

Phone: 905-337-7411 Fax: 905-337-1686



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1. IDENTIFICATION

Name:	Toluene
Synonyms:	methylbenzene, phenylmethane, toluol (obsolete)
Product Uses:	solvent, chemical feedstock, gasoline additive
Supplier Identifier:	Megaloid Laboratories Limited 5515 North Service Road # 306 Burlington, ON L7L 6G4
	EMERGENCY INFORMATION: Call CHEMTREC - (800) 4

EMERGENCY INFORMATION: Call CHEMTREC - (800) 424-9300 (CCN# 693764)

2. HAZARD INDENTIFICATION

GHS Class	flammable	aspiration haz.	skin irritant	eye irritant	STOT	<i>STOT</i>
(category)	(2)	(1)	(2)	(2B)	(3)	(2)
Signal Word	DANGER			no pictogram		
Hazard Statements	highly flammable liquid& vapour (H225)	may be fatal if swallowed& enters air- ways (H304)	causes skin irritation (H315)	causes eye irritation (H320)	may cause drowsiness or dizziness (H336)	may cause neuro- logical damage on prolonged or repeated inhalation (H373)
Haz	ardous Pictog	grams				
	<u>₹</u> 3					

GHS Precautiona	ary Statements for Labelling
Prevention:	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof electrical, ventilating, and lighting equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260	Do not breathe vapours.
P262	Do Not get in eyes or skin
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273, P391	Avoid release to the environment. Collect spillage.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
Response:	
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P314	Get medical advice or attention if you feel unwell.
P331	Do NOT induce vomiting.
P332+P313	If skin irritation occurs: Get medical advice or attention.
Storage:	
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
Disposal:	
P501	Dispose of contents and container in accordance with local, regional, national and international regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name:	CAS No.	%	Other Identifiers
Methylbenzene	108-88-3	100	EC# 203-625-9

4. FIRST-AID MEASURES

Inhalation

Remove from contaminated area promptly. CAUTION: Rescuer must not endanger himself! If breathing stops, administer artificial respiration and seek medical aid promptly.

Skin Contact

Wash with plenty of water. Remove contaminated clothing and do not reuse until thoroughly laundered.

Eye Contact

Wash eyes with plenty of water, holding eyelids open. Seek medical assistance if there is any irritation.

Ingestion

Give plenty of water to dilute product. Do not induce vomiting. Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.

Most important symptoms and effects, both acute and delayed

Eye irritation signs and symptoms may include a burning sensation, redness, and/or blurred vision. Skin irritation signs and symptoms may include a burning sensation, redness, and/or blisters. If inhaled, signs and symptoms may include coughing wheezing, difficulty in breathing, chest congestion, and/or fever.

The onset of respiratory symptoms may be delayed for sever-al hours after exposure.

Notes to physician

Call a doctor or poison control center for guidance.

First-aid Comments

Inadvertent inhalation of vomited material may seriously damage the lungs. The danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity substance. The stomach should only be emptied under medical supervision, and after the installation of an airway to protect the lungs.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media

Carbon dioxide, dry chemical powder, appropriate foam, water spray or fog.

Unsuitable Extinguishing Media

Straight streams of water

Specific Hazards Arising from the Product

Flammable liquid and vapour. Can ignite at room temperature. Releases vapour that can form explosive mixture with air. Can accumulate static charge by flow, splashing or agitation.

Special Protective Equipment and Precautions for Fire-fighters

Fight fire from a protected, explosion-resistant location or maximum distance possible. Firefighters must wear SCBA.

Always ground or electrically bond containers & pumps on product transfer!

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required, due to toxicity or flammability of the material.

Methods and materials for containment and cleaning up

Leak Precaution: dyke to control spillage and prevent environmental contamination Handling Spill: Ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep & pick up using plastic or aluminum shovel, & store in closed containers for recycling or disposal.

Environmental Precautions

Do not allow into any sewer, on the ground or into any waterway. If the spill is inside a building, prevent product from entering drains, ventilation systems and confined areas.

Serious Fire Potential: blanket spill with foam as a precaution against accidental ignition. Take extreme care to avoid sparks – do not operate (turn on OR off) electrical appliances near spill, unless explosion proof.

