


# Safety Data Sheet

Section 1. Identification	
<b>Product Identifier</b>	<b>Tetrahydrofuran</b>
	<b>Version: 5</b> <b>Effective Date: July 18, 2018</b>
<b>Other Means Of Identification</b>	THF
<b>Initial Supplier Identifier</b>	Chemfax Products Ltd. 11444 – 42 Street SE Calgary, AB T2C 5C4 Tel: 403-287-2055
<b>Recommended Use and Restrictions On Use</b>	Industrial solvent. No restrictions
<b>Product Family</b>	Ether
<b>24 Hour Emergency</b>	Canutec (613) 996-6666

Section 2. Hazard Identification	
<b>Hazard Classification</b>	
<b>Physical Hazards</b>	Flammable Liquids – Category 2
<b>Health Hazards</b>	Specific Target Organ Toxicity, (Single Exposure ) – Category 3 Eye Damage/Irritation – Category 2A Acute Oral Toxicity – Category 4 Carcinogenicity – Category 2
<b>Signal Word</b>	Danger
<b>Hazard Statement</b>	Highly flammable liquid and vapour. May cause respiratory irritation; or may cause drowsiness or dizziness. Harmful if swallowed. Suspected of causing cancer. Causes serious eye irritation.
<b>Precautionary Prevention Statement</b>	Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof electrical ventilating and lighting equipment. Use non-sparking tools.

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	Take action to prevent static discharges. Wear protective gloves, clothing, and eye & face protection. Avoid inhaling dust, fume, gas, mist, vapours, or spray. Only use outdoors, or in a well-ventilated area. Wash hands thoroughly after handling. Do not eat, drink, or smoke when using this product. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
<b>Precautionary Response Statement</b>	<p>IF ON SKIN (or hair): Immediately remove all contaminated clothing. Rinse skin with water or shower if on clothing.</p> <p>IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a doctor if you feel unwell.</p> <p>IF SWALLOWED: Call a doctor if you feel unwell. Rinse mouth. If exposed or concerned, seek medical attention.</p> <p>IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, seek medical attention.</p>
<b>Precautionary Storage Statement</b>	Store in a well-ventilated place. Keep cool. Keep container tightly closed. Store locked up.
<b>Precautionary Disposal Statement</b>	Dispose of contents/container in accordance with local regulations.
<b>Other Hazards</b>	None

### Section 3. Composition / Information on Ingredients

Chemical Name	Common Name or Synonyms	CAS NO. and Other Unique Identifiers	% by weight
Tetrahydrofuran	THF	109-99-9	>99

### Section 4. First-Aid Measures

<b>Eye Contact</b>	Flush eyes with water for 15 minutes. Seek medical attention.
<b>Skin Contact</b>	Flush area with water. If irritation persists, seek medical attention. Launder clothing before reuse.
<b>Inhalation</b>	Remove victim to fresh air. If there is difficulty breathing, seek immediate medical attention.
<b>Ingestion</b>	Remove victim to fresh air. If there is difficulty breathing, seek immediate medical attention.
<b>Most Important Symptoms and Effects Both Acute and Delayed</b>	Symptoms of overexposure may be headache, dizziness, tiredness, nausea, and vomiting. Causes central nervous system depression.

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<b>Immediate Medical Attention and Special Treatment</b>	Treat symptomatically.
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<b>Section 5. Fire-Fighting Measures</b>	
<b>Suitable and Unsuitable Extinguishing Media</b>	Dry chemical, CO <sub>2</sub> , alcohol foam, or water spray. Water may be ineffective.
<b>Hazardous Combustion Products</b>	Irritating vapours, carbon monoxide, nitrogen oxides, smoke, and partially oxidized hydrocarbon fragments.
<b>Specific Hazards Arising From the Product</b>	Flammable. Containers may explode when heated. Vapours may form explosive mixtures with air. Vapours may travel to source of ignition and flash back. May form explosive peroxides.
<b>Special Protective Equipment and Precautions For Fire-Fighters</b>	Fire-fighters should wear self-contained breathing apparatus and full protective clothing. Use water spray to cool containers and structures exposed to fire.

