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| Infosafe No™ | 1CH75 | Issue Date : August 2018 | RE-ISSUED by CHEMSUPP |
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Product Name : **TOLUENE**

Classified as hazardous

1. Identification

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| GHS Product Identifier | TOLUENE | |
| Company Name | CHEM-SUPPLY PTY LTD (ABN 19 008 264 211) | |
| Address | 38 - 50 Bedford Street GILLMAN SA 5013 Australia | |
| Telephone/Fax Number | Tel: (08) 8440-2000 Fax: (08) 8440-2001 | |
| Emergency Contact Address | CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International) | |
| Recommended use of the chemical and restrictions on use | Manufacture of benzene, toluene diisocyanates, benzoic acid, benzyl chloride, benzoyl chloride, phenol, xylene (mixed isomers), plasticizers (e.g. butyl benzoate), sodium benzoate, benzaldehyde, styrene, para-methylstyrene, terephthalic acid, caprolactam, explosives (e.g. trinitrotoluene), vinyltoluene, benzyl salicylate, benzotrithloride, toluenesulfonic acid and toluenesulfonyl chloride; aviation gasoline and high-octane blending stock; solvent for paints and coatings; in inks, gums, and resins; in the leather industry; most oils; rubber; vinyl organosols; pharmaceuticals; and other formulated products using a solvent carrier; as an adhesive solvent in plastic toys and model airplanes; as a paint thinner; and as a diluent and thinner in nitrocellulose lacquers, source of toluenediisocyanates (polyurethane resins), toluene sulfonate (detergents), scintillation counters and laboratory reagent. | |
| Other Names | Name | Product Code |
| | TOLUENE LR | TL014 |
| | TOLUENE AR | TA014 |
| | Methylbenzene | |
| | Methylbenzol | |
| | Phenylmethane | |
| | Toluol | |
| | TOLUENE TG | TT014 |

Other Information

Chem-Supply Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon Chem-Supply Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of Chem-Supply Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

2. Hazard Identification

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| GHS classification of the substance/mixture | Flammable Liquids: Category 2 Specific target organ toxicity - Repeated Exposure Category 2 Skin Corrosion/Irritation: Category 2 Specific target organ toxicity - Single Exposure Category 3 (Central nervous system) Toxic to Reproduction: Category 1B |
| Signal Word (s) | DANGER |
| Hazard Statement (s) | H225 Highly flammable liquid and vapour. H315 Causes skin irritation. H336 May cause drowsiness or dizziness. H360 May damage fertility or the unborn child. H373 May cause damage to organs through prolonged or repeated exposure. |
| Pictogram (s) | Flame, Health hazard, Exclamation mark |





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| Precautionary statement – Prevention | <p>P201 Obtain special instructions before use.</p> <p>P202 Do not handle until all safety precautions have been read and understood.</p> <p>P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.</p> <p>P233 Keep container tightly closed.</p> <p>P240 Ground/bond container and receiving equipment.</p> <p>P241 Use explosion-proof electrical/ventilating/lighting/.../equipment.</p> <p>P242 Use only non-sparking tools.</p> <p>P243 Take precautionary measures against static discharge.</p> <p>P260 Do not breathe dust/fume/gas/mist/vapours/spray.</p> <p>P264 Wash thoroughly after handling.</p> <p>P271 Use only outdoors or in a well-ventilated area.</p> <p>P280 Wear protective gloves/protective clothing/eye protection/face protection.</p> <p>P281 Use personal protective equipment as required.</p> |
| Precautionary statement – Response | <p>P302+P352 IF ON SKIN: Wash with plenty of soap and water.</p> <p>P333+P313 If skin irritation or rash occurs: Get medical advice/attention.</p> <p>P362 Take off contaminated clothing and wash before reuse.</p> <p>P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.</p> <p>P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</p> <p>P312 Call a POISON CENTER or doctor/physician if you feel unwell.</p> <p>P308+P313 IF exposed or concerned: Get medical advice/attention.</p> <p>P370+P378 In case of fire: Use foam, dry chemical, CO2 or water spray for extinction.</p> |
| Precautionary statement – Storage | <p>P403+P233 Store in a well-ventilated place. Keep container tightly closed.</p> <p>P403+P235 Store in a well-ventilated place. Keep cool.</p> <p>P405 Store locked up.</p> |
| Precautionary statement – Disposal | <p>P501 Dispose of contents/container to an approved waste disposal plant.</p> |

3. Composition/information on ingredients

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|------------------|-------------|------------|-------------------|----------------------|--------------------|
| Chemical | Liquid | | | | |
| Characterization | | | | | |
| Ingredients | <u>Name</u> | <u>CAS</u> | <u>Proportion</u> | <u>Hazard Symbol</u> | <u>Risk Phrase</u> |
| | Toluene | 108-88-3 | 100 % | | |

