








TOLUENE

WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing
 	B2 - Flammable Liquid D2B - Materials Causing Other Toxic Effects, Toxic Material	  

NFPA Hazard Class		HMIS Hazard Class	
Health	2	Hazardous	Health 2
Flammability	3	Flashpoint below 100 F	Flammability 3
Reactivity	0	Stable	Physical Hazard 0
Specific hazards		Personal Protective Equipment	Splash Goggles, Gloves, Apron, Vapor Respirator

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : TOLUENE

Product type : Suncor Product

MSDS Number : SEP000000082

Material number : 100151, 100067

CAS-No. : 108-88-3

Synonyms : Toluol, Methylbenzene, Phenylmethane

Intended Use : Coatings: Solvent for lacquers and paints. Petrochemical industry: Fuel additive. Industrial applications: Solvent. Manufacture of chemicals.

Manufacturer : Suncor Energy Inc.
36 York Mills Road
North York, Ontario Canada
M2P 2C5

EMERGENCY CONTACT INFORMATION

Suncor Energy Products Inc. (519) 337-2301 (24-hr)
Canutec(613) 996-6666

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
TOLUENE	108-88-3	99.7000 - 100.0000 %
BENZENE	71-43-2	< 0.0300 %
Sulphur based on mass/mass	7704-34-9	< 0.0001 %

SECTION 3. HAZARDS IDENTIFICATION

Potential Health Effects



TOLUENE

- Eyes : Causes eye irritation.

- Skin : Causes skin irritation.
May cause irritation, drying and blistering.
The product may be absorbed through the skin.

- Inhalation : May cause nose, throat, and lung irritation.
Major effects of exposure
Dizziness
Headache
Nausea
Loss of balance
Lack of coordination
Unconsciousness
respiratory failure and death.

- Ingestion : Harmful or fatal if swallowed.
Aspiration hazard if swallowed - can enter lungs and cause damage.
Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

- Chronic Exposure : Repeated or prolonged exposure to the substance can produce target organ damage.
Prolonged overexposures can cause brain, liver, kidney effects/damage.

- Primary Routes of Entry : Inhalation
Eye contact
Skin Absorption
Skin contact
Ingestion

- Target Organs : Central nervous system
Eyes
Skin
Upper respiratory tract
Kidney
Liver
Mucous membranes

- Carcinogenic Effects :
ACGIH A4 - Not Classifiable as a Human Carcinogen IARC Group 3 - Not Classifiable as to Human Carcinogenicity

- Toxicity to reproduction : Pregnancy: may cause mental and/or growth retardation in children of female solvent abusers (sniffers). In rats, prolonged breathing of 3000 ppm did not cause birth defects (not teratogenic); fetal toxicity at 1500 ppm; no effect at 750 ppm. Avoid prolonged and repeated breathing of high concentrations of toluene.



TOLUENE

SECTION 4. FIRST AID MEASURES

- Eye contact : In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Seek medical advice.
- Skin contact : In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash contaminated clothing before re-use.
Thoroughly clean shoes before re-use.
Seek medical advice.
- Inhalation : Remove to fresh air.
If breathing is irregular or stopped, administer artificial respiration.
In case of shortness of breath, give oxygen.
Seek medical advice.
- Ingestion : Do not induce vomiting without medical advice.
Never give anything by mouth to an unconscious person.
Loosen tight clothing such as collar, tie, belt or waistband.
If accidentally swallowed obtain immediate medical attention.

SECTION 5. FIRE-FIGHTING MEASURES

- Flash point : 4 °C (39 °F)
Test type: closed cup
Method: Tagliabue
- Flash point : 4 °C (39 °F)
Test type: open cup
Method: Tagliabue
- Autoignition temperature : 536 °C (997 °F)
- Lower explosion limit : 1 %(V)
- Upper explosion limit : 7 %(V)
- Flammability : Flammable. Vapors can accumulate and travel to distant ignition sources and flash back. Risk of fire or explosion exists if static charge accumulates during transfer or flow of product. Containers may explode or rupture if exposed to heat Forms explosive mixtures with air and oxidizing agents.
- Flammability in Presence of : Extremely flammable in presence of open flames