<b>Section 6. Accidental Release Measures</b>	
<b>Personal Precautions, Protective Equipment and Emergency Procedures</b>	Gloves (nitrile), coveralls (chemical resistant), chemical resistant footwear. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.
<b>Environmental Precautions</b>	Do not allow material to enter, sewers and surface watercourses. Low lying areas (sumps, basements etc.) may collect flammable vapours.
<b>Methods and Materials for Containment and Clean-Up</b>	Isolate area and restrict access. Remove all sources of ignition. Use non sparking tools. Soak up small spills with absorbent material, place in a suitable container for disposal. Large spills should be diked, pumped up, and placed in a container for disposal. Wash area with detergent and water to remove residues.

<b>Section 7. Handling and Storage</b>	
<b>Precautions For Safe Handling</b>	Handle with care. Flammable liquid. Ground all containers when in use. Spark resistant equipment should be employed. Clothing should be Nomex or similar non static forming material.
<b>Conditions For Safe Storage</b>	Store in a cool dry place away from all sources of ignition. Keep containers closed when not in use. Check drums for inhibitor (Butylated hydroxyl toluene) content, if below 200 ppm add additional inhibitor and mix well. Part drums should be blanketed with nitrogen.

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Section 8. Exposure Controls / Personal Protection				
<b>Control Parameters</b>	<b>TWA: 8 Hr</b>	<b>STEL: 15 min</b>	<b>Ceiling</b>	<b>IDLH *</b>
Tetrahydrofuran	100 ppm ACGIH	50 ppm ACGIH		2000 ppm
* Immediately Dangerous to Life and Health				
<b>Exposure Controls</b>	Local exhaust ventilation			
<b>Appropriate Engineering Controls</b>	Use explosion-proof electrical/ventilating/lighting/equipment. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.			
<b>Individual Protective Measures</b>				
<b>Eye / Face Protection</b>	Safety glasses			
<b>Skin Protection</b>	Chemical resistant coveralls, gloves			
<b>Respiratory Protection</b>	Air purifying respirator fitted with organic vapour cartridges if exposure limits are exceeded.			

Section 9. Physical and Chemical Properties	
<b>Appearance</b>	Clear , colourless liquid with strong ether odour.
<b>Odour</b>	Ether like
<b>Odour Threshold</b>	Not available.
<b>pH</b>	7
<b>Flash Point</b>	-17 °C
<b>Boiling Point and Boiling Range</b>	66 °C
<b>Melting Point and Freezing Point</b>	-108 °C
<b>Explosive Limits</b>	LEL: 1.8 % UEL: 11.8 %
<b>Evaporation Rate</b>	8.0 (ether =1)
<b>Flammability (solid, gas)</b>	Not applicable
<b>Upper and Lower Flammability or Explosive Limits</b>	2% – 11.8%
<b>Vapour Pressure</b>	>132 mmHg @ 20 °C
<b>Vapour Density</b>	2.5 (air = 1)
<b>Relative Density</b>	0.89 @ 25 °C
<b>Solubility</b>	Miscible
<b>Partition co-efficient, n-Octanol/Water</b>	No data
<b>Auto-ignition Temperature</b>	321 °C
<b>% Volatile</b>	100
<b>Decomposition Temperature</b>	No data
<b>Viscosity</b>	0.55 cP @ 20 °C

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Section 10. Stability and Reactivity	
<b>Reactivity</b>	Stable
<b>Chemical Stability</b>	This product is stable with an appropriate level of butylated hydroxyl toluene inhibitor (200 ppm), but reactive (unstable) without.
<b>Possibility of Hazardous Reactions</b>	Will not occur
<b>Conditions to Avoid</b>	Naked flames, sparks, and sources of ignition. Elevated temperatures.
<b>Incompatible Materials</b>	Strong oxidizing agents and strong acids.
<b>Hazardous Decomposition Products</b>	Irritating vapours NOTE: May form peroxides in the presence of air. May react with oxygen to form unstable peroxides. Peroxides are thermally unstable and shock sensitive.