7. HANDLING & STORAGE

Precautions for Safe Handling

Avoid breathing in this product. Avoid repeated or prolonged skin contact. Do not get in eyes. Eliminate heat and ignition sources such as sparks, open flames, hot surfaces and static discharge. Post "No Smoking" signs. Do not weld, cut or perform hot work on empty container until all traces of product have been removed. Electrically bond and ground equipment. Ground clips must contact bare metal. Use non-sparking tools. Keep containers tightly closed when not in use or empty. Do not puncture or incinerate container even when empty. Do not use at elevated temperatures without a thorough safety assessment. Do NOT eat, drink or store food in work areas.

Conditions for Safe Storage

Store in an area that is: cool, dry, well-ventilated environment, separate from incompatible materials and away from sources of ignition, heat and oxidising agents. Electrically bond and ground containers. Ground clips must contact bare metal. Use only non-sparking bronze or aluminium hand tools. All electrical & mechanical equipment (including lighting, switchgear & forklift trucks) used with or around this product must be explosion-proof. Always ground or electrically bond the source container, receiving container & transfer pump before transferring contents. Avoid splashing by ensuring that the product nozzle is below the surface in the receiving container. Empty containers may contain a flammable / explosive vapour. Containers, empty or full, must be tightly sealed unless in use.

Avoid breathing product vapour. Use with adequate ventilation. If dealing with a spill, and ventilation is impossible or impractical, wear a suitable respirator with organic vapour cartridge. Never cut, drill, weld or grind on or near this container. Avoid contact with skin & wash work clothes frequently. An eye bath & safety shower must be available near the workplace. WHEN FILLING STORAGE TANKS WITH THIS PRODUCT, IN ADDITION TO NORMAL GROUNDING PROCEDURES, READ THE FOLLOWING:

Toluene may form an explosive mixture inside a bulk storage tank. Prior to filling a bulk storage tank with this product, consider ventilating the headspace with nitrogen. In addition, consider asking the supplier to dissolve an anti-static additive in the product when you order. If the bulk tank has a floating product level indicator, <u>this should be inspected regularly</u>. The float MUST HAVE a <u>firmly fixed ground wire, not a chain</u> connecting it to its support cable. This connection must be free of corrosion. Consult NFPA 77, 2007: "Recommended Practice on Static Electricity"

8. EXPOSURE CONTROL & PERSONAL PROTECTION

Ontario TWAEV AGGIH TLV OSHA PEL	20ppm / 75mg/m ³ 20ppm / 75mg/m ³ 100ppm / 375mg/m ³	Ontario STEV ACGIH STEL OSHA STEL	
Ventilation	mechanical ventilation may be required to control airborne titre to regulated limits; respirators with organic vapour cartridge may be needed for "escape" should ventilation fail; <i>always store respirators & cartridges in sealed containers (eg:</i> <i>"Tupperware" or "Zip Lock"</i>)		
Hands	"Viton" gloves recommended – other types may also protect; consult supplier to confirm suitability		
Eyes	safety glasses with side shields – always protect the eyes		
Clothing	wear impermeable (above) apron, l splashing,	poots, & long sleeves i	if there is any danger of

9. PHYSICAL & CHEMICAL PROPERTIES

Odour & Appearance	Clear, colourless.
Odour threshold	Gasoline-like
рН	none – (does not liberate hydrogen ions when dissolved)
Melting point/Freezing point	-95 °C (-139 °F)
Initial boiling point/boiling range	111 °C (232 °F)
Flash point	4 °C (39 °F) (closed cup)
Evaporation rate	2 (n-butyl acetate = 1)
Flammability (solid; gas)	No data available
Lower flammable/explosive limit	1.1%
Upper flammable/explosive limit	7.1%
Vapour pressure	22 mm Hg (3 kPa) at 20 °C (68 °F)
Vapour density	3.1
Relative density	0.87
Water Solubility	0.6 grams per litre (25oC / 77oF)
Partition coefficient – n– octanol/water	2.73

