



SRF LIMITED

Rev: 01

Revision Date: 10.02.2018

MATERIAL SAFETY DATA SHEET Tetrahydrofuran

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

1.1 Product Name	Tetrahydrofuran
Trade Names / Synonyms	Tetrahydrofuran stabilized with BHT; THF; Butylene Oxide; Cyclotetramethylene oxide; 1,4-Epoxybutane
1.2 Marketed By	SRF Limited. SRF Limited, Block-C Sector-45, Gurgaon 122 003, Haryana India, Tel: +91-124-4354400 Warehouse address:SRF Limited, Plot no.-2801/3, Panoli, GIDC Tal.-Ankleshwar, Dist Bharuch, Gujarat (Pin-394116)
1.3 Emergency Call	02641 289 201 / 202
Relevant Identified Uses Of The Substance Or Mixture And Uses Advised Against	
Identified Uses:	Laboratory chemicals, Manufacture of substances
Uses advised against:	No Information available

2. HAZARDS IDENTIFICATION

2.1-Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

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).
Target Organs	Heart, Liver, Kidney, spleen, Blood.

2.2-Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram



Single word Danger

Hazard Statements (S)

H225 Highly flammable liquid and vapour.

H302 Harmful if swallowed.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

H351 Suspected of causing cancer.

Precautionary statement(s)

- 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.
- P301+P312+P330 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P370 + P378 In case of fire: Use dry powder or dry sand to extinguish.
- P403 + P235 Store in a well-ventilated place. Keep cool.

Supplemental Hazard information (EU)

- EUH019 May form explosive peroxides.

2.3-Other hazards

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

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1-Substance

Synonyms	THF
Formula	C ₄ H ₈ O
Molecular weight	72,11 g/mol

Ingredient(s)	EC No.	CAS No.	Classification (EC) 1272/2008	Weight %
Tetrahydrofuran	203-726-8	109-99-9	Flam. Liq. 2; Acute Tox. 4; Eye Irrit. 2; Carc. 2; STOT SE 3; Concentration limits: >= 25 %: Eye Irrit. 2 >= 25 %: STOT SE 3	<= 100 %

4. FIRST AID MEASURES

4.1-Description of first aid measures

Inhalation: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

Skin contact: Wash off with soap and plenty of water. Consult a physician.

Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

Ingestion: Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

General Advice : Consult a physician. Show this safety data sheet to the doctor in attendance.

Self-protection of first aider: Consider personal protective equipment as indicated in subsection 8.

4.2-Most Important Symptoms And Effects, Both Acute And Delayed

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

4.3-Indication of any immediate medical attention and special treatment needed

No data available

5. FIRE FIGHTING MEASURES

5.1-Extinguishing media: Suitable extinguishing media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
5.2-Special hazards arising from the substance or mixture	Carbon oxides
5.3-Advice for fire-fighters	Wear self-contained breathing apparatus for fire fighting if necessary.
5.4-Further information	Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency

Procedures:

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas
For personal protection see section 8.

Environmental precautions:

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods and material for containment and cleaning up:

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

Reference to other sections:

For disposal see section 13.

7. HANDLING & STORAGE

7.1-Precautions For Safe Handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge

Conditions for safe storage, including any incompatibilities:

Store in cool place. 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.
 Dry residue is explosive. Store under inert gas. Test for peroxide formation periodically and before distillation.
 Storage class (TRGS 510): Flammable liquids

Specific end use(s):

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

8. EXPOSURE CONTROL / PERSONAL PROTECTION CONTROL PARAMETERS

8.1-Control parameters

Components with workplace control parameters

Derived No Effect Level (DNEL)

Application Area	Exposure routes	Health effect	Value
Workers	Skin contact	Long-term systemic effects	25mg/kg BW/d
Consumer	Skin contact	Long-term systemic effects	15mg/kg BW/d
Workers	Inhalation	Long-term local effects	150 mg/m ³
Workers	Inhalation	Long-term systemic effects	150 mg/m ³
Consumers	Inhalation	Long-term systemic effects	62 mg/m ³
Consumers	Inhalation	Acute local effects	62 mg/m ³
Consumers	Inhalation	Acute systemic effects	150 mg/m ³

Predicted No Effect Concentration (PNEC)

Application Area	Value
Soil	2,13 mg/kg
Marine water	0,432 mg/l
Fresh water	4,32 mg/l
Marine sediment	2,33 mg/kg
Fresh water sediment	23,3 mg/kg
Onsite sewage treatment plant	4,6 mg/l

8.2-Exposure controls

Appropriate engineering controls

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

Personal Protective Equipment

Eye / face protection:	Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).	
Skin 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.	
	The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.	Material: butyl rubber
		Breakthrough time: 18 min
		Material thickness:0, 3 mm
	If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario..	