TOLUENE

- sparks
 Flammable in presence of heat
 shock
 Slightly flammable in presence of oxidizing materials
- Explosibility in Presence of : Explosive in presence of oxidizing materials

Fire fighting information

- Suitable extinguishing media : Extinguishing media - small fires, Dry chemical, Carbon dioxide (CO₂), Extinguishing media - large fires, Water spray, fog, Alcohol-resistant foam, Cool containers / tanks with water spray.
- Special protective equipment for fire-fighters : Wear self-contained breathing apparatus when fire fighting in confined space.
 Wear structural fire fighters protective clothing.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Ensure adequate ventilation.
 Wear proper protective equipment as specified in the protective equipment section.
 Remove all sources of ignition.
- Methods for cleaning up : Soak up with inert absorbent material.
 Scrape or gather material and place in a suitable container for disposal.
 Clean-up methods - large spillage
 Ensure adequate ventilation.
 Wear proper protective equipment as specified in the protective equipment section.
 Remove all sources of ignition.
 Prevent further leakage or spillage if safe to do so.
 Try to prevent the material from entering drains or water courses.
 Protect against water.
 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).
 Prevent entry into basements or confined areas.
 Ensure product is not present at a concentration level above the TLV.
 Check TLV on MSDS or consult local authorities.
 Clean-up methods - small spillage
 In Canada, advise the Ministry of the Environment.



TOLUENE

Additional advice : For dispersion properties, refer to Section 9, Solubility.

SECTION 7. HANDLING AND STORAGE

Handling Precautions

Handling : Keep away from open flames, hot surfaces and sources of ignition.
 Ensure all equipment is electrically grounded before beginning transfer operations.
 Do not ingest.
 Do not breathe vapors, mist or gas.
 Wear suitable protective equipment.
 In case of insufficient ventilation, wear suitable respiratory equipment.
 If ingested, seek medical advice immediately and show the container or the label.
 Avoid prolonged contact with eyes, skin and clothing.

Storage

Further information on storage conditions : Store in a place accessible by authorized persons only.
 Store in a cool, well ventilated area away from incompatible materials.
 Keep containers tightly closed and sealed until ready for use.
 Keep away from heat and sources of ignition.

Advice on mixed storage : Reactive with:
 Oxidizing agents
 Acids

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering measures : Adequate ventilation to ensure that Occupational Exposure Limits are not exceeded.
 Ventilation is dependant on work conditions;
 local ventilation is required.
 Ensure that eyewash station and safety shower are proximal to the work-station location.
 Use explosion-proof ventilation equipment.

Eye protection : Wear monogoggles or safety glasses when handling the product.
 If liquid handled, wear goggles and face shield.

Hand protection : Gloves recommended to protect against contact with product.
 The following materials are acceptable:
 polyvinyl alcohol
 Nitrile rubber
 Neoprene
 Viton



TOLUENE

- Skin and body protection : Wear as appropriate:
 Flame retardant protective clothing
 Boots
 If contact is unavoidable, wear chemical resistant clothing.
- Respiratory protection : Concentration in air determines protection needed.
 Half-mask air purifying respirator with organic vapor cartridges is acceptable to 10 times the exposure limit.
 Full-face air purifying respirator with organic vapor cartridges is acceptable to 50 times the exposure limit.
 Use a positive pressure-demand full-face supplied air respirator or SCBA for exposures above 50 times the exposure limit.
 If exposure is above IDLH (immediately dangerous to life & health) or there is the possibility of an uncontrolled release or exposure levels are unknown then use a positive pressure-demand full-face supplied air respirator with escape bottle or SCBA.

