

SAFETY DATA SHEET Toluene

SECTION 1: IDENTIFICATION OF MATERIAL AND SUPPLIER

Product Name:	Toluene
Other Names:	N/a
Product Codes/Trade Names:	N/A
Recommended Use:	Solvent
Applicable In:	Australia
Supplier:	ACB Group (ABN 79 724 186 134)
Address:	118 Swann Drive, Derrimut Victoria-3030
Telephone:	+ 61 3 93690220
Email Address:	info@acbgroup.com.au
Facsimile:	+61 3 93690883
Emergency Phone Number:	000 Fire Brigade and Police (available in Australia only).
Poisons Information Centre:	13 11 26 (available in Australia only).

This Material Safety Data Sheet (MSDS) is issued by the Supplier in accordance with National standards and guidelines from the Australian Safety and Compensation Council (ASCC, formerly National Occupational Health and Safety Commission - NOHSC). The information in it must not be altered, deleted or added to. The Supplier will not accept any responsibility for any changes made to its MSDS by any other person or organization. The Supplier will issue a new MSDS when there is a change in product specifications and/or ASCC standards, codes, guidelines, or Regulations.

SECTION 2: HAZARD IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE: Classified as **Hazardous** according to the criteria of the Australian Safety and Compensation Council ASCC (formerly NOHSC) Approved Criteria For Classifying Hazardous Substances [NOHSC:1008] 3rd Edition.

Toluene is classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.

GHS Classification:

Flam. Liq.- Category 2
Skin irrit. – Category 2
Repr. – Category 2
Stot. Se. Category 3
Stot. Re. – Category 2
Asp. Tox. – Category 1

GHS LABEL ELEMENTS

Symbol (s)



Signal Word: Danger

Hazard Statements:

PHYSICAL HAZARDS:

H225: Highly flammable liquid and vapour.

HEALTH HAZARDS:

H304: May be fatal if swallowed and enters airways

H315: Cause skin irritation

H336: May cause dizziness or drowsiness

H361: Suspected of damaging fertility or the unborn child

H373: May cause damage to organs through prolonged or repeated exposure

Prevention

P201: Obtain special instructions before use

P202: Do not handle until all safety precautions have been read and understood

P210: Keep away from heat, sparks, open flames, hot surfaces. No Smoking.

P233: Keep container tightly closed.

P240: Ground/bond container and receiving equipment.

P241: Use explosion-proof electrical, ventilating, lighting equipment.

P242: Use non-sparking tools

P243: Take precautionary measures against static discharge

P260: Do not breathe mist, vapours, spray

P264: Wash exposed skin thoroughly after handling

P270: use only outdoors or in a well-ventilated area

P280: Wear protective gloves, protective clothing eye protection, face protection.

Response

P301+P310: IF SWALLOWED: Immediately call a POISON CENTRE or doctor/physician

P303+P361+P353: If ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340: IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

P308+313: If exposed or concerned: Get medical advice/attention

P331: If swallowed do NOT induce vomiting.

P332+P313: If Skin irritation occurs. Get medical advice/attention.

P362: Take of contaminated clothing and wash before reuse.

P370 +P378: In case of fire: Use appropriate media for extinction. Carbon dioxide powder, alcohol-resistant foam for extinction

Storage

P403+P235: Store in a well-ventilated place. Keep cool.

P405: Store locked up

Disposal

P501: Dispose of contents and container to appropriate waste site of reclaimer in accordance with local and national regulations.

Other Hazards which do not result in classification

This material is a static accumulator.

Even with proper grounding and bonding, this material can still accumulate an electrostatic charge.

If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Classification of components according to GHS

Chemical name	Synonyms	CAS	Hazard Class (Category)	Hazard Statement	Conc.
Toluene		108-88-3	Flam. Liq., 2; Slom. Irrit. 2 Repr. 2 STOT SE 3 STOT RE 2 Asp. Tox. 1	H225 H315 H361 H336 H373 H304	100.00 %W

SECTION 4: FIRST AID MEASURES

Information:

Check the vital functions. Unconscious: Maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with labored breathing: half seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. Never give alcohol to drink.

Ingestion: If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. If any of the following delayed signs and symptoms appear within/ the next 6 hours, transport to the nearest medical facility: Fever greater than 101F (38.3C), shortness of breath, chest congestion or continued coughing or wheezing. Give nothing by mouth.

Eyes: Immediately flush eyes with large amounts of water for at least 15 minutes while holding eyelids open. Transport to the nearest medical facility for additional treatment.