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Auto ignition temperature	480 °C (896 °F)
Decomposition temperature	Not available
Viscosity	0.6centipoise (20oC / 68oF)
Molecular Weight	92.14 grams per mole
Surface Tension	27.73 mN/m at 25 °C (77 °F)
Critical Temperature	318.60 °C (605.48 °F)
Saturated Vapour Concentration	29000 ppm at 20 °C (68 °F)

10. STABILITY AND REACTIVITY

Reactivity

<u>Dangerously Reactive with:</u> Strong oxidising agents, nitric acid, sulphuric acid, nitrogen tetroxide, bromide trifluoride

<u>Also Reactive with:</u> Sulphur dichloride, uranium hexafluoride, & tetranitromethane

Chemical Stability Stable; will not polymerize

Possibility of Hazardous Reactions Hazardous polymerization will not occur.

Conditions to avoid Avoid heat, sparks, open flames

Incompatible materials Not known

Hazardous decomposition products None apart from Hazardous Combustion Products

Sensitive to Mechanical Impact No

11. TOXICOLOGICAL INFORMATION

	Acute Toxicity
Skin Contact	irritating if contact is prolonged; rabbit skin irritant in two studies
Skin Absorption	yes; no toxic effects likely by this route, but may add materially to exposure by other routes
Eye Contact	may irritate: "irritating" in 2 studies, "not irritating" in 2 reports
Inhalation	drowsiness & headache above 50ppm; irritation, fatigue & dizzyness above 100ppm; above 200ppm causes intoxication, numbness;
Ingestion	as for inhalation – not a route of industrial exposure
LD₅₀ (oral)	640mg/kg (rat); also 3000 – 7500mg/kg (rat, several studies); 5580mg/kg (rat)
LD₅₀ (skin)	12,250/kg (rabbit)
LC ₅₀ (inhalation)	400 – 8000ppm (mouse), 1600ppm (guinea pig), 7470 & 13,000ppm (rat), 12,000ppm (rabbit)

*NOTE: Oral LD50 & LC50 test data vary widely between species, & between tests on the same species. The very low oral LD50 of 640mg/kg & LC50 of 400ppm are out of line with other available values. They may have no relevance to human toxicity.

11. TOXICITY, CONTINUED

General

Prolonged exposure may cause dermatitis; extreme exposure (>200ppm) may damage liver & kidneys or cause neurological effects (associated with solvent "sniffing", not industrially relevant); hearing damage reported in workers exposed to 300ppm plus noise for 2-20 years

Sensitising

Not a sensitiser in humans or animals

Carcinogen/Tumorigen

Not considered a tumorigen or a carcinogen in humans or animals – no evidence found for carcinogenic Activity. IARC: Group 3 – Not classifiable as to its carcinogenicity to humans. ACGIH®: A4 – Not classifiable as a human carcinogen. NTP: Not specifically listed. OSHA: Not specifically listed.

Key to Abbreviations

ACGIH® = American Conference of Governmental Industrial Hygienists. IARC = International Agency for Research on Cancer. NTP = National Toxicology Program. OSHA = US Occupational Safety and Health Administration.

Reproductive Effect

Fetotoxic in humans involved in self-administration ("solvent sniffing"); fetotoxicity seen in rats chronically exposed to 1200-1800ppm – well above the level humans can tolerate . . .

Mutagen No known effect on humans or animals

Synergistic with Not known

12. ECOLOGICAL INFORMATION

not a bioaccumulator
biodegrades readily & rapidly in the presence of oxygen; many results available: soil ½-life from hours to 70 days; in ground water complete degradation seen in 8 days – longer in clean water; 80% & 86% in 20 days, also 81% in 5 days faster degradation likely in acclimated sewage sludge
reacts with atmospheric hydroxyl radicals; ½-life in air estimates: 1.3, 1.8 & 3 days
slightly water soluble; moves moderately rapidly in soil & water
26, 28 & 66mg/litre (Pimephelas promelas), 13 & 58mg/litre (Carcassius auratus), 59mg/litre (Lebistes reticulates), 13mg/litre (Lepomis macrochirus), 6.3mg/litre (Oncorhynchus kisutch), 24mg/litre (Oncorhynchus mykiss)
270mg/litre (Daphnia magna), 24-74mg/litre (Nitocra spinipes), 17mg/litre (Palaemoentes pugio)
245mg/litre (Chlorella vulgaris), 125-160mg/litre (Scenedesmus subspicatus), 432mg/litre (Selenastrum capricorntum)
950mg/litre ("other bacteria"), 84mg/litre (Nitrosomonas sp.)