Legislated occupational threshold limits

TOLUENE	108-88-3	CAD AB OEL	TWA	50 ppm	188 mg/m3
		CAD ON OEL	TWA	50 ppm	
		ACGIH	TWA	50 ppm	
		NIOSH	REL	100 ppm	375 mg/m3
		NIOSH	STEL	150 ppm	560 mg/m3
		OSHA Z2	TWA	200 ppm	
		OSHA Z2	Ceiling	300 ppm	
		OSHA Z2	MAX. CONC	500 ppm	
		OEL (QUE)	TWA	50 ppm	188 mg/m3
		ACGIH NIC	TWA	20 ppm	
BENZENE	71-43-2	CAD AB OEL	TWA	1 ppm	3.2 mg/m3
		CAD AB OEL	STEL	5 ppm	16 mg/m3
		CAD ON OEL	TWA	0.5 ppm	
		CAD ON OEL	STEL	2.5 ppm	
		ACGIH	TWA	0.5 ppm	
		ACGIH	STEL	2.5 ppm	
		NIOSH	REL	0.1 ppm	
		NIOSH	STEL	1 ppm	
		OSHA Z2	TWA	10 ppm	
		OSHA Z2	Ceiling	25 ppm	
		OSHA Z2	MAX. CONC	50 ppm	
		OSHA	TWA	1 ppm	
		OSHA	STEL	5 ppm	
		OSHA	OSHA_ACT	0.5 ppm	
		OEL (QUE)	TWA	1 ppm	3 mg/m3
		Remarks		Exposure must be minimized.	
		OEL (QUE)	STEL	5 ppm	15.5 mg/m3
		Remarks		Exposure must be minimized.	
Sulphur based on mass/mass	7704-34-9	CAD AB OEL	TWA	10 mg/m3	

Note: State/Provincial, local or other agencies or advisory groups may have established more

**TOLUENE**

stringent limits. Consult an industrial hygienist or similar professional, or your local authorities for further information.
Other information

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Colour	: colourless
Odour	: sweet pleasant characteristic
Odour Threshold	: 1 ppm
Physical state	: liquid
Molecular Weight	: 92.14 g/mol
Melting point/range	: -95 °C (-139 °F)
Boiling point/boiling range	: 110 °C (230 °F)
Evaporation rate	: 2 compared to Butyl Acetate
Volatility	: 100 % (V/V)
Vapour pressure	: 3.5 kPa at 20 °C (68 °F)
Specific gravity	: 0.87 Note: Water = 1
Solubility in other solvents	: Note: Easily soluble in, diethyl ether, acetone, Partially soluble in, cold water, hot water
Viscosity, dynamic	: >= 0.45 mPa.s at 50 °C (122 °F) <= 0.61 mPa.s at 20 °C (68 °F)
Relative vapour density	: 3 Note: Air = 1

SECTION 10. STABILITY AND REACTIVITY

Materials to avoid	: Incompatible with strong acids and oxidizing agents.
Hazardous decomposition products	: Carbon monoxide and asphyxiants on combustion.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	: LD50 rat
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TOLUENE

Dose: 636 mg/kg
 Test substance: Toluene

LD 50 Rat
 Dose: 930 mg/kg
 Test substance: Benzene

LD 50 Mouse
 Dose: 4,700 mg/kg
 Test substance: Benzene

LD 50 Rat
 Dose: > 8,437 mg/kg
 Test substance: Sulfur

Acute dermal toxicity : LD50 rabbit
 Dose: 14,100 mg/kg
 Test substance: Toluene

LD 50
 Dose: > 9,400 mg/kg
 Test substance: Benzene

Acute inhalation toxicity : LC50 mouse
 Exposure time: 24 h
 Dose: 400 ppm
 Test substance: Toluene

LC50 rat
 Exposure time: 4 h
 Dose: 49 mg/l
 Test substance: Toluene

LC 50 Rat
 Exposure time: 7 h
 Dose: 10000 ppm
 Test substance: Benzene

LC 50 Mouse
 Exposure time: 1 h
 Dose: 9980 ppm
 Test substance: Benzene

LC 50 Rat
 Exposure time: 7 h
 Dose: 30 mg/l
 Test substance: Benzene

LC 50 Mammal
 Exposure time: 4 h
 Dose: 1.660 mg/l
 Test substance: Sulfur



TOLUENE

SECTION 12. ECOLOGICAL INFORMATION

Products of biodegradation : Possibly hazardous short/long term degradation products are to be expected.
The products of degradation are less toxic than the product itself.

