

MATERIAL SAFETY DATA SHEET

Revision Date : 26.04.2007

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : TOLUENE
Chemical name : Toluene
Synonyms : Methyl benzene
Product use : Petroleum solvent
UN number : 1294
MSDS Internet website : www.hitechchemicals.co.za

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS-No.	Weight%	Symbol Codes	R-Phrase Numbers
Toluene	108-88-3	> 99.00	F, Xn	R11, R20
Benzene	71-43-2	< 0.10		

See Section 15 for European Label Information.

See Section 8 for Exposure Limits (if applicable).

3. HAZARDS IDENTIFICATION

Emergency response data : Colourless Liquid. Highly flammable. Vapour accumulation could flash and/or explode if in contact with any ignition source. DOT ERG No. : 130

Potential health effects

Inhalation : Irritation to the respiratory tract. At levels above 200 ppm, headache, dizziness, nausea, loss of coordination and/or consciousness. Central nervous system depression may result at levels approaching 10,000 ppm.

Skin : Irritant. Prolonged repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis.

Eye : Irritant.

Ingestion : Low viscosity material if swallowed may enter the lungs and cause lung damage.

Potential environmental effects : Toxic to fish, aquatic organisms and wildlife. Do not discharge into lakes, streams, ponds and ground water supply.

See Section 11 for further health effects/toxicological data.

4. FIRST AID MEASURES

Inhalation : Remove from further exposure. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with mechanical device or use mouth-to-mouth resuscitation with a mouthpiece.

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Skin contact	:	Remove contaminated clothing. Dry wipe exposed skin and cleanse with hand cleaner, soap and water. Launder contaminated clothing before reuse. (See Section 16 - Injection Injury)
Eye contact	:	Flush thoroughly with water for at least 15 minutes. Get medical assistance.
Ingestion	:	Seek immediate medical attention. Do not induce vomiting.
Note to doctors	:	Material if aspirated into the lungs may cause chemical pneumonitis. Skin contact may aggravate an existing dermatitis. Treat appropriately.

5. FIRE-FIGHTING MEASURES

Extinguishing media	:	Carbon dioxide, foam, dry chemical and water fog.
Special fire fighting procedure	:	Water spray should only be used to keep fire-exposed containers cool, flush spills away from exposures, disperse vapours and protect personnel attempting to stop leak. Prevent runoff from fire control or dilution from entering streams, municipal sewers, or drinking water supply.
Special protective equipment for firefighters	:	For fires in enclosed areas, fire fighters must use Self-Contained Breathing Apparatus.
Unusual fire and explosive hazards	:	Vapour accumulation could flash or explode if in contact with an open flame.
Products of decomposition	:	Fumes, smoke and carbon monoxide.
Flash Point	:	9 °C (ASTM D-56)
Upper Explosion Limit (UEL)	:	7.1 %(V)
Lower Explosion Limit (LEL)	:	1.2 %(V)
NFPA Hazard Id	:	Health: 2; Flammability: 3; Reactivity: 0

6. ACCIDENTAL RELEASE MEASURES

Procedure if material is released or spilled	:	Report spills/releases as required to appropriate authorities.
Methods for cleaning up	:	SMALL SPILLS: Eliminate all ignition sources. Remove leaking containers to detached area. Absorb on fire-retardant treated sawdust, diatomaceous earth, etc. Shovel up with spark-resistant utensils for later disposal at an approved facility, in accordance with current laws and regulations. LARGE SPILLS: Contain material and pump back to holding tank for disposal or recycling in accordance with product characteristics and applicable regulations.
Personal precautions	:	See Section 8.
Environmental precautions	:	Prevent spills from entering municipal sewers or drains and contact with soil.

7. HANDLING AND STORAGE

Safe handling advice	:	Avoid contact with eyes. Use in well ventilated area away from all ignition sources. Avoid sparking conditions. Ground and bond all transfer equipment.
Storage information	:	This product is a static accumulator, therefore, all storage containers should be grounded and bonded. Drums should also be equipped with self-closing valves, pressure vacuum bungs and flame arresters.
Storage and handling procedures	:	Electrical equipment and fittings must comply with local fire prevention regulations for this class of product. Refer to national or local regulations covering safety at petroleum handling and storage areas for this product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

TOLUENE

Occupational Exposure Limits (OELs)

Components	CAS-No.	Source	TWA	Value		Notations	
Toluene	108-88-3	ACGIH TLV	LTEL	188 mg/m ³	50 ppm	Skin; A4; BEI Estimated	
			STEL	560 mg/m ³	150 ppm		
		OSHA PEL	LTEL	375 mg/m ³	100 ppm	Skin Recommended Limit	
			STEL	560 mg/m ³	150 ppm		
		SA OEL	LTEL	188 mg/m ³	50 ppm		
			STEL	560 mg/m ³	150 ppm		
Benzene	71-43-2	ACGIH TLV	LTEL	1.6 mg/m ³	0.5 ppm	Skin; A1; BEI	
			STEL	8 mg/m ³	2.5 ppm		
		OSHA PEL	LTEL	2 mg/m ³	1 ppm		
			STEL	16 mg/m ³	5 ppm		

LTEL: Long Term Exposure Limits - Time Weight Average (TWA) over 8 hours.

