Section 1. Product and Company Identification

Product Name Tetrahydrofurfuryl Alcohol
CAS Number 97-99-4

Parchem - fine & specialty chemicals
415 Huguenot Street
New Rochelle, NY 10801
(914) 654-6800 **(914) 654-6899**
parchem.com **info@parchem.com**

EMERGENCY RESPONSE NUMBER
CHEMTEL
Toll Free US & Canada: 1 (800) 255-3924
All other Origins: 1 (813) 248-0585
Collect Calls Accepted

Section 2. Hazards Identification

Classification of the substance or mixture
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Flammable liquids (Category 4), H227
Eye irritation (Category 2A), H319
Reproductive toxicity (Category 2), H361

GHS Label Elements

Pictograms:

Signal word: Warning

Hazard and precautionary statements
Hazard statement(s)
H227 Combustible liquid.
H319 Causes serious eye irritation.
H361 Suspected of damaging fertility or the unborn child.
Precautionary statement(s)
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/open flames/hot surfaces. - No smoking.
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/ eye protection/ face protection.
P281 Use personal protective equipment as required.
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 advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
P501 Dispose of contents/ container to an approved waste disposal plant.

Applicable Risk Phrases: Xi, R36 (See Section 15 for explanation.)
Emergency Overview: Skin/eye irritant
Routes of Exposure: The substance can be absorbed into the body by inhalation and through the skin.
Health Effects: Combustible, clear liquid. Irritating to the eyes and skin. Prolonged exposure to vapor may cause central nervous system depression.
Eye Contact: Moderately irritating to eyes.
Skin Contact: Slightly irritating to skin.
Inhalation: Excessive exposure to vapor may cause dizziness, blurred vision, nausea, vomiting or headaches.
Ingestion: May be harmful if ingested.
Acute: The substance irritates the eyes, the skin and the respiratory tract. The substance may cause effects on the central nervous system. Exposure at high level may result in unconsciousness
Chronic: Repeated or prolonged exposure to vapors may cause central nervous system depression, and decreased male fertility. Repeated or prolonged dermal contact may cause decreased male fertility. Ingestion may cause developmental effects.
Carcinogenicity: Not listed as carcinogen by NTP or IARC, not regulated by OSHA.
Populations at Special Risk: Persons with existing skin disorders may be more susceptible to the effects of tetrahydrofuran exposure. /Tetrahydrofuran/ [Mackison, F. W., R. S. Stricoff, and L. J. Partridge, Jr. (eds.)

See Section 11 for additional information.

Section 3. Composition / Information on Ingredients

Common Name Tetrahydrofurfuryl Alcohol
Synonym(s) THFA; Tetrahydro-2-furanmethanol
CAS Number 97-99-4

COMPONENT	CAS NUMBER	CONCENTRATION
Tetrahydrofurfuryl Alcohol	97-99-4	≥ 98%
1,2-Pentanediol	5343-92-0	< 2%

Section 4. First Aid Measures

Eye Contact: Flush with large volumes of water for at least 15 minutes. Get medical attention.
Skin Contact: Wash with large volumes of soap and water. If irritation occurs, get medical attention.

Inhalation: Remove person to fresh air. If not breathing, give artificial respiration. If breathing difficult give oxygen. Get medical attention.
Ingestion: If conscious, give person 1 to 2 glasses of water. Get medical attention immediately.

Section 5. Firefighting Measures

Classified by OSHA as combustible (29 CFR 1910.1200).

Flammable Properties
Flashpoint: 165°F (74°C) TCC method
Lower Flammable Limit: 1.5% by volume
Upper Flammable Limit: 9.7% by volume
Autoignition Temperature: 540°F (282°C)
Fire Fighting: If material on fire or involved in fire, do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use "alcohol" foam, dry chemical or carbon dioxide
Extinguishing Media: Alcohol foam, carbon dioxide, dry chemical, water spray for dilution to nonflammable mixture.
Decomposition Products under Fire Conditions: Combustion produces carbon dioxide and carbon monoxide.