Acute and prolonged toxicity to fish : LC50
Species: Trout family (Salmonidae)
Dose: 24 mg/l
Exposure time: 96 h

LC50
Species: Bluegill (Lepomis macrochirus)
Dose: 24 mg/l
Exposure time: 96 h

LC50
Species: Sunfish (Lepomis)
Dose: 61 mg/l
Exposure time: 1 h

LC50
Species: Fathead minnow (Pimephales promelas)
Dose: 44 mg/l
Exposure time: 96 h

LC50
Species: Brine shrimp (Artemia sp.)
Dose: 33 mg/l
Exposure time: 24 h

SECTION 13. DISPOSAL CONSIDERATIONS

Advice on disposal : In Canada, follow federal, provincial and local regulations.
RCRA hazardous waste.
Do not flush to drain /storm sewer.

SECTION 14. TRANSPORT INFORMATION

DOT Proper shipping name : **TOLUENE**
UN-Number : 1294
Class : 3
Packing group : II

TDG Proper shipping name : TOLUENE
UN-Number : 1294
Class : 3



TOLUENE

Packing group : II

IATA UN Number : 1294
 Description of the goods : TOLUENE
 Class : 3
 Packaging group : II
 ADR/RID-Labels : 3
 Packing instruction (cargo aircraft) : 307
 Packing instruction (passenger aircraft) : 305
 Packing instruction (passenger aircraft) : Y305

IMDG Substance No. : UN 1294
 Description of the goods : TOLUENE
 Class : 3
 Packaging group : II
 ADR/RID-Labels : 3
 EmS Number : F-E

SECTION 15. REGULATORY INFORMATION

HMIS Hazard Class									
Health	2								
Flammability	3								
Physical Hazard	0								
Personal Protective Equipment	Splash Goggles, Gloves, Apron, Vapor Respirator								
NFPA Hazard Rating	<table border="1"> <tr> <td>Flammability</td> <td>3</td> <td>Reactivity</td> <td>0</td> </tr> <tr> <td>Health</td> <td>2</td> <td>Special</td> <td></td> </tr> </table>	Flammability	3	Reactivity	0	Health	2	Special	
Flammability	3	Reactivity	0						
Health	2	Special							

WHMIS Classification : B2 - Flammable Liquid, D2B - Materials Causing Other Toxic Effects, Toxic Material

WHMIS (Pictograms)



Clean water act

: Regulation: US. EPA Clean Water Act (CWA) Section 307(a)(1) Toxic Pollutants (40 CFR 401.15)

Regulation: US. EPA Clean Water Act (CWA) Section 311 Hazardous Substances (40 CFR 117.3)



TOLUENE

- Clean air act : Regulation: US. EPA Clean Air Act (CAA) Section 112(r)
Accidental Release Prevention (40 CFR 68.130)
- Environment - waste : Regulation: US. EPA CERCLA Hazardous Substances (40 CFR 302)
- Regulation: US. EPA Resource Conservation and Recovery Act (RCRA) U List of Hazardous Wastes (40 CFR 261.33(f) and 40 CFR 302 [CERCLA])
- TSCA Status** : Listed on TSCA
- | | |
|----------------------------|-----------|
| BENZENE | 71-43-2 |
| Sulphur based on mass/mass | 7704-34-9 |
| TOLUENE | 108-88-3 |
- DSL Status** : All components of this product are on the Canadian DSL list.
- | | |
|----------------------------|-----------|
| BENZENE | 71-43-2 |
| Sulphur based on mass/mass | 7704-34-9 |
| TOLUENE | 108-88-3 |

SECTION 16: OTHER INFORMATION

- Date Validated : 03/13/2009
- Other considerations for product : Containers are hazardous when empty as product vapor or liquid remains.
- D.O.T. flammable liquid label and "Hazardous when empty" pictogram also required for containers.
- References : Regulations respecting the handling, offering for transport and transporting of dangerous goods. Clear Language Regulation 2002
SAX, N.I. Dangerous Properties of Industrial Materials. Toronto, Van Nostrand Reinold, 6th ed. 1984.
Provisional Domestic Substances List, Canadian Environmental Protection Act, Volume 1-Registry Number Index, April 1990; Environment Canada.
- Validation date of previous version : 04/28/2004
- General contact information : B. Burrell: (519) 383-3657

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ASTRO PRODUCT CODE # 1030600



Material Safety Data Sheet

TOLUENE