

# MATERIAL SAFETY DATA SHEET



## Tetrahydrofuran

### Section 1 - Chemical Product and Company Identification

<b>MSDS Name:</b>	<b>Tetrahydrofuran</b>
<b>Synonyms:</b>	Diethylene oxide, 1,4-Epoxybutane, THF, Cyclotetramethylene oxide
<b>Company Identification:</b>	<b>Hazel Mercantile Limited</b>
<b>Company Identification: (INDIA)</b>	Veritas House, 70 Mint Road, Fort, Mumbai - 400 001. INDIA
<b>For information in the INDIA, call:</b>	Tel: +91 - 22 - 2275 5555 / 6184 0000, Fax: +91 - 22 - 2275 5556 / 6184 0001

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name:	%	EINECS#
109-99-9	Tetrahydrofuran	99	203-726-8

<b>Hazard Symbols:</b>	XI F
	
<b>Risk Phrases:</b>	11 19 36/37

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

*Highly flammable. May form explosive peroxides. Irritating to eyes and respiratory system.*

#### Potential Health Effects

<b>Eye:</b>	Contact with eyes may cause severe irritation, and possible eye burns. Vapors may cause eye irritation. Contact may cause ulceration of the conjunctiva and cornea.
<b>Skin:</b>	May cause skin irritation. Prolonged and/or repeated contact may cause defatting of the skin and dermatitis. No sensitizing effects known.
<b>Ingestion:</b>	Harmful if swallowed. May cause gastrointestinal irritation with nausea, vomiting and diarrhea.
<b>Inhalation:</b>	Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation.
<b>Chronic:</b>	Prolonged or repeated eye contact may cause conjunctivitis. Prolonged or repeated skin contact may cause defatting and dermatitis. May cause liver and kidney damage.

### Section 4 - First Aid Measures

<b>Eyes:</b>	Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
<b>Skin:</b>	Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists. Discard contaminated clothing in a manner which limits further exposure.
<b>Ingestion:</b>	If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately. Wash mouth out with water.
<b>Inhalation:</b>	Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

**Notes to Physician:**

## Section 5 - Fire Fighting Measures

<b>General Information:</b>	Vapors can travel to a source of ignition and flash back. Will burn if involved in a fire. Wear appropriate protective clothing to prevent contact with skin and eyes. Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products. Forms peroxides of unknown stability. Flammable liquid and vapor.
<b>Extinguishing Media:</b>	For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective.

## Section 6 - Accidental Release Measures

<b>General Information:</b>	Use proper personal protective equipment as indicated in Section 8.
<b>Spills/Leaks:</b>	Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Use water spray to dilute spill to a non-flammable mixture. Remove all sources of ignition.

## Section 7 - Handling and Storage

<b>Handling:</b>	Use only in a well-ventilated area. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Avoid ingestion and inhalation. Prevent build up of vapors to explosive concentration.
<b>Storage:</b>	Keep away from heat, sparks, and flame. Store in a cool place in the original container and protect from sunlight. Keep from contact with oxidizing materials. Flammables-area. Regularly check inhibitor levels to maintain peroxide levels below 1%.

## Section 8 - Exposure Controls, Personal Protection

<b>Engineering Controls:</b>	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.
<b>Exposure Limits</b>	CAS# 109-99-9: United Kingdom, WEL - TWA: 50 ppm TWA; 150 mg/m3 TWA United Kingdom, WEL - STEL: 100 ppm STEL; 300 mg/m3 STEL United States OSHA: 200 ppm TWA; 590 mg/m3 TWA Belgium - TWA: 200 ppm VLE; 599 mg/m3 VLE Belgium - STEL: 100 ppm VLE; 300 mg/m3 VLE France - VME: 50 ppm VME; 150 mg/m3 VME France - VLE: 100 ppm VLE; 300 mg/m3 VLE Germany: 50 ppm TWA; 150 mg/m3 TWA Germany: skin notation Japan: 200 ppm OEL; 590 mg/m3 OEL Malaysia: 200 ppm TWA; 590 mg/m3 TWA Netherlands: 100 ppm MAC; 300 mg/m3 MAC Spain: 50 ppm VLA-ED; 150 mg/m3 VLA-ED Spain: 100 ppm VLA-EC; 300 mg/m3 VLA-EC
<b>Personal Protective Equipment</b>	
<b>Eyes:</b>	Wear chemical splash goggles.
<b>Skin:</b>	Wear appropriate protective gloves to prevent skin exposure.
<b>Clothing:</b>	Wear appropriate protective clothing to minimize contact with skin.

