

Hazard Statements Harmful if swallowed. Highly flammable liquid and vapour. Causes serious eye irritation. May cause respiratory irritation. Suspected of causing cancer.

Precautionary Statements Keep away from heat / sparks/open flames/hot surfaces - No smoking. Keep cool. Protect from sunlight. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do and continue rinsing. If eye irritation persists: Get medical advice/attention. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Store in a well ventilated place. Keep cool.

Section 3. Composition

3.1 Substances

Component	CAS No.	EEC No.	REACH No.	Conc w/w	CLP Classification (1272/2008/CE)
Tetrahydrofuran	109-99-9	203-726-8	01-2119444314-46-XXXX	>99.5%	Flam. Liq. 2, Acute Tox. 4 (O), Eye Irrit. 2, Carc. 2, STOT SE 3 (I)

Section 4. First Aid

4.1 Description of first aid measures

Eyes	Irrigate thoroughly with plenty of water for at least 10 minutes, holding the eye open. OBTAIN MEDICAL ATTENTION.
Skin	Wash off skin thoroughly with water. Remove contaminated clothing immediately and wash before re-use.
Inhalation	Remove from exposure. Keep warm and at rest. If there is difficulty in breathing give oxygen if available. If breathing stops or shows signs of failing, apply artificial resuscitation. If unconscious place in the recovery position. OBTAIN MEDICAL ATTENTION URGENTLY.
Ingestion	If conscious give plenty of water to drink. Do not induce vomiting. If there is difficulty in breathing give oxygen if available. If breathing stops or shows signs of failing, apply artificial resuscitation. If unconscious place in the recovery position. OBTAIN MEDICAL ATTENTION URGENTLY.
Personal protection for first aiders	Wear protective gloves / eye protection.

4.2 Most important symptoms and effects, both acute & delayed.

No further relevant information available.

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

No further relevant information available.

Section 5. Fire Fighting

5.1 Extinguishing media

Extinguishing Media	Dry powder, carbon dioxide or vaporising liquids. Use water spray to keep fire exposed containers cool.
Unsuitable Media	Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Hazards	Vapour-air mixtures are explosive. Vapours may flow along surfaces to distant ignition sources and flash back.
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5.3 Advice for firefighters

Advice for firefighters	Evacuate area immediately. Keep up wind. Avoid exposure to toxic vapours and fumes. Fire-fighters should wear protective clothing and breathing apparatus.
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Section 6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Protection	Ensure no sources of ignition. Avoid breathing vapour. Use approved personal protective equipment. Evacuate area immediately. Do not allow general use of area until it is safe to do so. Beware : vapour is heavier than air and will tend to accumulate at low spots.
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6.2 Environmental precautions

Environmental	Keep material out of sewers, storm drains, surface waters and soil. Notify the Environmental Agency and local Environmental Health Officer if major spillage occurs.
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6.3 Methods and material for containment and cleaning up

Major Spillage	Contain and absorb on inert material. Transfer absorbent to salvage container for removal. Wash area down with copious amounts of water.
Minor Spillage	Contain and absorb on inert material. Transfer absorbent to container for removal. Allow solvent to evaporate in remote area, then dispose of absorbent as solid chemical waste. Wash area down with copious amounts of water.

6.4 Reference to other sections

See section 8.2 for information on protective equipment and section 13 for information on disposal.

Section 7. Storage & Handling

7.1 Precautions for safe handling

All transfer systems should be earthed to prevent accumulation of static electricity. Avoid contact with skin and eyes. Do not breath vapours. Do not allow to contaminate clothing.

Ensure Local Exhaust Ventilation maintains vapour concentrations below the recommended limits.

7.2 Conditions for safe storage, including any incompatibilities

Well ventilated, cool, dry storage . Protect from direct sun and store away from sources of ignition. Keep containers closed when not in use. Keep well separated from oxidising agents.

7.3 Specific end use(s)

See section 1.2.

Section 8. Workplace Exposure & Personal Protection

8.1 Control parameters

Component	CAS No	Concentration	Workplace Exposure Limits			
			Long Term (8hr TWA)	Short Term 15min period		
Tetrahydrofuran	109-99-9	>99.5%	50.0 ppm	150.0 mg/m-3	100.0 ppm	300.0 mg/m-3

Exposure data source(s) IOELV: Indicative Occupational Exposure Limit Value.

8.2 Exposure controls

Respiratory Protection	Use L.E.V. or natural ventilation to maintain vapour concentrations below exposure limits. If not, use a well maintained chemical cartridge organic vapour respirator, or use self contained breathing apparatus.
Hand Protection	Use solvent resistant gloves.
Eye Protection	Use tightly fitting chemical splash proof glasses or goggles.
Skin Protection	Avoid contact with skin. If skin contact or contamination of clothing is likely, protective clothing must be worn.
Special Hazards	No special precautions required.