Body protection:	Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Respiratory protection:	Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (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).
Environmental exposure controls:	Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

9. PHYSICAL & CHEMICAL PROPERTIES

9.1-Information on basic physical and chemical properties

Appearance	Form: liquid, clear Colour: colourless
Odour	ether-like
Odour Threshold	No data available
pH	ca.7
Melting point/freezing point	Melting point/range: -108,44 °C at 1.013,25 hPa
Initial boiling point and boiling range	65,0 - 67,0 °C at 1.013,25 hPa
Flash point	-17,0 °C - closed cup
Evaporation rate	No data available
Flammability (solid, gas)	No data available

Upper/lower flammability or explosive limits Upper explosion limit: 11,8 %(V) Lower explosion limit: 1,8 %(V)

Vapour pressure	170 hPa at 20,0 °C
Vapour density	ca.2,5 at 25 °C - (Air = 1.0)
Relative density	0,89 g/cm ³
Water solubility	soluble
Partition coefficient: noctanol/water	log Pow: 0,46
Auto-ignition temperature	215 °C at 1.013 hPa
Decomposition temperature	No data available
Viscosity	0,518 mm ² /s at 25 °C - 0,403 mm ² /s at 50 °C -
Explosive properties	Not explosive, In use may form flammable/explosive vapour-air mixture.
Oxidizing properties	The substance or mixture is not classified as oxidizing.

9.2-Other safety information

Relative ca.2,5 at 25 °C - (Air = 1.0)

10. STABILITY & REACTIVITY

10.1-Reactivity:	No data available
10.2-Chemical stability:	Stable under recommended storage conditions.
10.3-Possibility of hazardous reactions:	No data available
10.4-Conditions to avoid:	Heat, flames and sparks.
10.5-Incompatible materials:	Strong oxidizing agents, Acids
10.6-Hazardous decomposition products:	Other decomposition products - No data available In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1-Information on toxicological effects

Acute toxicity	LD50 Oral - Rat - 1.650 mg/kg
	LC50 Inhalation - Rat - 6 h - 14,7 mg/l
	Remarks: Material may be irritating to mucous membranes and upper respiratory tract.
	LD50 Dermal - Rat - > 2.000 mg/kg
Skin corrosion/irritation	Based on available data, the classification criteria are not met.
Serious eye damage /eye irritation	Eyes - Rabbit Result: Risk of serious damage to eyes.(Draize Test)
Respiratory or skin sensitisation	Based on available data, the classification criteria are not met.
Germ cell mutagenicity	In vivo tests did not show mutagenic effects
	Ames test S. typhimurium Result: negative
Carcinogenicity	Suspected human carcinogens
	IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC
Reproductive toxicity	No toxicity to reproduction
Specific target organ toxicity - single exposure	May cause drowsiness or dizziness. - Nervous system
	May cause respiratory irritation.
Specific target organ toxicity - repeated exposure	The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
Aspiration hazard	No aspiration toxicity classification
Additional Information	Central nervous system depression, Cough, chest pain, Difficulty in breathing, Exposure to high airborne concentrations can cause anesthetic effects.

12. ECOLOGICAL INFORMATION

12.1-Toxicity

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 2.160 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	No toxicity to reproduction
Toxicity to algae	EC50 - Daphnia magna (Water flea) - 382 mg/l - 24 h

12.2-Persistence and degradability

Biodegradability	(OECD Test Guideline 301)
	Remarks: According to the results of tests of biodegradability this product is not readily biodegradable.

12.3-Bioaccumulative potential

No bioaccumulation is to be expected (log Pow <= 4).

12.4-Mobility in soil

No data available

12.5-Results of PBT and vPvB assessment

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

12.6-Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1-Waste Treatment Methods

Product	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.
Contaminated packaging	Recommendation: Dispose of observing national or local regulations. Suitable cleaning agents: Dispose of as unused product.

14. TRANSPORT INFORMATION

14.1-UN number:	ADR/RID: 2056	IMDG: 2056	IATA: 2056
14.2-UN proper shipping name:	ADR/RID TETRAHYDROFURAN	IMDG TETRAHYDROFURAN	IATA Tetrahydrofuran
14.3-Transport hazard class(es)	ADR/RID: 3	IMDG:3	IATA:3
14.4-Packaging group	ADR/RID: II	IMDG:II	IATA:II
14.5-Environmental hazards	ADR/RID: no	IMDG: no	IATA: no
14.6-Special precautions for user	No data available		



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15. REGULATORY INFORMATION

15.1-Safety, Health And Environmental Regulations/Legislation Specific For The Substance or Mixture

15.2-Chemical safety assessment: A Chemical Safety Assessment has been carried out for this substance.

16. OTHER INFORMATION

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. SRF Limited-Chemical business shall not be held liable for any damage resulting from handling or from contact with the above product.