |

## 16. Other information

**Prepared By**

Regulatory Affairs  
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**Creation Date** 11-Jun-2009**Revision Date** 16-Aug-2023**Print Date** 16-Aug-2023**Revision Summary** This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).**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**