

Safety Data Sheet

Classified According to OSHA Hazard Communication Standard (HCS)

SECTION 1: Identification

1.1. Product Identifier

Trade Name or Designation: Tetrahydrofuran, ACS Reagent Grade

Product Number: RSOT0050

Other Identifying Product Numbers: RSOT0050-4C, RSOT0050-500C

1.2. Recommended Use and Restrictions on Use

General Laboratory Reagent

1.3. Details of the Supplier of the Safety Data Sheet

Company: Ricca Chemical Company

Address: 448 West Fork Drive

Arlington, TX 76012 USA

Telephone: 888-467-4222

1.4. Emergency Telephone Number (24 hours)

CHEMTREC (USA) 800-424-9300

CHEMTREC (International) 1+ 703-527-3887

SECTION 2: Hazard(s) Identification

2.1. Classification of the Substance or Mixture

For the full text of the Hazard and Precautionary Statements listed below, see Section 16.

Hazard Class	Category	Hazard Statements	Precautionary Statements:
Eye Damage / Irritation	Category 2	H319	P264, P280, P305+P351+P338, P337+P313
Carcinogenicity	Category 2	H351	P201, P202, P280, P308+P313, P405, P501
Specific Target Organs/Systemic Toxicity Following Single Exposure	Category 3	H335, H336	P261, P271, P304+P340, P312, P403+P233, P405, P501
Flammable Liquids	Category 2	H225	P210, P233, P240, P241, P242, P243, P280, P303+P361+P353, P370+P378, P403+P235, P501

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2.2. GHS Label Elements

Pictograms:



Signal Word: **Danger**

Hazard Statements:

Hazard Number	Hazard Statement
H225	Highly flammable liquid and vapor.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.

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Precautionary Statements:

Precautionary Number	Precautionary Statement
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat, sparks and open flame. No smoking.
P233	Keep container tightly closed.
P240	Ground container and receiving equipment.
P241	Use explosion-proof equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P261	Avoid breathing fumes, mist, vapors, or spray.
P264	Wash arms, hands and face thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves and eye protection.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical attention.
P312	Call a POISON CENTER or physician if you feel unwell.
P337+P313	If eye irritation persists: Get medical attention.
P370+P378	In case of fire: Use dry chemical, foam or carbon dioxide to extinguish.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents in accordance with local, state, federal and international regulations.

2.4. Hazards not Otherwise Classified or Covered by GHS

Data not available.

SECTION 3: Composition / Information on Ingredients

3.1. Components of Substance or Mixture

Chemical Name	Formula	Molecular Weight	CAS Number	Weight%
Tetrahydrofuran	C ₄ H ₈ O	72.10 g/mol	109-99-9	100.00

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SECTION 4: First-Aid Measures

4.1. General First Aid Information

Eye Contact: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Causes severe irritation, redness, pain, tearing and burns.

Inhalation: IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Skin Contact: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Causes irritation to skin, symptoms include redness, itching, and pain.

Ingestion: Induce vomiting immediately as directed by medical personnel. Call a physician immediately.

4.2. Most Important Symptoms and Effects, Acute and Delayed

Causes serious eye irritation. May cause respiratory irritation. May cause drowsiness or dizziness. Suspected of causing cancer. EYE CONTACT: Causes severe irritation, redness, pain, tearing and burns. SKIN CONTACT: Causes irritation to skin, symptoms include redness, itching, and pain. CHRONIC EFFECTS / CARCINOGENICITY: Repeated or high exposure may cause liver or kidney damage, may affect lungs. Repeated skin exposure can cause dryness, cracking of skin and rash.

4.3. Medical Attention or Special Treatment Needed

Avoid prolonged breathing of vapor or contact with skin. Harmful if swallowed. Do not pipet by mouth. If ingested, induce vomiting until vomitus is clear. Call a physician. Wash areas of contact with plenty of water. For eyes, get medical attention.

SECTION 5: Fire-Fighting Measures

5.1. Extinguishing Media

In case of fire: Use dry chemical, foam or carbon dioxide to extinguish. Use dry chemical, alcohol foam, or carbon dioxide for extinguishing the surrounding fire. Use water as fog in flooding quantities. Water can be used to dilute spills to non-flammable mixtures.

5.2. Specific Hazards Arising from the Substance or Mixture

Highly flammable liquid and vapor. Flammable liquid. Vapors are heavier than air and may travel to a source of ignition and flash back.

5.3. Special Protective Equipment for Firefighters

Wear full protective clothing and positive pressure self-contained breathing apparatus. Teflon barrier recommended.

SECTION 6: Accidental Release Measures

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

Ground container and receiving equipment. Use explosion-proof equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wear protective gloves and eye protection.

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6.2. Cleanup and Containment Methods and Materials

Eliminate all ignition sources. Approach release from upwind. Stop or control the leak, if this can be done without undue risk. Use water spray to cool and disperse vapors, protect personnel, and dilute spills to form nonflammable mixtures. Control runoff and isolate discharged material for proper disposal.