Section 11. Toxicological Information			
<b>Component Toxicity</b>	<b>LD50 Oral</b>	<b>LD50 Dermal</b>	<b>LC50 Inhalation</b>
Tetrahydrofuran	1.6 g/kg (Rat)	6.4 g/kg (Rabbit)	53.9 ppm (Rat) 4h
<b>Likely Routes of Exposure</b>			
<b>Skin:</b>	May cause moderate skin irritation with a burning sensation. Repeated and prolonged contact may cause defatting, leading to dermatitis.		
<b>Eyes:</b>	May cause burning sensation, redness, swelling and blurred vision.		
<b>Inhalation:</b>	May cause burning sensation in the nose and throat, coughing and difficulty breathing. High concentrations may cause central nervous system depression, resulting in headaches, dizziness and nausea. Continued inhalation may result in unconsciousness and/or death.		
<b>Ingestion:</b>	May cause headache, dizziness, nausea, vomiting, gastrointestinal irritation and central nervous system depression. Aspiration hazard – small amounts of product can be aspirated in to the lungs during ingestion and vomiting, this may cause lung injury leading to death. Symptoms may include coughing, gasping, choking, shortness of breath, bluish coloured skin, rapid breathing and heart rate. Pulmonary edema or bleeding, drowsiness, confusion, coma and seizures may occur in more serious cases. Symptoms may be delayed up to 24 hours dependant on quantity of material inhaled.		
<b>Acute Toxicity Estimates (ATE)</b>	Toxic by ingestion		
<b>STOT (Specific Target Organ Toxicity) – Single Exposure</b>	Respiratory system Central nervous system (CNS)		
<b>Aspiration Toxicity</b>	Not classified		



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<b>STOT (Specific Target Organ Toxicity) – Repeated Exposure</b>	Heart, liver, kidney, spleen, and blood
<b>Skin Corrosion / Irritation</b>	Not classified
<b>Serious Eye Damage / Irritation</b>	Irritant
<b>Respiratory or Skin Sensitization</b>	Not classified
<b>Chronic Toxic Effects</b>	Symptoms of respiratory tract irritation and damage to respiratory epithelium were reported in rats exposed to 5000 ppm of tetrahydrofuran for 90 days. Elevation SGPT suggests a disturbance in liver function.
<b>Carcinogenicity</b>	– Listed under ACGIH – A3.
<b>Reproductive Toxicity</b>	
- <b>Sexual Function and Fertility</b>	Not classified
- <b>Development of Offspring</b>	Not classified
- <b>Effects on or via Lactation</b>	Not classified
<b>Germ Cell Mutagenicity</b>	Not classified
<b>Interactive Effects</b>	None known
<b>Other Information</b>	None known

### Section 12. Ecological Information

<b>Ecotoxicity</b>	LC50: 2700 – 3600 mg/L (Pimephales promelas) 96 hr static LC50: 1970 - 2360 mg/L (Pimephales promelas) 96 hr flow through
<b>Persistence and Degradability</b>	Will not persist
<b>Bioaccumulative Potential</b>	Not expected to bioaccumulate.
<b>Biodegradability</b>	Readily biodegradable
<b>Mobility in Soil</b>	Not available
<b>Special Remarks</b>	BOD = 100% in 14 days.
<b>Other Adverse Effects</b>	None known

### Section 13. Disposal Considerations

<b>Disposal Considerations</b>	Dispose of contents/container in accordance with local regulations.
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Section 14. Transport Information	
<b>UN Number</b>	2056
<b>UN Proper Shipping Name</b>	Tetrahydrofuran
<b>Transport Hazard Class(es)</b>	3
<b>Packaging Group</b>	II
<b>Environmental Hazards</b>	Not applicable
<b>Bulk Transport</b>	Not applicable
<b>Special Precaution</b>	Not applicable
<b>DOT Erg#</b>	127

Section 15. Regulatory Information	
<b>Canada – DSL Inventory</b>	All components of this product are either on the Domestic Substances List (DSL), Non-Domestic Substances List (NDSL,) or exempt
<b>TSCA</b>	All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt
<b>Additional Information</b>	None

Section 16. Other Information	
<b>NFPA Rating</b>	Health-2/ Flammability-3/Reactivity-0/Special Hazard-Not applicable
<b>HMIS Rating</b>	Health-2/Flammability-3/Reactivity-0/Personal Protection-See Section 8.
<b>Prepared by:</b>	Chemfax Products Ltd., Technical Department
<b>Date Prepared:</b>	28 September, 2012
<b>Date of Latest Revision:</b>	18 July, 2017
<b>Disclaimer</b>	
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