<b>Respirators:</b>	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
---------------------	---

## Section 9 - Physical and Chemical Properties

<b>Physical State:</b>	Clear liquid
<b>Color:</b>	APHA: 10 max
<b>Odor:</b>	fruity odor
<b>pH:</b>	Not available
<b>Vapor Pressure:</b>	200 mbar @20 deg C
<b>Viscosity:</b>	0.55 cP 20 deg C
<b>Boiling Point:</b>	66 deg C @ 760.00mm Hg ( 150.80°F)
<b>Freezing/Melting Point:</b>	-108.4 deg C ( -163.12°F)
<b>Autoignition Temperature:</b>	215 deg C ( 419.00 deg F)
<b>Flash Point:</b>	-21 deg C ( -5.80 deg F)
<b>Explosion Limits: Lower:</b>	1.50 vol %
<b>Explosion Limits: Upper:</b>	12.00 vol %
<b>Decomposition Temperature:</b>	Not available
<b>Solubility in water:</b>	soluble in water
<b>Specific Gravity/Density:</b>	.8880g/cm3
<b>Molecular Formula:</b>	C4H8O
<b>Molecular Weight:</b>	72.11

## Section 10 - Stability and Reactivity

<b>Chemical Stability:</b>	Prolonged exposure to air and sunlight may form unstable peroxides. Hygroscopic: absorbs moisture or water from the air.
<b>Conditions to Avoid:</b>	Hygroscopic: absorbs moisture or water from the air., incompatible materials, light, excess heat, exposure to moist air or water.
<b>Incompatibilities with Other Materials</b>	Sodium hydroxide, caustics (e.g. ammonia, ammonium hydroxide, calcium hydroxide, potassium hydroxide, sodium hydroxide), oxidizing agents (strong, e.g. bromine, hydrogen peroxide, nitrogen dioxide, potassium nitrate), potassium hydroxide, bromine, metal halides.
<b>Hazardous Decomposition Products</b>	Carbon monoxide, carbon dioxide.
<b>Hazardous Polymerization</b>	May occur.

## Section 11 - Toxicological Information

<b>RTECS#:</b>	CAS# 109-99-9: LU5950000
<b>LD50/LC50:</b>	RTECS: <b>CAS# 109-99-9:</b> Inhalation, rat: LC50 = 21000 ppm/3H; Oral, rat: LD50 = 1650 mg/kg;
<b>Carcinogenicity:</b>	Tetrahydrofuran - ACGIH: A3 - Confirmed animal carcinogen with unknown relevance to humans
<b>Other:</b>	See actual entry in RTECS for complete information. The toxicological properties have not been fully investigated.

## Section 12 - Ecological Information

<b>Ecotoxicity:</b>	Fish: Cyprinus carpio: 4400 mg/L; 48H; LC50
	Fish: Leuciscus idus: 2820 mg/L; 48H; LC50
	Fish: Leuciscus idus: 2930 mg/L; 48H; LC50
	Daphnia: Daphnia: >10000 mg/L; 24H; EC50

## Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

## Section 14 - Transport Information

	IATA	IMO	RID/ADR
<b>Shipping Name:</b>	TETRAHYDROFURAN	TETRAHYDROFURAN	TETRAHYDROFURAN
<b>Hazard Class:</b>	3	3	3
<b>UN Number:</b>	2056	2056	2056
<b>Packing Group:</b>	II	II	II

## Section 15 - Regulatory Information

### European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XI F

#### Risk Phrases:

- R 11 Highly flammable.
- R 19 May form explosive peroxides.
- R 36/37 Irritating to eyes and respiratory system.

#### Safety Phrases:

- S 16 Keep away from sources of ignition - No smoking.
- S 29 Do not empty into drains.
- S 33 Take precautionary measures against static discharges.

#### WGK (Water Danger/Protection)

- CAS# 109-99-9: 1

#### Canada

- CAS# 109-99-9 is listed on Canada's DSL List

#### US Federal

- TSCA
- CAS# 109-99-9 is listed on the TSCA Inventory.

## Section 16 - Other Information

**MSDS Creation Date:** July 26, 2015

**Revision #1 Date**

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.*