Section 6. Accidental Release Measures

Personal Precautions: Review Sections 8, 13, and 7 before proceeding with cleanup. Use appropriate Personal Protective Equipment as specified in Section 8 during cleanup.
Land or Water Spill: Evacuate to fresh air and ventilate area before reentering. Self-contained breathing apparatus should be utilized when responding to spills or heavy fumes. Remove sources of heat sparks, flame, impact, friction, and electricity and use non-sparking tools and equipment. Contain and recover liquid when possible. Dike spill. Collect liquid in an appropriate container or absorb with an inert material (i.e. vermiculite, dry sand, earth), and place in a chemical waste container. Use water spray to disperse vapors or to flush liquid away from fire exposure. US Regulations (CERCLA) require reporting spills and releases to soil, water, and air in excess of Reportable Quantities. Comply with all federal, state, and local regulations.

Environmental Precautions: Prevent liquid from entering waterways or low areas.

Section 7. Handling and Storage

Precautionary Measures: Do not get in eyes. Do not taste or swallow. Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

General Handling Information: Store in a cool, dry place with adequate ventilation. Keep away from open flames and high temperatures. Wash with soap and water after handling before eating, drinking, smoking, applying cosmetics, or using toilet facilities. Launder contaminated clothing before reuse. Do not wear contact lenses when working with this material.

Section 8. Exposure Controls / Personal Protection

Occupational Exposure Controls
OSHA PEL: Not established.
ACGIH TLV: Not established.
AIHA WEEL Guide: 2ppm (8hr TWA).

Workplace Exposure Guidelines: Avoid direct contact with tetrahydrofurfuryl alcohol. General ventilation and local exhaust required to minimize exposure to mists and vapors.
Personal Protection: If misting of vapors occurs, use NIOSH approved organic vapor air purifying respirator. Use chemical safety goggles for eye protection. Use impervious chemical gloves (North Safety Products, Silver Shield). Have eye wash and safety shower available.
Engineering Measures: A system of local and or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent addition, for details.

Personal Protective Equipment
Eye/Face Protection: Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.
Skin Protection: Neoprene coated gloves such as Ansell Scorpio™ or equivalent, and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure.
Respiratory Protection: If exposure is anticipated to be greater than applicable exposure limits, wear a NIOSH approved respirator that provides adequate protection from measured concentrations of this material. Use the following elements for air-purifying respirators: Air-Purifying Respirator for Organic Vapors Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.
Hygiene Recommendations: If clothing or shoes become contaminated, remove, thoroughly wash affected areas of the body, and launder contaminated clothing before reuse.

Section 9. Physical and Chemical Properties

Product Description: Clear, colorless liquid
Specific Gravity: 1.05
Vapor Pressure: 0.2 mm Hg at 68 °F (20°C)
Solubility in Water: Complete.
Appearance: Clear, water white to pale yellow, mobile liquid.
Vapor Density: 3.5 at 1 atm (air = 1)

Freezing/Melting Point: -112°F (-80°C)
Boiling Point: 352°F (178°C)
pH: Not available
Odor: Mild characteristic odor.

Section 10. Stability and Reactivity

Stability: Stable.
Hazardous Polymerization: None.
Incompatible Materials: Oxidizers, strong acids.
Conditions to Avoid: Heat, sparks, flame or other sources of ignition.
Hazardous Decomposition Products: Combustion produces carbon dioxide and carbon monoxide.

Section 11. Toxicological Information

Oral LD50 1600 mg/Kg Rat
Intraperitoneal LD50 400 mg/Kg Rat
Oral LD50 2300 mg/Kg Mouse
Intravenous LD50 725 mg/Kg Rabbit
Oral LD50 800 mg/Kg Guinea pig
Dermal LD50 5 gm/Kg Guinea pig
Intraperitoneal LD50 400 mg/Kg Guinea pig
Source, RTECS Reference

Acute Effects: Moderately irritating to eyes, skin and mucous membranes. Moderately toxic by ingestion.
Subchronic Effects: Subchronic exposures (oral, dermal and inhalation) at relatively high levels, have demonstrated systemic toxicity, reproductive toxicity, and central nervous system depression in either rats, rabbits or dogs. An oral developmental screening study in rats expressed a lower mean fetal body weight at 100 mg/kg/day.
Chronic Effects: Not available