STEL: Short Term Exposure Limits - Time Weight Average (TWA) over 15 Minutes

Note: Limits Shown for guidance only. Follow applicable regulations.

Personal Protection Equipment (PPE)

- Engineering controls : Use in well ventilated area. Explosive-proof ventilation equipment with local exhaust is desirable.
- Respiratory protection : Approved respiratory equipment must be used when airborne concentrations are unknown or exceed the recommended exposure limit. Self-Contained Breathing Apparatus may be required for use in confined or enclosed spaces.
- Eye protection : If splash with liquid is possible, chemical type goggles should be worn.
- Skin and body protection : No special equipment required. However, good personal hygiene practices should always be followed.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : Liquid.
- Colour : Colourless
- Odour : Aromatic
- Solubility : Negligible
- Melting point/range : -95 °C
- Boiling point/range : 110 °C
- Flash Point : 9 °C (ASTM D-
- Upper Explosion Limit (UEL) : 7.1 %(V)
- Lower Explosion Limit (LEL) : 1.2 %(V)
- Vapour pressure : 22 hPa
- Relative vapour density : 3.2
- Density : 0.872 g/cm³ @ 20 °C
- Viscosity, kinematic : 0.6 mm²/s @ 40 °C
0.3 mm²/s @
100 °C

10. STABILITY AND REACTIVITY

- Stability : Stable.
- Conditions to avoid : Heat, sparks, flame and build up of static electricity.
- Materials to avoid : Strong oxidizers.
- Hazardous decomposition products : Fumes, smoke and carbon monoxide.

11. TOXICOLOGICAL INFORMATION

TOLUENE

Acute oral toxicity	:	(Rats): LD50: > 7 000 mg/kg. Considered to be practically non-toxic based on single dose level testing at 7 000 mg/kg.
Acute inhalation toxicity	:	(Rats): Practically non-toxic (LC50: greater than 5mg/l). Based on testing of similar products and/or the components.
Acute dermal toxicity	:	(Rats): Practically non-toxic (LD50: > 2 000 mg/kg). Based on single dose level testing at 2 000 mg/kg.
Skin irritation	:	(Rabbits): Practically non-irritating. (Primary Irritation Index: greater than 0.5 but less than 3). Based on testing of similar products and/or the components.
Eye irritation	:	(Rabbits): Practically non-irritating. Eye irritation scores: 12.0 at 24 hours, 18.0 at 48 hours, 18.0 at 72 hours, 16.0 at 4 days, 9.0 at 7 days.
Repeated dose toxicity	:	Prolonged repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis.
Teratogenicity	:	The NOEL for toluene was 500 ppm. Levels greater than 1500 ppm may adversely affect foetal development.
Mutagenicity	:	This product tested negative in a series of mutagenic tests.
Neurological effects	:	Toluene Inhalation studies (1500 ppm), 6 hours/day, 5 days/week for 6 months in rats: No neurotoxicity. However, deliberate inhalation associated with substance abuse could damage the brain and central nervous system.
Carcinogenicity	:	No carcinogenic effects were observed when toluene was applied to the skin of mice for two years. A 2 year NTP inhalation study (rodents) at levels up to 1200 ppm toluene was negative. Prolonged or repeated exposure to toluene does not result in bone marrow injury or blood changes characteristic of benzene.

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

Biodegradability	:	Readily Biodegradable.
Physico-chemical removability	:	Water solubility: 500 mg/l @ 20 C.
Bioaccumulation	:	Bioconcentration factor (BCF) < 100.

Ecotoxicity effects

Toxicity to fish	:	(Salmon) LC/EC50: 8.1 mg/l at 96 hours.
Toxicity to aquatic organisms	:	(Daphnia magna) LC/EC50: 6 mg/l at 48 hours. (Green algae) LC/EC50: 9.4 mg/l at 8 hours.

Further information on ecology

Remarks	:	This environmental assessment is based on test data for this product (or estimated data).
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13. DISPOSAL CONSIDERATIONS

Waste disposal	:	Product is suitable for burning for fuel value in compliance with applicable laws and regulations, and consideration of product characteristics at time of disposal.
Contaminated packaging	:	Empty containers retain residue (liquid and/or vapour) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY

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EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to refill or clean container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

Other regulations : Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity, or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP).

