



Safety Data Sheet

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Section 1 - Identification

1.1 Product Identifier

Product Name : Tetrahydrofuran
CAS-No : 109-99-9

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : 9920 Pacific Heights Blvd
Suit 150
San Diego
California -92121

1.4 Emergency Telephone number

Emergency phone : +1 (858) 245-0283

Section 2: Hazard Identification

2.1 Classification of the substance or the mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable liquids	Category 2	H225:Highly flammable liquid and vapour.
Acute toxicity	Category 4	H302:Harmful if swallowed.
Serious eye damage	Category 1	H318:Causes serious eye damage.
Carcinogenicity	Category 2	H351:Suspected of causing cancer.
Specific target organ toxicity -single exposure,Central nervous system	Category 3	H336:May cause drowsiness or dizziness.

Specific target organ toxicity
-single exposure,Respiratory
system

Category 3

H335:May cause respiratory
irritation.

2.2 Label elements

Label according Regulation (EC) 1272/2008

Hazard Pictogram



Signal Word:
DANGER

Hazard statements

H225	Highly flammable liquid and vapour.
H302	Harmful if swallowed.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.

Supplemental Hazard Statements

EUH019	May form explosive peroxides.
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Precautionary statements

Prevention

P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280	Wear protective gloves/ protective clothing/eye protection/ face protection.

Response:

P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
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.

Hazardous components which must be listed on the label:

phosphoric acid

Reduced Labelling (<= 125 ml)

Hazard Pictogram



Signal Word:
DANGER

Hazard statements

H351	Suspected of causing cancer.
H318	Causes serious eye damage.

Precautionary Statements

P202	Do not handle until all safety precautions have been read and understood.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
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.

Supplemental Hazard information (EU)

EUH019

May form explosive peroxides.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Section 3: Composition/information on ingredients

3.1 Substance

Substance name	: THF
EC-No.	: 203-726-8
Index-No.	: 603-025-00-0

Section 4: First aid measures

4.1 Description of first aid measures

General advice

Show this safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air. Call in physician.

In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/

shower. Consult a physician.

In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.
Remove contact lenses.

If swallowed

After swallowing: immediately make victim drink water (two glasses at most).
Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labeling (see section 2.2) and/or in section 11.

4.3 Indications of any immediate medical attention and special treatment needed

No data available

Section 5: Firefighting measures

5.1 Extinguishing Media

Suitable extinguishing media	: Carbon dioxide (CO ₂) Foam Dry powder
Unsuitable extinguishing media	: For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazard arising from the substance or mixture

Specific hazards during fire fighting	: Combustible. Pay attention to flashback. Vapours are heavier than air and may spread along floors. Development of hazardous combustion gases or vapours possible in the event of fire.
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Hazardous combustion products : Forms explosive mixtures with air at ambient temperatures.
: Carbon oxides

5.3 Advice for firefighters

Special protective equipment for fire-fighters : Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information : Suppress (knock down) gases/vapours/mists with a water spray jet.
Prevent fire extinguishing water from contaminating surface water or the ground water system.

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions:

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environment precautions

Environmental precautions : Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up : Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10).
Take up carefully with liquid-absorbent material (e.g. Chemisorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections

For disposal considerations see section 13.

Section 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Further information on storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Storage class (TRGS 510)

3, Flammable liquids

Further information on storage stability

Store under nitrogen.

Test for peroxide formation periodically and before distillation.

Recommended storage temperature

Recommended storage temperature see product label.

Packaging material

Suitable material: Mild Steel Drum, Amber Glass Bottle/Jar

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

Section 8: Exposure controls – Personal protection

8.1 Control parameters

Occupational Exposure Limits

8.2 Exposure Controls

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection	: Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles
Hand protection	
Material	: butyl-rubber
Break through time	: 10 min
Glove thickness	: 0,7 mm
Protective index	: Splash contact
Manufacturer	: Butoject® (KCL 898)
Remarks	: This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Skin and body protection	: Flame retardant antistatic protective clothing.
Respiratory protection	: required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.
Recommended Filter	: Filter A (acc. to DIN 3181) for vapours of organic compounds
type:	

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Environmental exposure controls

Advice

Do not let product enter drains. Risk of explosion.