Mutagenicity
Test System: Ames Salmonella Typhimurium
Strain Indicator: TA98
Metabolic Activation: None
Method: Preincubation
Dose: 0.01 - 1000 μmol/PLATE (test material solvent: methanol)
Results: Negative
Reference: *AESCHBACHER,HU, WOLLEB,U, LOLIGER,J, SPADONE,JC AND LIARDON,R; CONTRIBUTION OF COFFEE AROMA CONSTITUENTS TO THE MUTAGENICITY OF COFFEE; FOOD CHEM. TOXICOL. 27(4):227-232, 1989]*

Section 12. Ecological Information

Environmental Fate/Exposure Summary: If released to air, tetrahydrofurfuryl alcohol will exist solely as a vapor in the ambient atmosphere. Vapor-phase tetrahydrofurfuryl alcohol will be degraded in the atmosphere by reaction in air and is estimated to be in air for 13.4 hrs. If released to soil, tetrahydrofurfuryl alcohol is expected to have very high mobility. Volatilization from moist soil surfaces is not expected. Tetrahydrofurfuryl alcohol may volatilize slowly from dry soil surfaces based upon its vapor pressure. If released into water, tetrahydrofurfuryl alcohol is not expected to adsorb to suspended solids and sediment. Tetrahydrofurfuryl alcohol is readily biodegradable. Source: HDSB Data Bank

Environmental Biodegradation: Tetrahydrofurfuryl alcohol was considered readily biodegradable.

Section 13. Disposal Considerations

Waste Treatment Methods: Dispose of product and contaminated packaging in accordance with all local, state, and federal environmental control regulations.

Section 14. Transport Information

The information in this section is for reference only and should not take the place of a bill of lading specific to an order.

DOT/Transportation Information

Proper Shipping Name: Combustible liquid, n.o.s. (Tetrahydrofurfuryl alcohol)

UN Number: NA 1993

Packing Group III

49CFR173.150: Combustible liquids in non-bulk packaging are not regulated by DOT.

Section 15. Regulatory Information

UNITED STATES FEDERAL REGULATIONS

TSCA

TSCA Inventory: Yes

Health & Safety Reporting List: No

Chemical Test Rule: No

SNUR under TSCA: No

HPV: Yes

EPA

SARA, Section 302, RQ: None

SARA Section 302, TPQ: None

SARA Codes 311/312: Acute, Chronic

SARA Section 313: No

SARA Section 31

FIFRA-Inerts List 3

Clean Air Act
Hazardous Air Pollutant: No
Class 1 Ozone Depletor: No
Class 2 Ozone Depletor: No

Clean Water Act
Hazardous Substance: No
Priority Pollutant: No
Toxic Pollutant: No

OSHA
Highly Hazardous: No

State Right to Know
Yes: Massachusetts, Pennsylvania
Significant Risk Level (CA): No

FDA EAFUS: ASP

EU Risk and Safety Phrases
EU Symbols: Xi: Irritant
Risk Phrases: R 36: Irritating to eyes.
Safety Phrases: S 2: Keep out of the reach of children.
S39: Wear eye/face protection.
This chemical substance is not listed in a priority list (as foreseen under Council Regulation (EEC) No 793/93 on the evaluation and control of the risks of existing substances.).

Canada
WHMIS Classification: Yes
The classification of this product has not been validated yet by the Service du répertoire toxicologique
Ingredient Disclosure List: Yes
All the components of this material are on the Canadian Domestic Substances List (DSL).

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by those regulations.

Other Regulations:
Listing status is unknown for the Australian Inventory of Chemical, Substances (AICS), Existing Chemical Substances in China, Japan's Existing & New Chemical Substances (ENCS), Korean Existing Chemicals List (ECL), Philippine Inventory of Chemicals and Chemical Substances (PICCS).

NFPA Ratings
Health: 2
Flammability: 2
Reactivity: 0

Section 16. Other Information

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product.

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