13. DISPOSAL

Waste Disposal

Do not flush to sewer, recycle solvent if possible, local regulations may permit disposal in sanitary landfill, may be incinerated in approved facility after mixing with a suitable flammable waste

Containers

Drums should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use.

Pails must be vented and thoroughly dried prior to crushing and recycling.

IBCs (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 60 months (5yrs).

Steel containers must be inspected, pressure tested & recertified every 5 years.

Never cut, drill, weld or grind on or near this container, even if empty

14. TRANSPORT INFORMATION

Canada TDG AND	UN / PIN # Shipping Name	1294 Tolune	
U.S.A. 49 CFR	Class & Packing Group	3, II	•
Marine Pollutant ERAP Required (CA	Not a marine pollutant		

Marine Pollutant	Not a marine pollutant
ERAP Required (CA	
only)	No
Emergency Response	130
Guide No.	150
Reportable Quantity	$1,000,(454,1c_{0})$
(RQ – USA only)	1,000 (454 kg)

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

15. REGULATORY INFORMATION

Canada DSL	On Inventory
U.S.A. TSCA	On Inventory
Europe EINECS	On Inventory

<u>Canada</u>

CEPA - National Pollutant Release Inventory (NPRI) Part 1A, Part 5.

U.S.A. Regulations:

Immediately Dangerous to Life or Health: 500 ppm

Allowable Tolerances: Toluene is exempted from the requirement of a tolerance when used as a solvent or cosolvent in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only.

OSHA Standards: Permissible Exposure Limit: Table Z-2 8-hr Time Weighted Avg: 200 ppm. Permissible Exposure Limit: Table Z-2 Acceptable Ceiling Concentration: 300 ppm. Permissible Exposure Limit: Table Z-2 Acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift. Concentration: 500 ppm. Maximum Duration: 10 minutes. Vacated 1989 OSHA PEL TWA 100 ppm (375 mg/cu m); STEL 150 ppm (560 mg/cu m) is still enforced in some states. **NIOSH Recommendations:** Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 100 ppm (375 mg/cu m). Recommended Exposure Limit: 15 Min Short-Term Exposure Limit: 150 ppm (560 mg/cu m).

Threshold Limit Values: 8 Hr Time Weighted Avg (TWA): 20 ppm Excursion Limit Recommendation: Excursions in worker exposure levels may exceed 3 times the TLV-TWA for no more than a total of 30 minutes during a work day, and under no circumstances should they exceed 5 times the

TLV-TWA, provided that the TLV-TWA is not exceeded. A4; Not classifiable as a human carcinogen. Biological Exposure Index (BEI): Determinant: o-Cresol in urine; Sampling Time: end of shift; BEI: 0.5 mg/L. The determinant may be present in biological specimens collected from subjects who have not been occupationally exposed, at a concentration which could affect interpretation of the result. Such background concentrations are incorporated in the BEI value. Biological Exposure Index (BEI): Determinant: Hippuric acid in urine; Sampling Time: end of shift; BEI: 1.6 g/g creatinine. The determinant may be present in biological specimens collected from subjects who have not been occupationally exposed, at a concentration which could affect interpretation of the result. Such background concentrations are incorporated in the BEI value. The determinant is nonspecific, since it is also observed after exposure to other chemicals. [REF-218, p.108] Biological Exposure Index (BEI): Determinant: toluene in blood; Sampling Time: prior to last shift of workweek; BEI: 0.05 mg/L. Atmospheric Standards: This action promulgates standards of performance for equipment leaks of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOCMI). The intended effect of these standards is to require all newly constructed, modified, and reconstructed SOCMI process units to use the best demonstrated system of continuous emission reduction for equipment leaks of VOC, considering costs, non-air quality health and environmental impact and energy requirements. Toluene is produced, as an intermediate or a final product, by process units covered under this subpart. Listed as a hazardous air pollutant (HAP) generally known or suspected to cause serious health problems. The Clean Air Act, as amended in 1990, directs EPA to set standards requiring major sources to sharply reduce routine emissions of toxic pollutants. EPA is required to establish and phase in specific performance based standards for all air emission sources that emit one or more of the listed pollutants. Toluene is included on this list.