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	: liquid (20 °C, 1.013 hPa)
Color	: Not data available
Odor	: Not data available
Melting point/range	: -108,44 °C (ECHA)
Boiling point/boiling range	: 65 °C (1.013,25 hPa) (ECHA)
Flammability	: Not data available
Upper explosion limit / Upper flammability limit	: Upper explosion limit 12,4 %(V) (THF)
Lower explosion limit / Lower flammability limit	: Lower explosion limit 1,5 %(V)
Flash point	: -21,2 °C(1.013 hPa) Method: DIN 51755 Part 1, closed cup
Autoignition temperature	: 215 °C (1.013 hPa) Method: DIN 51794
Decomposition temperature	: Not data available

pH	: ca. 7 - 8
Viscosity, dynamic	: 0,359 mPa.s (50 °C) 0,456 mPa.s (25 °C)
Viscosity, kinematic	: No data available
Flow time	: No data available
Solubility(ies) Water solubility	: miscible
Partition coefficient: n-octanol/water	: log Pow: 0,45 (25 °C) Method: OECD Test Guideline 107 Bioaccumulation is not expected.
Vapor pressure	: 170 hPa (20 °C) (THF)
Relative density	: No data available
Density	: 0,89 g/cm ³ (20 °C)
Relative vapour density	: No data available

9.2 Other information

Explosives	: Not classified as explosive.
Oxidizing properties	: none
Burning rate	: No data available
Self-ignition	: 215 °C 1.013 hPa Method: DIN 51794
Evaporation rate	: No data available
Molecular weight	: 72,11 g/mol

Section 10: Stability and reactivity

10.1 Reactivity

Formation of peroxides possible.
Vapours may form explosive mixture with air.

10.2 Chemical stability

Sensitivity to light

Sensitive to air.

The product is chemically stable under standard ambient conditions (room temperature) .

Contains the following stabiliser(s):

butyl hydroxytoluene (BHT)(250 ppm)

10.3 Possibility of hazardous reactions

Hazardous reactions

: A risk of explosion and/or of toxic gas formation exists
with the following substances:

alkali hydroxides

Bromine

hydrides

Potassium

lithium aluminium hydride

thionyl chloride

Oxidizing agents

Oxygen

aminophenol

with

Peroxides

Exothermic reaction with:

Acids

halides

peroxi compounds

10.4 Conditions to avoid

Conditions to avoid

Distillation (Risk of explosion).

Warming.

Moisture.

10.5 Incompatible materials

No data available

10.6 Hazardous decomposition products

Peroxides

In the event of fire: see section 5

Section 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Acute toxicity estimate Oral - 1.650 mg/kg

(Calculation method)

LD50 Oral - Rat - male and female - 1.650 mg/kg

Remarks: (ECHA)

Symptoms: Irritation of mucous membranes

Acute toxicity estimate Oral - 1.650 mg/kg

(ATE value derived from LD50/LC50 value)

LC50 Inhalation - Rat - male and female - 6 h - > 14,7 mg/l - vapour

(US-EPA)

LD50 Dermal - Rat - male and female - > 2.000 mg/kg

(OECD Test Guideline 402)

Skin corrosion/irritation

Skin - Rabbit

Result: No skin irritation - 72 h

(Draize Test)

Remarks: Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Serious eye damage/eye irritation

Eyes - Rabbit

(Evaluated according F.H.S.A.= Federal Hazardous Substance Act.)

Remarks: Causes serious eye damage.

(ECHA)

Eyes - Rabbit

(Tested according to Annex V of Directive 67/548/EEC.)

Remarks: Causes serious eye damage.

(ECHA)

Respiratory or skin sensitization

Local lymph node assay (LLNA) - Mouse

Result: negative

(OECD Test Guideline 429)

Germ cell mutagenicity

Test Type: Ames test

Test system: *S. typhimurium*

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster ovary cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

Test Type: Chromosome aberration test in vitro

Test system: Chinese hamster ovary cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 473

Result: negative

Test Type: Micronucleus test

Species: Mouse

Cell type: Red blood cells (erythrocytes)

Application Route: inhalation (vapour)

Method: OECD Test Guideline 474

Result: negative

Carcinogenicity

Suspected of causing cancer.