SECTION 7: Handling and Storage

7.1. Precautions for Safe Handling and Storage Conditions

Store locked up. As with all chemicals, wash hands thoroughly after handling. Avoid contact with eyes and skin. Protect from freezing and physical damage. Store in cool, secure, flammable storage area away from all sources of ignition. Empty containers may be hazardous since they retain product residues. Keep containers closed. Check peroxide content before heating material. Do not breathe vapor.

SECTION 8: Exposure Controls / Personal Protection

8.1 Control Parameters

Chemical Name	Limit Type	Country	Exposure Limit	Information Source
Tetrahydrofuran (109-99-9)	TWA	USA	200 ppm TWA; 590 mg/m ³ TWA	U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)
Tetrahydrofuran (109-99-9)	TLV-STEL	USA	100 ppm STEL	ACGIH - Threshold Limit Values - Short Term Exposure Limits (TLV-STEL)
Tetrahydrofuran (109-99-9)	TLV-TWA	USA	50 ppm TWA	ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA)

8.2. Exposure Controls

Engineering Controls: Use only outdoors or in a well-ventilated area. A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limit.

Respiratory Protection: If the TLV is exceeded, a half-mask organic vapor respirator may be worn for up to 10 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full facepiece organic vapor respirator may be worn for up to 50 times the exposure limit, or the maximum use concentration specified by the respirator supplier, whichever is lowest.

Skin Protection: Wear protective gloves and eye protection. Chemical resistant gloves.

Eye Protection: Wear protective gloves and eye protection. Safety glasses or goggles.

8.3. Personal Protective Equipment

Wear protective gloves and eye protection. If the TLV is exceeded, a half-mask organic vapor respirator may be worn for up to 10 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full facepiece organic vapor respirator may be worn for up to 50 times the exposure limit, or the maximum use concentration specified by the respirator supplier, whichever is lowest. Chemical resistant gloves. Safety glasses or goggles.



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SECTION 9: Physical and Chemical Properties

9.1. Basic Physical and Chemical Properties

Appearance: Colorless liquid

Physical State: Liquid

Odor: Data not available.

Odor Threshold: Data not available.

pH: Data not available.

Melting/Freezing Point: -108°C

Initial Boiling Point/Range: 66°C - 66°C

Flash Point: -14°C

Evaporation Rate: Data not available.

Flammability: Data not available.

Flammability/Explosive Limits: Data not available.

Vapor Pressure: 173 hPa at 20°C

Vapor Density: Data not available.

Relative Density: 0.89

Solubility: Soluble

Partition Coefficient: 0.45 at 25°C

Auto-Ignition Temperature: Data not available.

Decomposition Temperature: Data not available.

Viscosity: Data not available.

Explosive Properties: Data not available.

Oxidizing Properties: Data not available.

SECTION 10: Stability and Reactivity

10.1. Reactivity and Chemical Stability

Distillation or evaporation can concentrate peroxides (if present) to create an explosion hazard.

10.2. Possibility of Hazardous Reactions

Data not available.

10.3. Conditions to Avoid and Incompatible Materials

Keep away from heat, sparks and open flame. No smoking. Keep container tightly closed. Strong oxidizers, Potassium Hydroxide, Sodium Hydroxide, Lithium-Aluminum alloys, heat, sparks, open flame. May attack some forms of plastics and rubber. Peroxides may accumulate upon prolonged storage in presence of air.

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10.4. Hazardous Decomposition Products

May occur.

SECTION 11: Toxicological Information

11.1. Information on Toxicological Effects

Acute Toxicity - Oral Exposure:

Not applicable.

Acute Toxicity - Dermal Exposure:

Not applicable.

Acute Toxicity - Inhalation Exposure:

Not applicable.

Acute Toxicity - Other Information:

LD50, Oral, Rat: 1650 mg/kg, details of toxic effects not reported other than lethal dose value.

Skin Corrosion and Irritation:

Not applicable.

Serious Eye Damage and Irritation:

Causes serious eye irritation. Wash arms, hands and face thoroughly after handling. Wear protective gloves and eye protection. 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 attention.

Respiratory Sensitization:

Not applicable.

Skin Sensitization:

Not applicable.

Germ Cell Mutagenicity:

Not applicable.

Carcinogenicity:

Suspected of causing cancer. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves and eye protection. IF exposed or concerned: Get medical attention. Store locked up. Dispose of contents in accordance with local, state, federal and international regulations.

Reproductive Toxicity:

Not applicable.

Specific Target Organ Toxicity from Single Exposure:

May cause respiratory irritation. May cause drowsiness or dizziness. Avoid breathing fumes, mist, vapors, or spray. Use only outdoors or in a well-ventilated area. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. Store in a well-ventilated place. Keep container tightly closed. Store locked up. Dispose of contents in accordance with local, state, federal and international regulations.

Specific Target Organ Toxicity from Repeated Exposure:

Not applicable.

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Aspiration Hazard:

Not applicable.

Additional Toxicology Information:

Data not available.

SECTION 12: Ecological Information

12.1. Ecotoxicity

Not applicable.

