

Material Safety Data Sheet

Version 3.1
Revision Date 07/09/2009
Print Date 04/09/2010

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Tetrahydrofuran

Product Number : 186562
Brand : Sigma-Aldrich

Company : Sigma-Aldrich Canada, Ltd
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CANADA

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : C₄H₈O

CAS-No.	EC-No.	Index-No.	Concentration
Tetrahydrofuran			
109-99-9	203-726-8	603-025-00-0	>= 99.9 %
2,6-di-tert-Butyl-p-cresol			
128-37-0	204-881-4	-	250 ppm

3. HAZARDS IDENTIFICATION**Emergency Overview****Target Organs**

Central nervous system, Liver, Kidney

Other hazards which do not result in classification

May form explosive peroxides.

WHMIS Classification

B2 Flammable Liquid
D2B

Flammable Liquid
Moderate eye irritant

HMIS Classification

Health Hazard: 2
Chronic Health Hazard: *
Flammability: 3
Physical hazards: 3

Potential Health Effects

Inhalation May be harmful if inhaled. Causes respiratory tract irritation.

Skin
Eyes
Ingestion

May be harmful if absorbed through skin. Causes skin irritation.
Causes eye irritation.
May be harmful if swallowed.

4. FIRST AID MEASURES

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

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

In case of skin contact

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

In case of eye contact

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

If swallowed

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

5. FIRE-FIGHTING MEASURES

Flammable properties

Flash point -17.0 °C (1.4 °F) - closed cup

Ignition temperature 321 °C (610 °F)

Suitable extinguishing media

For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

Further information

Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid breathing vapors, 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.

Environmental precautions

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

Methods for cleaning up

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

7. HANDLING AND STORAGE

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.

Storage

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. Store in cool place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Update	Basis
Tetrahydrofuran	109-99-9	TWA	50 ppm	2006-11-29	Canada. British Columbia OEL
Remarks	Contributes significantly to the overall exposure by the skin route.				
		STEL	100 ppm	2006-11-29	Canada. British Columbia OEL
	Contributes significantly to the overall exposure by the skin route.				
		TWAE V	50 ppm	2008-07-16	Canada. Ontario OELs
	Skin				
		STEV	100 ppm	2008-07-16	Canada. Ontario OELs
	Skin				
		STEL	250 ppm 737 mg/m3	2007-01-01	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
		TWA	200 ppm 590 mg/m3	2007-01-01	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
		TWAE V	100 ppm 300 mg/m3	2006-12-29	Canada. Quebec OELs

Personal protective equipment

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (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).

Hand protection

Handle with gloves.

Eye protection

Face shield and safety glasses

Skin and body protection

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid, clear
Colour	colourless

Safety data

pH	no data available
Melting point	-108.0 °C (-162.4 °F)
Boiling point	65.0 - 67.0 °C (149.0 - 152.6 °F)
Flash point	-17.0 °C (1.4 °F) - closed cup
Ignition temperature	321 °C (610 °F)
Lower explosion limit	1.8 %(V)
Upper explosion limit	11.8 %(V)
Vapour pressure	152.0 hPa (114.0 mmHg) at 15.0 °C (59.0 °F) 190.7 hPa (143.0 mmHg) at 20.0 °C (68.0 °F) 213.3 hPa (160.0 mmHg) at 25.0 °C (77.0 °F) 373.3 hPa (280.0 mmHg) at 38.0 °C (100.4 °F)
Density	0.89 g/cm ³
Water solubility	soluble

10. STABILITY AND REACTIVITY

Storage stability

Stable under recommended storage conditions.

Conditions to avoid

Heat, flames and sparks.

Materials to avoid

Oxidizing agents, Oxygen

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides

Hazardous reactions

Vapours may form explosive mixture with air.

Contains the following stabiliser(s):

BHT (250 ppm)

11. TOXICOLOGICAL INFORMATION

Acute toxicity

LD50 Oral - rat - 2,880 mg/kg

LC50 Inhalation - rat - 3 h - 21000 ppm

Remarks: Drowsiness Lungs, Thorax, or Respiration:Respiratory stimulation. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

Irritation and corrosion

no data available

Sensitisation

no data available

Chronic exposure

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.

Signs and Symptoms of Exposure

Central nervous system depression, Cough, chest pain, Difficulty in breathing, Exposure to high airborne concentrations can cause anesthetic effects., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Potential Health Effects

Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Skin	May be harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.
Ingestion	May be harmful if swallowed.
Target Organs	Central nervous system, Liver, Kidney,

Additional Information

RTECS: LU5950000

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

no data available

Ecotoxicity effects

no data available

Further information on ecology

no data available

13. DISPOSAL CONSIDERATIONS

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN-Number: 2056 Class: 3 Packing group: II
Proper shipping name: Tetrahydrofuran
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG

UN-Number: 2056 Class: 3 Packing group: II EMS-No: F-E, S-D
Proper shipping name: TETRAHYDROFURAN
Marine pollutant: No

IATA

UN-Number: 2056 Class: 3

Packing group: II

Proper shipping name: Tetrahydrofuran

15. REGULATORY INFORMATION**DSL Status**

All components of this product are on the Canadian DSL list.

WHMIS Classification

B2 Flammable Liquid

D2B

Flammable Liquid

Moderate eye irritant

16. OTHER INFORMATION**Further information**

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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. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.