

# SAFETY DATA SHEET

## Tetrahydrofuran, Stabilized

### 1. IDENTIFICATION OF SUBSTANCE / MIXTURE AND OF SUPPLIER

**Product Identifier:** High Purity Chemicals  
**Synonyms:** THF  
**Other means of identification:** CAS No. 109-99-9  
EINECS No. 203-726-8

**Recommended use of the chemical and restrictions on use:**

#### Supplier Details:

**Pharmco Products, Inc.**  
58 Vale Road, Brookfield,  
CT 06804, USA.  
Tel: 203.740.3471  
Fax: 203.740.3481  
CCN17213

**Pharmco Products, Inc.**  
1101 Isaac Shelby Drive, Shelbyville,  
KY 40065, USA.  
Tel: 502.232.7600  
Fax: 502.633.6100  
CCN17213

**Emergency Contact:**

**CHEMTREC: 1.800.424.9300 (USA) / +1.703.527.3887 (International)**



### 2. HAZARDS IDENTIFICATION

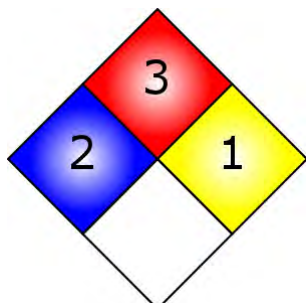
#### OSHA Hazards:

Flammable liquid, Harmful by ingestion, Irritant, Target organ effect

#### Target Organs:

Central nervous system

#### NFPA



GHS label elements, including precautionary statements

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**Signal Word:**

DANGER!

**Hazard statement(s)**

H225 Highly flammable liquid and vapor.  
H319 Causes serious eye irritation.  
H335 May cause respiratory irritation.

**Precautionary statement(s)**

P501 Dispose of contents and container to an approved waste disposal plant.  
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.  
P210 Keep away from heat, sparks, open flames, and hot surfaces. No smoking.  
P233 Keep container tightly closed.  
P280 Wear protective gloves and eye and face protection.

**GHS Classification(s)**

Eye Irritation (Category 2)  
Eye irritation (Category 2A)  
Flammable Liquids (Category 2)  
Specific target organ toxicity - single exposure (Category 3)

**Other hazards which do not result in classification:**

**Potential Health Effects:**

Organ	Description
Eyes	Causes eye irritation
Ingestion	May be harmful if swallowed.
Inhalation	May be harmful if inhaled. Material causes respirator tract irritation. Vapors may cause drowsiness/dizziness.
Skin	May be harmful if absorbed through skin. Causes skin burns.

**3. COMPOSITION AND INFORMATION ON INGREDIENTS**

**Chemical identity:** Tetrahydrofuran

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**Common name / Synonym:** THF  
**CAS number:** 109-99-9  
**EINECS number:** 203-726-8  
**ICSC number:** 0578  
**RTECS #:** LU5950000  
**UN #:** UN2056  
**EC #:** 603-025-00-0

<b>% Weight</b>	<b>Material</b>	<b>CAS</b>
100	Tetrahydrofuran	109-99-9

## 4. FIRST AID MEASURES

### General advice

Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid. Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

### Skin

Wash skin with soap and copious amounts of water. Seek medical attention.

### Inhalation

Remove person to fresh air. If signs/symptoms continue, get medical attention. Give oxygen or artificial respiration as needed.

### Eyes

Thoroughly flush the eyes with large amounts of clean low-pressure water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation persists, seek medical attention.

### Ingestion

DO NOT induce vomiting. If vomiting does occur, have victim lean forward to prevent aspiration. Rinse mouth with water. Seek medical attention. Never give anything by mouth to an unconscious individual.

## 5. FIRE FIGHTING MEASURES

### Suitable (and unsuitable) extinguishing media:

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

### Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products):

Carbon oxides expected to be the primary hazardous combustion product.

### Special protective equipment and precautions for firefighters:

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Keep unopened containers cool by spraying with water.

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Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

**Flammable Properties**

**Classification**

OSHA/NFPA Class IB Flammable Liquid.

**Flash point**

-14°C (6°F) - Closed Cup

**Autoignition temperature**

321°C (610°F)

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures:**

Wear respiratory protection. Do not inhale vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

**Environmental precautions:**

Stop leak / contain spill if possible and safe to do so. Prevent product from entering drains.

**Methods and materials for containment and cleaning up:**

Contain spill, then collect with an electrically protected vacuum cleaner or by wet-brushing and put the material into a convenient waste disposal container. Keep container closed.

## 7. HANDLING AND STORAGE

**Precautions for safe handling:**

Do not get on skin or in eyes. Do not inhale vapor or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the buildup of electrostatic charge. Open and handle container with care. Metal containers involved in the transfer of this material should be grounded and bonded.

**Conditions for safe storage, including any incompatibilities:**

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Control parameters, e.g., occupational exposure limit values or biological limit values:**

**Occupational Exposure Limits**

Component	Source	Type	Value	Note
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Tetrahydrofuran	US (OSHA)	TWA	200 ppm, 590 mg/m <sup>3</sup>	29 CFR 1910.1000 Table Z-1 Limits for Air Contaminants
Tetrahydrofuran	US (OSHA)	STEL	250 ppm, 735 mg/m <sup>3</sup>	29 CFR 1910.1000 Table Z-1 Limits for Air Contaminants
Tetrahydrofuran	US (ACGIH)	TWA	50 ppm	ACGIH Threshold Limit Value

**Appropriate engineering controls:**

General room or local exhaust ventilation is usually required to meet exposure limit(s). Electrical equipment should be grounded and conform to applicable electrical code.