12.2. Persistence and Degradability

Data not available.

12.3. Bioaccumulative Potential

Data not available.

12.4. Mobility in Soil

Data not available.

12.5. Other Adverse Ecological Effects

Data not available.

SECTION 13: Disposal Considerations

13.1. Waste Treatment Methods

Data not available.

SECTION 14: Transportation Information

14.1. Transportation by Land-Department of Transportation (DOT, United States of America)

Sizes: 4 L, 500 mL

UN Number: UN2056

Proper Shipping Name: Tetrahydrofuran

Hazard Class: 3

Packing Group: II

Hazard Label(s):



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14.2. Transportation by Air - International Air Transport Association (IATA)

Sizes: 4 L, 500 mL

UN Number: UN2056

Proper Shipping Name: Tetrahydrofuran

Hazard Class: 3

Packing Group: II

Hazard Label(s):



14.3 Transportation of Dangerous Goods (TDG, Canada)

Sizes: 4 L, 500 mL

UN Number: UN2056

Proper Shipping Name: TETRAHYDROFURAN

Hazard Class: 3

Packing Group: II

Hazard Label(s):



SECTION 15: Regulatory Information

15.1. Occupational Safety and Health Administration (OSHA) Hazards

Not listed.

15.2. Superfund Amendments and Reauthorization Act (SARA) 302 Extremely Hazardous Substances

Not listed.

15.3. Superfund Amendments and Reauthorization Act (SARA) 311/312 Hazardous Chemicals

Tetrahydrofuran (CAS # 109-99-9): 1000 lb final RQ; 454 kg final RQ

15.4. Superfund Amendments and Reauthorization Act (SARA) 313 Toxic Release Inventory (TRI)

Not listed.

15.5. Massachusetts Right-to-Know Substance List

Tetrahydrofuran (CAS # 109-99-9): Present

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15.6. Pennsylvania Right-to-Know Hazardous Substances

Tetrahydrofuran (CAS # 109-99-9): Environmental hazard

Tetrahydrofuran (CAS # 109-99-9): Present

15.7. New Jersey Worker and Community Right-to-Know Components

Tetrahydrofuran (CAS # 109-99-9): flammable - third degree

Tetrahydrofuran (CAS # 109-99-9): sn 1823

15.8. California Proposition 65

Tetrahydrofuran (CAS # 109-99-9): carcinogen, 12/17/2021

15.9. Canada Domestic Substances List / Non-Domestic Substances List (DSL/NDSL)

Tetrahydrofuran (CAS # 109-99-9): Present (DSL)

15.10. United States of America Toxic Substances Control Act (TSCA) List

All components of this solution are listed as active on the TSCA Inventory or are mixtures (hydrates) of active items listed on the TSCA Inventory.

Tetrahydrofuran (CAS # 109-99-9): Present (ACTIVE)

15.11. European Inventory of Existing Commercial Chemical Substances (EINECS), European List of Notified Chemical Substances (ELINCS), and No Longer Polymers (NLP)

Tetrahydrofuran (CAS # 109-99-9): 203-726-8

SECTION 16: Other Information

16.1. Full Text of Hazard Statements and Precautionary Statements

Highly flammable liquid and vapor. Causes serious eye irritation. May cause respiratory irritation. May cause drowsiness or dizziness. Suspected of causing cancer.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, sparks and open flame. No smoking. Ground container and receiving equipment. Use explosion-proof equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing fumes, mist, vapors, or spray. Wash arms, hands and face thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves and eye protection.

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical attention. If eye irritation persists: Get medical attention. In case of fire: Use dry chemical, foam or carbon dioxide to extinguish.

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

Dispose of contents in accordance with local, state, federal and international regulations.

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16.2. Miscellaneous Hazard Classes

Canadian Carcinogenicity Hazard Class: Not Applicable.

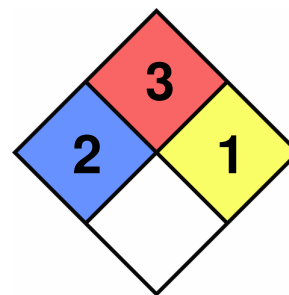
Physical Hazards Not Otherwise Classified (PHNOC): Not Applicable.

Health Hazards Not Otherwise Classified (HHNOC): Not Applicable.

Biohazardous Infectious Materials Hazard Class: Not Applicable.

16.3. National Fire Protection Association (NFPA) Rating

Health: 2
Flammability: 3
Reactivity: 1
Special Hazard:



16.4. Document Revision

Last Revision Date: 2023-10-11

DISCLAIMER

When handled properly by qualified personnel, the product described herein does not present a significant health or safety hazard. Alteration of its characteristics by concentration, evaporation, addition of other substances, or other means may present hazards not specifically addressed herein and which must be evaluated by the user. The information furnished herein is believed to be accurate and represents the best data currently available to us. No warranty, expressed or implied, is made and RICCA CHEMICAL COMPANY assumes no legal responsibility or liability whatsoever resulting from its use.