Flash Point : 9 °C (ASTM D-56)

14. TRANSPORT INFORMATION

ADR

Proper shipping name : TOLUENE
UN number : 1294
DOT ERG number : 130
Class : 3
Letter : F
Packing group : II
Labelling number : 3
Product Reportable Quantity : 500 kg

CFR

Proper shipping name : TOLUENE
UN number : 1294
DOT ERG number : 130
Class : 3
Letter : F
Packing group : II
Labelling number : 3
Product Reportable Quantity :

IATA_C

Proper shipping name : TOLUENE
UN number : 1294
DOT ERG number : 130
Class : 3
Letter : F
Packing group : II
Labelling number : 3
Product Reportable Quantity :

IMDG

Proper shipping name : TOLUENE
UN number : 1294
DOT ERG number : 130
Class : 3
Letter : F
Packing group : II
Labelling number : 3
Product Reportable Quantity :
Marine pollutant : Marine pollutant
Medical First Aid Guide : 310
(MFAG) table
Emergency Schedule (EmS) : 3-07
number
IMDG code page number : 3285

Static Accumulator (50 picosiemens or less) : Yes

15. REGULATORY INFORMATION

US OSHA Hazard Communication Standard : Product assessed in accordance with OSHA 29 CFR 1910.1200 and determined to be hazardous.

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U.S. Drug Enforcement Administration Chemical Diversion and Trafficking Act	:	Sales, receipts, movements or unexplainable losses of the following chemical(s) may require recordkeeping and reporting in accordance with 21 CFR 1310/1313. Contains Toluene.
Governmental Inventory Status	:	All components comply with TSCA, EINECS/ELINCS, AICS, METI, DSL, KECI, ENCS, PICCS and IECSC.
EU Labelling	:	Product is dangerous as defined by the European Union Dangerous Substances/Preparations Directives.
Symbols	:	F, Xn Highly flammable, Harmful
R-Phrase(s)	:	R11, R20 Highly flammable., Harmful by inhalation.
S-phrase(s)	:	S16, S25, S29, S33 Keep away from sources of ignition - No smoking., Avoid contact with eyes., Do not empty into drains., Take precautionary measures against static discharges.
Note	:	Contains Toluene.

SARA

U.S. Superfund Amendments and Reauthorization Act SARA Title III	:	This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".
SARA (311/312) Reportable Hazard Categories	:	Fire Chronic Acute
SARA (313) Toxic Release Chemicals:	:	Toluene (108-88-3) - Conc > 98 %.

The following product ingredients are cited on the lists below

Chemical name	CAS-No.	Concentration [%]	List Citations
Toluene	108-88-3	> 99.00	1, 10, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26
Benzene	71-43-2	< 0.10	1, 2, 4, 6, 9, 10, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26

Regulatory List Searched

1 = ACGIH ALL	6 = IARC 1	11 = TSCA 4	17 = CA P65	22 = MI 293
2 = ACGIH A1	7 = IARC 2A	12 = TSCA 5a2	18 = CA RTK	23 = MN RTK
3 = ACGIH A2	8 = IARC 2B	13 = TSCA 5e	19 = FL RTK	24 = NJ RTK
4 = NTP CARC	9 = OSHA CARC	14 = TSCA 6	20 = IL RTK	25 = PA RTK
5 = NTP SUS	10 = OSHA Z	15 = TSCA 12b	21 = LA RTK	26 = RI RTK

Code Key: CARC = Carcinogen; SUS = Suspected Carcinogen

16. OTHER INFORMATION

Note: Our products do not contain PCBs.

Health studies have shown that many hydrocarbons pose potential human health risks which may vary from person to person. Information provided on this MSDS reflects intended use. This product should not be used for any other applications. In any case, the following advice should be considered:

FIRST AID: If swallowed, call a doctor immediately. Only induce vomiting at the instruction of a doctor. Never induce vomiting or give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a doctor immediately. In case of contact, immediately wash skin with soap and plenty of water. Remove contaminated clothing. Call a doctor if symptoms occur. Wash clothing before reuse.

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INJECTION INJURY WARNING: If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a doctor as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

SAFETY: Keep away from heat, sparks, and flame. Keep container closed. Use with adequate ventilation. Avoid breathing mist or vapour. Avoid prolonged or repeated skin contact.

For industrial use only. Not intended or suitable for use in or around a household or dwelling.

Attention.

Empty container may contain product residue, including flammable or explosive vapours. Do not cut, puncture, or weld on or near container. All label warnings and precautions must be observed until container has been thoroughly cleaned or destroyed.

Precautionary Label Text:

CONTAINS TOLUENE

DANGER!

HARMFUL OR FATAL IF SWALLOWED. FLAMMABLE VAPOUR HARMFUL. MAY CAUSE SKIN IRRITATION ON PROLONGED, REPEATED CONTACT.

Disclaimer

Information given herein is offered in good faith as accurate, but without guarantee. Conditions of use and suitability of the product for particular uses are beyond our control; all risks of use of the product are therefore assumed by the user and we expressly disclaim all warranties of every kind and nature, including warranties of merchantability and fitness for a particular purpose in respect to the use or suitability of the product. Nothing is intended as a recommendation for uses which infringe valid patents or as extending license under valid patents. Appropriate warnings and safe handling procedures should be provided to handlers and users.
