

## Material Safety Data Sheet

Version 4.0  
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### 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Nitrobenzene

Product Number : 252379

Brand : Sigma-Aldrich

Company : Sigma-Aldrich Canada, Ltd  
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CANADA

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### 2. HAZARDS IDENTIFICATION

#### Emergency Overview

#### Target Organs

Blood, Central nervous system, Male reproductive system., Liver, Spleen.

#### WHMIS Classification

B3	Combustible Liquid	Combustible Liquid
D1A		Highly toxic by inhalation
D1B		Toxic by ingestion
D2A		Carcinogen

#### GHS Label elements, including precautionary statements

Pictogram



Signal word : Danger

Hazard statement(s)

H227	Combustible liquid
H302	Harmful if swallowed.
H313	May be harmful in contact with skin.
H316	Causes mild skin irritation.
H320	Causes eye irritation.
H331	Toxic if inhaled.
H351	Suspected of causing cancer.
H361	Suspected of damaging fertility or the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.
H401	Toxic to aquatic life.

Precautionary statement(s)

P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P281	Use personal protective equipment as required.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P311	Call a POISON CENTER or doctor/physician.

#### HMIS Classification

Health hazard: 3

Chronic Health Hazard: \*

Flammability: 2

**Physical hazards:** 0

#### Potential Health Effects

<b>Inhalation</b>	Toxic if inhaled. May cause respiratory tract irritation.
<b>Skin</b>	May be harmful if absorbed through skin. May cause skin irritation.
<b>Eyes</b>	May cause eye irritation.
<b>Ingestion</b>	Toxic if swallowed.

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula :  $C_6H_5NO_2$   
Molecular Weight : 123.11 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
<b>Nitrobenzene</b>			
98-95-3	202-716-0	609-003-00-7	-

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### 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. Take victim immediately to hospital. 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

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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### 5. FIRE-FIGHTING MEASURES

#### Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

#### Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

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### 6. ACCIDENTAL RELEASE MEASURES

#### Personal precautions

Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

#### Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

#### Methods and materials for containment and cleaning up

Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

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### 7. HANDLING AND STORAGE

#### Precautions for safe 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.

#### Conditions for safe 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.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Update	Basis
Nitrobenzene	98-95-3	TWA	1 ppm	2006-11-29	Canada. British Columbia OEL
Remarks	IARC "2B" applies to substances deemed possibly carcinogenic to humans. Contributes significantly to the overall exposure by the skin route.				
		TWAE V	1 ppm 5 mg/m3	2005-12-17	Canada. Ontario OELs
	Skin				
		TWA	1 ppm 5 mg/m3	2007-01-01	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
	Substance may be readily absorbed through intact skin				
		TWAE V	1 ppm 5 mg/m3	2006-12-29	Canada. Quebec OELs
	Skin (percutaneous)				

### 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

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Appearance

Form	liquid, clear
Colour	yellow

### Safety data

pH	8.0 - 8.5 at 1.00000 g/l at 20.0 °C (68.0 °F)
Melting point	5 - 6 °C (41 - 43 °F) - lit.
Boiling point	210 - 211 °C (410 - 412 °F) - lit.
Flash point	88.0 °C (190.4 °F) - closed cup
Ignition temperature	482 °C (900 °F)

Lower explosion limit	1.8 %(V)
Upper explosion limit	40 %(V)
Vapour pressure	66.7 hPa (50.0 mmHg) at 120.0 °C (248.0 °F) 0.3 hPa (0.2 mmHg) at 20.0 °C (68.0 °F)
Density	1.196 g/cm <sup>3</sup> at 25 °C (77 °F)
Water solubility	no data available
Partition coefficient: n-octanol/water	log Pow: 1.85

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## 10. STABILITY AND REACTIVITY

### Chemical stability

Stable under recommended storage conditions.

### Conditions to avoid

no data available

### Materials to avoid

Strong oxidizing agents, Strong reducing agents, Strong bases

### Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NO<sub>x</sub>)

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## 11. TOXICOLOGICAL INFORMATION

### Acute toxicity

LD50 Oral - rat - 349.0 mg/kg

Remarks: Behavioral:Altered sleep time (including change in righting reflex). Lungs, Thorax, or Respiration:Dyspnea.

LC50 Inhalation - rat - 4 h - 556 ppm

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Lacrimation. Behavioral:Tremor. Cyanosis

LD50 Dermal - rat - 2,100 mg/kg

### Skin corrosion/irritation

Skin - rabbit - Mild skin irritation - 24 h

### Serious eye damage/eye irritation

Eyes - rabbit - Mild eye irritation - 24 h

### Respiratory or skin sensitization

no data available

### Germ cell mutagenicity

no data available

### Carcinogenicity

This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

Limited evidence of carcinogenicity in animal studies

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Nitrobenzene)

### Reproductive toxicity

Suspected human reproductive toxicant

### Specific target organ toxicity - single exposure (GHS)

no data available

**Specific target organ toxicity - repeated exposure (GHS)**

Causes damage to organs through prolonged or repeated exposure.

**Aspiration hazard**

no data available

**Potential health effects**

<b>Inhalation</b>	Toxic if inhaled. May cause respiratory tract irritation.
<b>Ingestion</b>	Toxic if swallowed.
<b>Skin</b>	May be harmful if absorbed through skin. May cause skin irritation.
<b>Eyes</b>	May cause eye irritation.

**Signs and Symptoms of Exposure**

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated., Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer., Exposure to and/or consumption of alcohol may increase toxic effects.

**Additional Information**

RTECS: DA6475000

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**12. ECOLOGICAL INFORMATION****Toxicity**

Toxicity to fish	LC50 - Danio rerio (zebra fish) - 92 mg/l - 96.0 h
	LC50 - Pimephales promelas (fathead minnow) - 44 mg/l - 96.0 h
	NOEC - Cyprinodon variegatus (sheepshead minnow) - 22 mg/l - 96.0 h
	Growth inhibition LOEC - Pimephales promelas (fathead minnow) - 10.2 mg/l - 7.0 d
Toxicity to daphnia and other aquatic invertebrates.	EC50 - Daphnia magna (Water flea) - 50.00 mg/l - 24 h
	LC50 - Daphnia magna (Water flea) - 27 mg/l - 48 h
Toxicity to algae	EC50 - Pseudokirchneriella subcapitata (green algae) - 51.60 mg/l - 72 h

**Persistence and degradability****Bioaccumulative potential**

Bioaccumulation	Leuciscus idus (Golden orfe) - 3 d
	Bioconcentration factor (BCF): < 10

**Mobility in soil**

no data available

**PBT and vPvB assessment**

no data available

**Other adverse effects**

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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**13. DISPOSAL CONSIDERATIONS****Product**

This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. 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.

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**14. TRANSPORT INFORMATION**

**DOT (US)**

UN-Number: 1662 Class: 6.1 Packing group: II  
Proper shipping name: Nitrobenzene  
Reportable Quantity (RQ): 1000 lbs  
Marine pollutant: No  
Poison Inhalation Hazard: No

**IMDG**

UN-Number: 1662 Class: 6.1 Packing group: II EMS-No: F-A, S-A  
Proper shipping name: NITROBENZENE  
Marine pollutant: No

**IATA**

UN-Number: 1662 Class: 6.1 Packing group: II  
Proper shipping name: Nitrobenzene

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**15. REGULATORY INFORMATION****DSL Status**

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

**WHMIS Classification**

B3	Combustible Liquid	Combustible Liquid
D1A		Highly toxic by inhalation
D1B		Toxic by ingestion
D2A		Carcinogen

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**16. OTHER INFORMATION****Further information**

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