4. First-aid measures

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| Inhalation | If inhaled, remove from contaminated area to fresh air immediately, avoid becoming a casualty. Make patient comfortable, keep warm and at rest until fully recovered. If breathing is difficult (or develops a bluish skin discolouration), supply oxygen by a qualified person. Apply artificial respiration with a respiratory medical device if not breathing. Do not use mouth to mouth resuscitation. Seek medical attention is required. |
| Ingestion | Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek immediate medical advice. |
| Skin | Immediately remove contaminated clothing and wash affected area with water for at least 15 minutes. Ensure contaminated clothing is washed before re-use. Seek immediate medical advice /attention depending on the severity. |
| Eye contact | Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. In all cases of eye contamination it is a sensible precaution to seek medical advice. |
| First Aid Facilities | Eye wash fountains and safety showers should be available for emergency use. |
| Advice to Doctor | Treat symptomatically based on judgement of doctor and individual reactions of the patient. Potential for chemical pneumonitis. Consider: gastric lavage with protected airway, administration of activated charcoal. Potential for cardiac sensitisation, particularly in abuse situations. Causes cardiac sensitization to endogenous catecholamines which may lead to cardiac arrhythmias. Do NOT use adrenergic agents such as epinephrine or pseudoepinephrine. Hypoxia or negative inotropes may enhance these effects. Consider: oxygen therapy. |
| Other Information | For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor. |

5. Fire-fighting measures



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| Hazards from Combustion Products | Irritating and/or toxic gases, including carbon monoxide in case of incomplete combustion, carbon dioxide, reactive hydrocarbons, aldehydes and other organic compounds. |
| Specific Methods | Caution: Use of water spray when fighting fire may be inefficient. Small fire: Use foam, dry chemical, CO2 or water spray. Large fire: Use foam, fog or water spray - Do not use water jets. If safe to do so, move undamaged containers from fire area. Cool containers with flooding quantities of water until well after fire is out. Avoid getting water inside containers. |
| Specific hazards arising from the chemical | HIGHLY FLAMMABLE: Low flashpoint - Will be easily ignited by heat, sparks or flame. Vapours will form explosive mixtures with air. Vapours may travel to source of ignition and flash back. Most vapours are heavier than air and will collect in low or confined areas (drains, basements, tanks). Many liquids are lighter than water. Containers may explode when heated. Fire will produce irritating, poisonous and/or corrosive gases. Vapours from runoff may create explosion hazard. |
| Hazchem Code | 3YE |
| Precautions in connection with Fire | Wear SCBA and fully-encapsulating, gas-tight suit when handling these substances. Structural firefighter's uniform is NOT effective for these materials. |

6. Accidental release measures

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| Spills & Disposal | ELIMINATE all ignition sources (no smoking, flares, sparks or flame) within at least 50m - All equipment used when handling the product must be earthed. Do not touch or walk through spilled material. Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. Vapour-suppressing foam may be used to control vapours - Water spray may be used to knock down or divert vapour clouds. Absorb with earth, sand or other non-combustible material. Use clean, non-sparking tools to collect absorbed material and place it into loosely-covered metal or plastic containers for later disposal. SEEK EXPERT ADVICE ON HANDLING AND DISPOSAL. |
| Personal Precautions | Evacuate the area of all non-essential personnel. Avoid contact with skin, eyes, nose, mouth. |
| Personal Protection | Wear protective clothing specified for normal operations (see Section 8) |
| Environmental Precautions | Prevent contamination of soil and water. |

7. Handling and storage

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| Precautions for Safe Handling | Avoid ingestion or inhalation of gas/fumes/vapour/spray mists. Avoid contact with eyes, skin, and clothing. Avoid exposure of (pregnant) women! Build up of mists or vapours in the atmosphere must be prevented. Keep tank covered and containers tightly sealed when not in use. Open containers cautiously as contents may be under pressure. Use only with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Wear suitable protective clothing. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. It is essential that all who come into contact with this material maintain high standards of personal hygiene ie. Washing hands prior to eating, drinking, smoking or using toilet facilities. Keep away from incompatibles such as oxidizing agents. Keep away from heat and all sources of ignition (sparks and flame) - No smoking. All electrical equipment must be flameproofed. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Take measures to prevent the build up of electrostatic charge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Use non-sparking handtools. Empty containers retain product residue, (liquid and/or vapour), and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. |
| Conditions for safe storage, including any incompatibilities | Store in a segregated and approved, fireproof, diked (bunded) area. Outside or detached storage is preferred. Inside storage should be in a standard flammable liquids storage warehouse, room, or cabinet. Store small containers in suitable flammable liquid storage cabinets when not in use. Larger drums (200l) must be kept in purpose-built stores. Store in tightly closed containers, in a cool, dry, well-ventilated area away from incompatible substances. Store away from aerosols, flammables, oxidizing agents, corrosives, foodstuffs, clothing, heat and sources of ignition (spark or flame). Protect against physical damage, direct sunlight and moisture. Always keep in containers made of the same material as the supply container. Take precautions against static electricity discharges. Use proper grounding procedures. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapours, liquid); observe all warnings and precautions listed for the product. Containers which are opened must be carefully resealed and kept upright to prevent leakage. |