Federal Drinking Water Standards: EPA 1000 ug/l

Federal Drinking Water Guidelines: EPA 1000 ug/l

State Drinking Water Standards: California 150 ug/l

State Drinking Water Guidelines: Arizona 2000 ug/l Maine 1400 ug/l Minnesota 1000 ug/l **Clean Water Act Requirements:** Toxic pollutant designated pursuant to section 307(a)(1) of the Federal Water Pollution Control Act and is subject to effluent limitations. Toluene is designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of this substance. This designation includes any isomers and hydrates, as well as any solutions and mixtures containing this substance. For the protection of human health from the toxic properties of toluene ... the ambient water criterion is determined to be 14.3 mg/l. The maximum contaminant level (MCL) set forth by the National Revised Primary Drinking Water Regulations for the organic contaminant toluene in community and non-transient, non-community water systems is 1 mg/l.

CERCLA Reportable Quantities: Persons in charge of vessels or facilities are required to notify the National Response Center (NRC) immediately, when there is a release of this designated hazardous substance, in an amount equal to or greater than its reportable quantity of 1000 lb or 454 kg. The toll free number of the NRC is (800) 424-8802; In the Washington D.C. metropolitan area (202) 426-

2675. The rule for determining when notification is required is stated in 40 CFR 302.4 (section IV. D.3.b).

TSCA Requirements: Pursuant to section 8(d) of TSCA, EPA promulgated a model Health and Safety Data Reporting Rule. The section 8(d) model rule requires manufacturers, importers, and processors of listed chemical substances and mixtures to submit to EPA copies and lists of unpublished health and safety studies. Toluene is included on this list.

RCRA Requirements: As stipulated in 40 CFR 261.33, when toluene, as a commercial chemical product or manufacturing chemical intermediate or an off-specification commercial chemical product or a manufacturing chemical intermediate, becomes a waste, it must be managed according to Federal and/or State hazardous waste regulations. Also defined as a hazardous waste is any residue, contaminated soil, water, or other debris resulting from the cleanup of a spill, into water or on dry land, of this waste. Generators of small quantities of this waste may qualify for partial exclusion from hazardous waste regulations (40 CFR 261.5). When toluene is a spent solvent, it is classified as a hazardous waste from a nonspecific source, as stated in 40 CFR 261.31, and must be managed according to State and/or Federal hazardous waste regulations.

FIFRA Requirements: Toluene is exempted from the requirement of a tolerance when used as a solvent or cosolvent in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only.

16. OTHER INFORMATION

NFPA RATING	Health 2	Flamr	nability	3	Instability	0	
Prepared for	Megaloid Laboratories by Rob Cangiano						
Preparation Date: Revision Dates:	March 2004 May 2006, November 2008, December 2009, November 2012, April 2015, March 2018, October 2019						
Key to Abbreviations	 ACGIH® = American Conference of Governmental Industrial Hygienists AIHA® = AIHA® Guideline Foundation HSDB® = Hazardous Substances Data Bank IARC = International Agency for Research on Cancer NIOSH = National Institute for Occupational Safety and Health NTP = National Toxicology Program OSHA = US Occupational Safety and Health Administration RTECS® = Registry of Toxic Effects of Chemical Substances 						
References	CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS). HSDB® database. US National Library of Medicine. Available from Canadian Centre for Occupational Health and Safety (CCOHS). NIOSH Pocket Guide database. National Institute for Occupational Safety and Health. Available from Canadian Centre for Occupational Health and Safety (CCOHS). Registry of Toxic Effects of Chemical Substances (RTECS®) database. Dassault Systèmes/BIOVIA ("BIOVIA"). Available from Canadian Centre for Occupational Health and Safety (CCOHS).						
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