Section 9. Physical & Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance	Clear colourless liquid.
Odour	Fresh and characteristic.
pH	Not applicable
Boiling Point	65 °C
Melting Point	-108.44 °C
Flash Point	-21.2 °C (DIN 51755)
Upper Flammable Limit	11.8%
Lower Flammable Limit	1.8%
Auto Ignition	215 °C
Explosive Properties	Severe in confined spaces.
Oxidising Properties	No.
Vapour Pressure	17 kPa @ 20 °C
Relative Density	0.883

Water Solubility 100 g/L Completely miscible in water.

9.2 Other information

No data available.

Section 10. Stability & Reactivity

10.1	Reactivity	No data available.
10.2	Chemical Stability	Stable under normal conditions but may form peroxides on prolonged storage if air is present.
10.3	Possibility of hazardous reactions	No data available.
10.4	Conditions to Avoid	Hot surfaces, naked flames or other sources of ignition.
10.5	Incompatible Materials	Strong oxidising agents. Sulphuric acid. Nitric acid.
10.6	Hazardous Decomposition Products	None unusual. Burning will produce smoke, carbon monoxide and/or carbon dioxide.

Section 11. Toxicological Information

11.1 Information on toxicological effects

Eyes	Both the vapour and liquid are, irritating to the eyes but unlikely to cause serious injury.
Skin	Repeated or prolonged contact may defat the skin producing irritation and dermatitis. Unlikely to be absorbed across the skin in harmful amounts.
LD50 Skin	>2000 mg/Kg Rat
Ingestion	No information is available.
LD50 Oral	1.65 mg/Kg Rat
Inhalation	Exposure to vapour concentrations above the occupational exposure limits may produce irritation of the eyes, nose, throat and respiratory tract. High concentrations of vapour will induce confusion, drowsiness, stupor and finally unconsciousness
LD50 Inhalation	>5000 ppm Rat
TCLo	Not available
Carcinogenicity	Not considered to be a carcinogen.
Mutagenicity	Not considered to be a mutagen.
Reproductive Effects	None identified.
Other Information	The irritant effect provides warning and toxic dosages are unlikely to be absorbed.

Section 12. Ecological

12.1	Toxicity	At 1000mg/l tetrahydrofuran is non-toxic in algae growth test, in the fish test, golden orfe (DIN 38412) and in the toxicity test with Daphnia magna (water flea) (DIN 38412).
	LC50 Algal	3700 mg/L Green algae
	LC50 Crustacea	3485 mg/L Daphnia magna
	LC50 Fish	2160 mg/L Fish
12.2	Persistence and degradability	No data available.
12.3	Bioaccumulative potential	No data available.
12.4	Mobility in soil	No data available.
12.5	Results of PBT & vPvB assessment	Assessment not required.
12.6	Other adverse effects	None known at present.

Section 13. Disposal Considerations

13.1 Waste treatment methods

- Disposal Methods Dispose of in a licensed incinerator for organic solvents. Do not dispose of as domestic waste. Never dispose of into water courses or sewerage systems due to high risk of explosion.
- Contaminated Packaging Use a licensed waste disposer. Do not attempt to burn any residual liquids due to risk of explosion.

Section 14. Transport Information


- 14.1 UN Number 2056
- 14.2 Proper Shipping Name Tetrahydrofuran
- 14.3 Transport classes
- UN classification 3
- Subsidiary hazard(s) None
- Transport category 2
- ADR Hazard ID 33
- Tunnel Restriction Code D/E
- 14.4 Packing Group II
- 14.5 Environment hazards See section 12.
- 14.6 Special precautions for user No special precautions required.
- 14.7 Transport in bulk Not transported in bulk.



Section 15. Regulatory Information

15.1 Safety, health and environment regulations specific for substance/mixture.

Classification, Labeling & Packaging of Substances & Mixtures Regulations (1272/2008/CE)

- Classification Flammable liquid, category 2; Acute toxicity, category 4 (oral); Serious eye damage/irritation, category 2; Carcinogenicity, category 2; Spec target organ tox - single, category 3
- Signal word Danger
- Hazard Pictograms
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- Hazard Statements H302, H225, H319, H335, H351
Harmful if swallowed. Highly flammable liquid and vapour. Causes serious eye irritation. May cause respiratory irritation. Suspected of causing cancer.
- Precautionary Statements P210, P235+P410, P305+P351+P338, P337+P313, P303+P361+P353, P403+P235
Keep away from heat / sparks/open flames/hot surfaces - No smoking. Keep cool. Protect from sunlight. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do and continue rinsing. If eye irritation persists: Get medical advice/attention. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Store in a well ventilated place. Keep cool.

15.2 Chemical safety assessment

Assessment not required.

Section 16. Other Information

The information contained in this document only covers the hazards presented by this material, it DOES NOT constitute a workplace risk assessment. See sections 11 for toxicological information and section 12 for ecological information.

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