**Individual protection measures, such as personal protective equipment:**

**Respiratory protection:**

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Hand protection:**

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Eye protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Use equipment approved by appropriate government standards, such as NIOSH (US) or EN166 (EU) Maintain eye wash fountain and quick-drench facilities in work area.

**Skin and body protection:**

Wear impervious, flame retardant, antistatic protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Hygiene measures:**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance (physical state, color, etc.)</b>	Liquid. Colorless, clear.
<b>Freezing point</b>	-108.0 °C (-162.4 °F)
<b>Initial boiling point and boiling range</b>	65.0 - 67.0 °C (149.0 - 152.6 °F)
<b>Flash point</b>	-14°C (6°F) - Closed Cup
<b>Flammability (solid, gas)</b>	Flammable
<b>Upper / Lower flammability or explosive limits</b>	2% (V) / 11.8% (V)

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<b>Vapor pressure</b>	152.0 hPa (114.0 mmHg) at 15.0 °C (59.0 °F) 190.7 hPa (143.0 mmHg) at 20.0 °C (68.0 °F) 213.3 hPa (160.0 mmHg) at 25.0 °C (77.0 °F) 373.3 hPa (280.0 mmHg) at 38.0 °C (100.4 °F)
<b>Vapor Density</b>	2.1
<b>Relative Density</b>	1.049 g/mL at 25 °C (77 °F)
<b>Solubility(ies)</b>	soluble
<b>Auto-ignition temperature</b>	321.0 °C (609.8 °F)
<b>Formula (TETRAHYDROFURAN)</b>	C4H8O
<b>Molecular Weight (TETRAHYDROFURAN)</b>	72.11 g/mol

## 10. STABILITY AND REACTIVITY

<b>Chemical Stability</b>	Stable under recommended storage conditions.
<b>Possibility of hazardous reactions</b>	Vapors may form explosive mixture with air.
<b>Conditions to avoid (e.g., static discharge, shock or vibration)</b>	Heat, flames and sparks. Extreme temperatures and direct sunlight.
<b>Incompatible materials</b>	Oxidizing agents, oxygen
<b>Hazardous decomposition products</b>	Hazardous decomposition products formed under fire conditions. - Carbon oxides

## 11. TOXICOLOGICAL INFORMATION

- Tetrahydrofuran 109-99-9

### Product Summary:

No data available for the teratogenic, mtuagenic, or reproductive toxicity effects of this product.

### Acute Toxicity:

LC50 (Inhalation)	Rat	21000 ppm	3h
LD50 (Dermal)	Rat	> 2000 mg/kg	
LD50 (Oral)	Rat	1650 mg/kg	
LD50 (Oral)	Guinea pig	2300 mg/kg	

### Irritation:

#### Eyes

Rabbit - Serious risk of eye damage

#### Skin

Rabbit - skin irritation

### Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable or confirmed human carcinogen by IARC.

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ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

#### Other Hazards

Organ	Description
Eyes	Causes eye irritation
Ingestion	May be harmful if swallowed.
Inhalation	May be harmful if inhaled. Material causes respirator tract irritation. Vapors may cause drowsiness/dizziness.
Skin	May be harmful if absorbed through skin. Causes skin burns.

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## 12. ECOLOGICAL INFORMATION

- Tetrahydrofuran 109-99-9

#### Ecotoxicity (aquatic and terrestrial, where available):

##### Acute algae toxicity (TETRAHYDROFURAN)

Growth inhibition NOEC / 192h / Algae - 3700 mg/l

##### Acute fish toxicity (TETRAHYDROFURAN)

LC50 / 96h / Fathead minnow - 2160 mg/l

#### Persistence and degradability:

Biodegradation is expected.

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## 13. DISPOSAL CONSIDERATIONS

**Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging:**

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.



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## 14. TRANSPORT INFORMATION

Description of waste residues and information on their safe handling and methods of disposal:

UN number	UN2056
UN proper shipping name	Tetrahydrofuran
Transport hazard class(es)	3
Packing group (if applicable)	II

### Reportable Quantity

1000 lbs

### IMDG

UN-Number: UN2056 Class: 3 Packing Group: II

EMS-No: F-E, S-D

Proper shipping name: TETRAHYDROFURAN

Marine pollutant: No

### IATA

UN-Number: UN2056 Class: 3 Packing Group: II

Proper shipping name: Tetrahydrofuran

## 15. REGULATORY INFORMATION

Safety, health and environmental regulations specific for the product in question:

### OSHA Hazards

Flammable liquid, Harmful by ingestion, Irritant, Target organ effect

All ingredients are on the following inventories or are exempted from listing

Country	Notification
Australia	AICS
Canada	DSL
China	IECS
European Union	EINECS
Japan	ENCS/ISHL
Korea	ECL
New Zealand	NZIoC
Philippines	PICCS
United States of America	TSCA

### SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

### SARA 313 Components

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.



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**SARA 311/312 Hazards**

Acute Health Hazard  
Chronic Health Hazard  
Fire Hazard

**Massachusetts Right To Know Components**

Tetrahydrofuran CAS-No. 109-99-9 Revision Date 2007-03-01

**Pennsylvania Right To Know Components**

Tetrahydrofuran CAS-No. 109-99-9 Revision Date 2007-03-01

**New Jersey Right To Know Components**

Tetrahydrofuran CAS-No. 109-99-9 Revision Date 2007-03-01

**California Prop 65 Components**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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## **16. OTHER INFORMATION: INCLUDING INFORMATION ON PREPARATION AND REVISION OF THE SDS**

**Disclaimer**

PHARMCO-AAPER believes that the information on this MSDS was obtained from reliable sources. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, PHARMCO-AAPER does not assume responsibility and expressly disclaims liability for loss, damage, or expense arising out of or in any way connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this MSDS information may not be applicable. Information is correct to the best of our knowledge at the date of the MSDS publication.