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

Inhalation - May cause respiratory irritation. - Central nervous system

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

11.2 Additional Information

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Repeated dose toxicity - Rat - male and female - Oral - 4 Weeks

RTECS: LU5950000

irritant effects, Cough, Shortness of breath, narcosis, somnolence

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

In high doses:

somnolence

Narcosis

Other dangerous properties can not be excluded.
Sigma

Section 12: Ecological information

12.1 Toxicity

Components:

Tetrahydrofuran:

Toxicity to fish	: LC50 (Pimephales promelas (fathead minnow)): 2.160 mg/l End point: mortality Exposure time: 96 h Test Type: flow-through test Analytical monitoring: yes Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): 3.485 mg/l End point: mortality Exposure time: 48 h Test Type: static test Method: OECD Test Guideline 202
Toxicity to fish (Chronic toxicity)	: NOEC: 216 mg/l End point: Growth inhibition Exposure time: 33 d Species: Pimephales promelas (fathead minnow) Test Type: flow-through test Analytical monitoring: yes Remarks: (ECHA)

12.2 Persistence and degradability

Components:

Tetrahydrofuran:

Biodegradability	: Test Type: aerobic Inoculum: activated sludge
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Concentration: 2 mg/l
Result: Not readily biodegradable.
Biodegradation: 39 %
Related to: Biochemical oxygen demand
Exposure time: 28 d
Method: OECD Test Guideline 301D

12.3 Bioaccumulated potential

Components:

Tetrahydrofuran:

Partition coefficient: n-octanol/water : log Pow: 0,45 (25 °C)
Method: OECD Test Guideline 107
Remarks: Bioaccumulation is not expected.

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment:-This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Components:

Tetrahydrofuran:

Assessment : Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

12.6 Endocrine disrupting properties

Product:

Assessment:-The substance/mixture does not contain components considered to have

endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

No data available

Section 13: Disposal considerations

13.1 Waste treatment methods

Product : Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

Section 14: Transportation information

14.1 UN Number or ID number

ADR	UN 2056
IMDG	UN 2056
IATA	UN 2056

14.2 UN proper shipping name

ADR	TETRAHYDROFURAN
IMDG	TETRAHYDROFURAN
IATA	TETRAHYDROFURAN

14.3 Transport hazard class(es)

Class

ADR	3
IMDG	3

IATA 3

Subsidiary risks

ADR -

IMDG -

IATA -

14.4 Packaging group

ADR

Packing group II
Classification Code F1
Hazard Identification Number 33
Labels 3
Tunnel restriction code (D/E)

IMDG

Packing group II
Labels 3
EmS Code F-E, S-D

IATA (Cargo)

Packing instruction (cargo aircraft) 364
Packing instruction (LQ) Y341
Packing group II
Labels Class 3 - Flammable liquids

IATA_P (Passenger)

Packing instruction (passenger aircraft) 353
Packing instruction (LQ) Y341
Packing group II
Labels Class 3 - Flammable liquids

14.5 Environmental hazards

ADR

Environmentally hazardous no

IMDG

Marine pollutant no

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

Section 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) :

Conditions of restriction for the following entries should be considered:
Number on list 3

Number on list 40
This substance/mixture shall not be used in aerosol dispensers intended for supply to the general public for entertainment and decorative Purposes.

Number on list 75
If you intend to use this product as tattoo ink, please contact your vendor.

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).

: Not applicable

Regulation (EU) No 2024/590 on substances that deplete the ozone layer :

: Not applicable

Regulation (EU) 2019/1021 on persistent organic :

: Not applicable

pollutants (recast)

REACH - List of substances subject to authorisation : Not applicable
(Annex XIV)

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

Section 16: Other information

Full text of H-Statements

H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
HEU019	May form explosive peroxides.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

Further information

The information and recommendations in this SDS are to the best of our knowledge, information and belief accurate at the time of publication. Although utmost care is been taken in composition of this text, Highpuris LLC cannot be held responsible for any damage resulting from any possible error in this publication.