

Material Safety Data Sheet

Version 3.4
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1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Toluene

Product Number : 155004
Brand : Sigma-Aldrich

Company : Sigma-Aldrich Canada, Ltd
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CANADA

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : C₇H₈
Molecular Weight : 92.14 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Toluene			
108-88-3	203-625-9	601-021-00-3	-

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

Bladder, Liver, Kidney, Brain.

WHMIS Classification

B2 Flammable Liquid
D2A
D2B

Flammable Liquid
Teratogen
Reproductive hazard
Moderate skin irritant
Moderate eye irritant

HMIS Classification

Health Hazard: 2
Chronic Health Hazard: *
Flammability: 3
Physical hazards: 0

Potential Health Effects**Inhalation**

May be harmful if inhaled. Causes respiratory tract irritation. Vapours may cause drowsiness and dizziness.

Skin
Eyes
Ingestion

May be harmful if absorbed through skin. Causes skin irritation.
Causes eye irritation.
Aspiration hazard if swallowed - can enter lungs and cause damage. May be harmful if swallowed.

4. FIRST AID MEASURES

General advice

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

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 4.0 °C (39.2 °F) - closed cup

Ignition temperature 535 °C (995 °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
Toluene	108-88-3	TWA	20 ppm	2007-05-25	Canada. Worker's Compensation Act, Occupational Health and Safety Regulations (BC Reg 296/97 as amended), 7.2 [B.C. Reg. 382/2004, s.1]
		TWA	50 ppm	2005-02-03	Canada. Occupational Health and Safety Act [R.S.O. 1990, c.1], Industrial Establishments (R.R.O. 1990, Reg 851),139
		TWA	50 ppm 188 mg/m3	2004-04-30	Canada. Occupational Health and Safety Code 218
Remarks	Substance may be readily absorbed through intact skin				
		TWA	50 ppm 188 mg/m3	2004-04-30	Canada. Occupational Health and Safety Code 218
	Substance may be readily absorbed through intact skin				
		TWA	50 ppm 188 mg/m3	2000-01-12	Canada. Act Respecting Occupational Health and Safety [R.S.Q., c.2.1], Regulation respecting Occupational Health and Safety (O.C.885-2001), Division XV, Sections 130-14
	SKIN (percutaneous) : The designation "Pc" in the Designation and remarks column refers to the potentially significant contribution to the overall exposure by the cutaneous route. Exposure is by contact with vapours or, of probable greater significance, by direct skin contact with the substance. The cutaneous route includes mucous membranes and the eyes.				

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

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
Colour	colourless

Safety data

pH	no data available
Melting point	-93.0 °C (-135.4 °F)
Boiling point	110.6 °C (231.1 °F)
Flash point	4.0 °C (39.2 °F) - closed cup
Ignition temperature	535 °C (995 °F)
Lower explosion limit	1.2 %(V)
Upper explosion limit	7 %(V)
Vapour pressure	29.1 hPa (21.8 mmHg) at 20.0 °C (68.0 °F)
Density	0.86 g/cm ³ at 25.00 °C (77.00 °F)
Water solubility	no data available

10. STABILITY AND REACTIVITY

Storage stability

Stable under recommended storage conditions.

Conditions to avoid

Heat, flames and sparks.

Materials to avoid

Strong oxidizing agents

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides

Hazardous reactions

Vapours may form explosive mixture with air.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

LD50 Oral - rat - > 5,580 mg/kg

LC50 Inhalation - rat - 4 h - 12,500 - 28,800 mg/m³

LD50 Dermal - rabbit - 12,196 mg/kg

Irritation and corrosion

Skin - rabbit - Skin irritation - 24 h

Eyes - rabbit - Severe eye irritation - 24 h

Sensitisation

no data available

Chronic exposure

IARC: Group 3 - Not classifiable as to carcinogenicity to humans (Toluene)

Developmental Toxicity - rat - Oral

Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Damage to fetus possible

Reproductive toxicity - rat - Inhalation

Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count).

Experiments have shown reproductive toxicity effects in male and female laboratory animals.

Signs and Symptoms of Exposure

Lung irritation, chest pain, pulmonary edema, Inhalation studies on toluene have demonstrated the development of inflammatory and ulcerous lesions of the penis, prepuce, and scrotum in animals.

Potential Health Effects

Inhalation	May be harmful if inhaled. Causes respiratory tract irritation. Vapours may cause drowsiness and dizziness.
Skin	May be harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.
Ingestion	Aspiration hazard if swallowed - can enter lungs and cause damage. May be harmful if swallowed.
Target Organs	Bladder, Liver, Kidney, Brain.,

Additional Information

RTECS: XS5250000

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

Bioaccumulation	Leuciscus idus (Golden orfe) - 3 d Bioconcentration factor (BCF): 94
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Ecotoxicity effects

Toxicity to fish	LC50 - <i>Lepomis macrochirus</i> (Bluegill) - 74.00 - 340.00 mg/l - 96 h
	LC50 - <i>Oncorhynchus mykiss</i> (rainbow trout) - 7.63 mg/l - 96 h
	NOEC - <i>Pimephales promelas</i> (fathead minnow) - 5.44 mg/l - 7 d
	LOEC - <i>Pimephales promelas</i> (fathead minnow) - 8.04 mg/l - 7 d
Toxicity to daphnia and other aquatic invertebrates.	EC50 - <i>Daphnia magna</i> (Water flea) - 8.00 mg/l - 24 h
	Immobilization EC50 - <i>Daphnia magna</i> (Water flea) - 6 mg/l - 48 h
Toxicity to algae	EC50 - <i>Chlorella vulgaris</i> (Fresh water algae) - 245.00 mg/l - 24 h
	EC50 - <i>Pseudokirchneriella subcapitata</i> (green algae) - 10.00 mg/l - 24 h

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: 1294	Class: 3	Packing group: II
Proper shipping name: Toluene		
Marine pollutant: No		
Poison Inhalation Hazard: No		

IMDG

UN-Number: 1294	Class: 3	Packing group: II	EMS-No: F-E, S-D
Proper shipping name: TOLUENE			
Marine pollutant: No			

IATA

UN-Number: 1294	Class: 3	Packing group: II
Proper shipping name: Toluene		

15. REGULATORY INFORMATION

DSL Status

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

WHMIS Classification

B2	Flammable Liquid	Flammable Liquid
D2A		Teratogen
D2B		Reproductive hazard
		Moderate skin irritant
		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.