Skin: Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest facility for additional treatment.

Inhaled: DO NOT DELAY. Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.

First Aid Facilities: Eye wash fountains and safety showers should be available for emergency use.

Advice to Doctor:

Most important symptoms and effects acute and delayed Treat Symptomatically. Exposure to high concentrations can give headache, nausea, feeling of weakness, dizziness, central nervous system depression, narcosis, mental confusion, drunkenness, coordination disorders, disturbed motor response, disturbances of consciousness, tingling/irritation of the skin, irritation of the eye tissue, aspiration pneumonia and abdominal pain.

Chronic symptoms On continuous/ repeated exposure/ contact: Dry skin, rash/inflammation, impairment of the nervous system, tremor, impaired memory, impaired concentration, brain affection, disturbances of heart rate and/or change in the haemogramme/ blood composition

SECTION 5: FIRE FIGHTING MEASURES

Suitable extinguishing media: Preferably: alcohol resistant foam, water spray, BC powder, Polyvalent foam, carbon dioxide/

Unsuitable extinguishing media Container may slop over if solid jet (water/foam) is applied

Special protective precautions and equipment for fire fighters: Wear full protective clothing and self-contained breathing apparatus.

Other advice Keep adjacent containers cool by spraying with water.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see chapter 8 of this Material Safety Data Sheet.

Personal precautions, protective equipment and emergency procedures. : Isolate hazard area and deny entry to unnecessary or unprotected personnel. Stay upwind and keep out of low areas.

Environmental procedures : Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment (of product and fire fighting water) to avoid environmental contamination. Prevent from spreading or entering drains, ditches

or rivers by using sand, earth or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment.
Ventilate contaminated area thoroughly.

Methods and material for containment and cleaning up. : For large liquid spills (>1 drum), transfer by mechanical means such as vacuum truck to salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove all contaminated soil and dispose of safely.
For small liquid spills (<1 drum), transfer by mechanical means to a labelled sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

Additional advice : Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained. The vapor is heavier than air, spreads along the ground and distant ignition is possible. Vapor may form an explosive mixture with air. See Chapter 13 for information on disposal. For guidance on selection of personal protective equipment see chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see chapter 13 of this Material Safety Data Sheet.

SECTION 7: HANDLING AND STORAGE

General precautions Avoid breathing vapors or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. On guidance on selection of personal protective equipment see chapter 8 of this Material Safety Data Sheet. For comprehensive advice on handling, product transfer, storage and tank cleaning refer to the product supplier. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Avoid contact with skin, eyes and clothing.

Precautions for safe handling: Avoid inhaling vapor and/or mists. Avoid contact with skin, eyes and clothing. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. The vapor is heavier than air. Beware of accumulation in pits and confined spaces. Use local exhaust ventilation if there is risk of inhalation of vapors, mists or aerosols. Bulk storage tanks should be diked (bunded). Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapor mixtures can occur. Be aware of handling operations that may give rise to additional hazards that result from the accumulation of static charges. This include but are not limited to pumping (especially turbulent flow), mixing, filtering, splash, filling, cleaning and filling of tanks and containers, sampling, switch loading, gauging, vacuum truck operations, and mechanical movements. These activities may lead to static discharge e.g. spark formation. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (< 1 m/s until fill pipe submerged to twice its diameter, than (< 7 m/s). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations.

Product Transfer Refer to guidance under handling section.

Recommended materials Suitable material: metal, stainless steel carbon steel, aluminium, nickel polypropylene, glass, tin.
Material to avoid: polyethylene.

Incompatible products Strong oxidizers

Incompatible material Direct sunlight. Heat sources. Sources of ignition

Container advice Containers, even those that have been emptied, can contain explosive vapors. Do not cut, drill, grind, weld or perform similar operation on or near containers.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits

Material	Type	ppm	mg/m3
Toluene	TWA	50	191
Toluene	STEL	150	574

Biological Exposure Index (BEI):

No biological limit allocated.

ENGINEERING CONTROLS

- Ventilation:** Provide sufficient ventilation to keep airborne levels below the exposure limits. Where vapours or mists are generated, particularly in enclosed areas, and natural ventilation is inadequate, a flameproof exhaust ventilation system is required. Refer to AS 1940 - The storage and handling of flammable and combustible liquids and AS/NZS 2430.3.1:1997 : Classification of hazardous areas - Examples of area classification - General, for further information concerning ventilation requirements.
- Appropriate Engineering Controls:** The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Use sealed systems as far as possible. Firewater monitors and deluge systems are recommended. Eye washes and showers for emergency use.

PERSONAL PROTECTION

- Hand Protection** Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739, AS/NZS:2161) made from the following materials may provide suitable chemical protection: Longer term protection: Viton. Incidental contact/Splash protection: Nitrile rubber. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.
- Skin Protection:** Wear gloves of impervious material. Final choice of appropriate gloves will vary according to individual circumstances i.e. methods of handling or according to risk assessments undertaken. Reference should be made to AS/NZS 2161.1: Occupational protective gloves - Selection, use and maintenance.
- Eye Protection:** Safety glasses with side shields, goggles or full-face shield as appropriate recommended. Final choice of appropriate eye/face protection will vary according to individual circumstances i.e. methods of handling or engineering controls and according to risk assessments undertaken. Eye protection should conform with Australian/New Zealand Standard AS/NZS 1337 - Eye Protectors for Industrial Applications..
- Respiratory Protection:** If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapors [Type A boiling point > 65°C (149°F)] meeting EN14387. Where respiratory protective equipment is required, use a full-face mask. Where air-filtering respirators are unsuitable (e.g., airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.

- **Body protection:** Chemical resistant gloves/gauntlets, boots, and apron. Where risk of splashing or in spillage clean up, use chemical resistant one-piece overall with integral hood. Wear antistatic and flame retardant clothing.
 - **Smoking & Other Dusts** Smoking must be prohibited in all areas where this product is used - see safety information on flammability.
 - **Thermal Hazards** Not Applicable
- Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Examples of sources of recommended exposure measurement methods are given below or contact the supplier.
- Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapor.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance Colourless liquid
Odour Aromatic
Melting Point Not available.
Solubility Water 0.05g / 100mL, Ethanol complete, ether complete, acetone > 10g / 100mL
Specific Gravity (H₂O=1) at 15°C 865 – 875 kg/m³
pH Value No data available.
Vapour Pressure 102 hPa at 20°C
Vapour Density (air = 1) 3.2
Flash Point 4°C (Abel Setflash)
Self Ignition Temperature 460°C
Flammable Limits LEL No data available
Flammable Limits UEL No data available
Kinetic viscosity 0.69 mm²/s at 20°C
VOC content 100%

SECTION 10: STABILITY AND REACTIVITY

- Chemical Stability:** Stable under normal conditions.
- Incompatible Materials:** Will react violently with (some) halogens, strong oxidizers, increased risk of explosion in presence of some acids.
- Conditions to avoid:** Heat, sparks, flame and build-up of static electricity.
- Hazardous Decomposition Products:** Thermal decomposition may result in the release of toxic and/or irritating fumes including carbon monoxide and carbon dioxide.
- Hazardous Reactions:** Hazardous polymerisation will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

- Basis for assessment:** Information given is based on product testing, and/or similar products, and/or components.
- Likely Routes of exposure:** Inhalation is the primary route of exposure although absorption may occur through skin contact or following accidental ingestion.

Acute Toxicity

Acute Oral Toxicity:	May be harmful if swallowed LD50 > 2000 mg/kg
Acute Dermal Toxicity	Harmful in contact with skin. LD50 >5000 mg/kg
Acute Inhalation Toxicity	Harmful if inhaled. LC50 > 20,0 mg/l
Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/Irritation	Causes serious eye irritation.
Respiratory or skin sensitisation	Not expected to be a skin sensitiser.
Aspiration Hazard	Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.
Germ cell mutagenicity	Not mutagenic.
Carcinogenity	Not expected to be carcinogenic.
Reproductive and environmental toxicity	Suspected of damaging fertility or the unborn child
Specific target organ toxicity	May cause damage to organs through prolonged or repeated exposure.
Toxicity single exposure	Respiratory system
Specific target organ repeated exposure	Central nervous system: repeated exposure affects the nervous system. Effects were seen at high doses only. May cause MDS (Myelodysplasia syndrome)
Additional information	On continuous/ repeated exposure/ contact: Dry skin, skin rash/ inflammation. Impairment of the nervous system, tremor, impaired memory, impaired concentration, brain affection, disturbances of heart rate, change in the haemogramme/blood composition. Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Ecology - general	Classification concerning the environment: Not applicable
Ecology – air	TA-Luft Klasse 5.2.5/l.
Ecology - water	Fouling to shoreline. Ground water pollutant. Toxic to fishes. Toxic to invertebrates. Harmful to algae. Inhibits photosynthesis of algae. Harmful to bacteria. Taste alteration in fishes/aquatic organisms.

Toluene (108-88-3)	
LC50 fishes 1	24 mg/l 96 h; <i>Salmo gairdneri</i> (<i>Oncorhynchus mykiss</i>)
EC50 Daphnia 1	84 mg/l (24 h; <i>Daphnia magna</i> ; Locomotor effect)
LC50 Fish 2	13 mg/l (96 h; <i>Lepomis macrochirus</i>)
EC Daphnia 2	11.5 - 19.6 mg/l (48 h; <i>Daphnia magna</i>)
Threshold limit algae 1	> 400 mg/l (168 h; <i>Scenedesmus quadricauda</i> ; Toxicity test)
Threshold limit algae 2	105 mg/l (192 h; <i>Microcystis aeruginosa</i>)

Persistence and degradability

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Toluene (108-88-3)	
Persistence and degradability	Readily biodegradable in water. Biodegradable in the soil. Low potential for adsorption in soil.
Biochemical oxygen demand (BOD)	2.15 g O ₂ /g substance
Chemical oxygen demand (COD)	2.52 g O ₂ /g substance
ThOD	3.13 g O ₂ /g substance
BOD (% of ThOD)	0.69 % ThOD

Bio accumulative potential

Toluene (108-88-3)	
BCF fish 1	13.2 (Anguilla japonica)
BCF fish 2	90 (72 h; Leuciscus idus)
BC other aquatic organisms 1	380 (24 h; Chlorella sp.; Fresh weight)
BC other aquatic organisms 2	4.2 (Mytilus edulis; Fresh weight)
Log Pow	2.73 (Experimental value; Other; 20 °C, Experimental value; Other; 20 °C)
Bio accumulative potential	Low potential for bioaccumulation (BCF < 500).

Mobility in soil

Surface tension toluene is 0.03 N/m (at 20 °C)

SECTION 13: DIPOSAL CONSIDERATIONS

Dispose of waste according to federal, EPA, state and local regulations. Labels should not be removed from containers until they have been cleaned. Do not cut, puncture or weld on or near containers. Empty containers may contain hazardous residues. Contaminated containers must not be treated as household waste. Containers should be cleaned by appropriate methods and then re-used or disposed of by landfill or incineration as appropriate. Do not incinerate closed containers.

SECTION 14: TRANSPORT INFORMATION

Proper Shipping Name:	Toluene
UN number:	1294
DG Class:	3
Subsidiary Risk 1:	None Allocated
Packaging Group:	II
HAZCHEM code:	3YE
Marine Pollutant:	No
Special Precautions for User:	Refer to incompatibilities in section 7 and stability and reactivity information in section 10.
ADDITIONAL TRANSPORT REQUIREMENTS:	Nil

SECTION 15: REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Chemical inventory status

Listed in AICS, DLS, INV (CN), ENCS (JP), TSCA, EINECS, KECI (KR) and PICCS (PH)

SECTION 16: OTHER INFORMATION

For further information on this product, please contact:

ACB Group (ABN 79 724 186 134)
118 Swann Drive, Derrimut Victoria-3030
Phone: +61 3 93690220
Fax: + 61 3 93690883

ADDITIONAL INFORMATION

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Australian Standards References:

AS 1020	The Control of undesirable static electricity.
AS 1076	Code of Practice for selection, installation and maintenance of electrical apparatus and associated equipment for use in explosive atmospheres (other than mining applications) – Parts 1 to 13.
AS/NZS 1336	Recommended Practices for Occupational Eye Protection
AS/NZS 1715	Selection, Use and Maintenance of Respiratory Protective Devices
AS/NZS 1716	Respiratory Protective Devices
AS 1940	The Storage and Handling of Flammable and Combustible Liquids.
AS 2161	Industrial Safety Gloves and Mittens (excluding electrical and medical gloves)
AS 2380	Electrical equipment for explosive atmospheres – Explosion Protection Techniques (Parts 1 to 9).
AS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules).

Other References:

NOHSC:2011(2003)	National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition, April 2003, National Occupational Health and Safety Commission.
NOHSC; 2012 (1994)	National Code of Practice for the Labeling of Workplace Substances, March 1994, Australian Government Publishing Service, Canberra.
NES	National Occupational Exposure Standards for workplace Atmospheric Contaminants (NES) Australian Safety and Compensation Council, ASCC (Formerly NOHSC) 1995 as amended.
ADG Code 6 th Edition	Australian Dangerous Goods Code 6 th Edition

AUTHORISATION

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END OF MSDS