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| Corrosiveness | <p>Inspect regularly for deficiencies such as damage or leaks. Vapours from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a suitable vapour treatment system. The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Have appropriate fire extinguishers available in and near the storage area.</p> <p>Corrosivity to Metals: Not corrosive to metals, such as stainless steels (330 and 400 series), aluminum alloys (e.g. type 3003), carbon steel (e.g. types 1010 and 1020); cast iron, nickel and nickel-base alloys (Monel, Hastelloy, Inconel and Incoloy), copper and its alloys, brass and bronze, copper-nickel, tantalum, titanium and zirconium.</p> <p>Corrosivity to Non-Metals: Attacks plastics, such as polyvinyl chloride (PVC), chlorinated polyvinyl chloride (CPVC), polypropylene, acrylonitrile-butadiene-styrene (ABS), styrene-acrylonitrile (SAN), polyethersulfone, polyurethane (rigid), polybutylene terephthalate, polysulfone, high-density polyethylene (HDPE), ultra high molecular weight polyethylene (UHMWPE), crosslinked polyethylene (XLPE), polyphenylene oxide (Noryl), thermoset polyester, polystyrene and ethylene vinyl acetate (EVA); elastomers, such as nitrile rubber (Nitrile Buna N; NBR), ethylene propylene (EP), ethylene propylene diene (EPDM), ethylene propylene terpolymer (EPT), chloroprene, styrene-butadiene (SBR), polyurethane, butyl rubber (isobutylene isoprene), natural rubber, isoprene, neoprene, flexible polyvinyl chloride (PVC), chlorosulfonyl polyethylene (Hypalon), low density polyethylene (LDPE), silicone, ethylene vinyl acetate (EVA) and Fluoraz; and coatings, such as coal tar epoxy and epoxy chemical resistant. Does not attack plastics, such as Teflon and other fluorocarbons, like ethylene tetrafluoroethylene (EFTE; Tefzel), ethylene chlorotrifluoroethylene (ECTFE; Halar) and polyvinylidene fluoride (PVDF; Kynar), polyvinylidene chloride, nylon, polyetherether ketone (Peek), polyethylene terephthalate and thermoset epoxy; elastomers, such as Viton A and other fluorocarbons, like Teflon, Chemraz and Kalrez; and coatings, such as phenolic, urethanes and vinyls.</p> |
| Storage Regulations | Refer Australian Standard AS 1940-2004 'The storage and handling of flammable and combustible liquids'. |
| Storage Temperatures | Store at room temperature (15 to 25 °C recommended). |
| Product Transfer | Keep containers closed when not in use. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1 m/sec until fill pipe submerged to twice its diameter, then ≤ 7 m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. |
| Recommended Materials | For containers, or container linings use mild steel, stainless steel. |
| Unsuitable Materials | Natural, butyl, neoprene or nitrile rubbers. |

8. Exposure controls/personal protection

| Occupational exposure limit values | Name | STEL | | TWA | | Footnote |
|---|---|-------------------|-----|-------------------|-----|----------|
| | | mg/m ³ | ppm | mg/m ³ | ppm | |
| | Toluene | 574 | 150 | 191 | 50 | |
| Other Exposure Information | <p>These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.</p> <p>A time weighted average (TWA) has been established for Toluene (Worksafe Aust) of 191 mg/m³, (50 ppm). The corresponding STEL level is 574 mg/m³, (150 ppm). The STEL (Short Term Exposure Limit) is an exposure value that should not be exceeded for more than 15 minutes and should not be repeated for more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.</p> <p>Note: Absorption through skin may be a significant source of exposure.</p> | | | | | |
| Appropriate engineering controls | Provide sufficient ventilation to ensure that the working environment is below the TWA (time weighted average). Where vapours or mists are generated, particularly in enclosed areas, and natural ventilation is inadequate, a flame proof exhaust ventilation system is required. Refer to AS 1940-The storage and handling of flammable and combustible liquids and AS 2430-Explosive gas atmospheres for further information concerning ventilation requirements. | | | | | |
| Respiratory Protection | Where ventilation is not adequate, respiratory protection may be required. Avoid breathing vapours or mists. Select and use respirators in accordance with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. When mists or vapours exceed the exposure standards then the use of the following is | | | | | |



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| Eye Protection | recommended: Approved respirator with organic vapour and dust/mist filters. Filter capacity and respirator type depends on exposure levels. |
| Hand Protection | The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336. |
| Personal Protective Equipment | Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Excellent: Unsupported Viton. Good: Supported Polyvinyl Alcohol (PVA) gloves. Poor: NR latex, vinyl, nitrile, neoprene gloves. |
| Footwear | Personal protective equipment should not solely be relied upon to control risk and should only be used when all other reasonably practicable control measures do not eliminate or sufficiently minimise risk. Guidance in selecting personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards. |
| Body Protection | Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use. |
| Hygiene Measures | Flame retardant antistatic protective clothing. Clean clothing or protective clothing should be worn, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals. |
| | Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using. |

9. Physical and chemical properties

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| Form | Liquid |
| Appearance | Clear, colourless volatile liquid. |
| Odour | Sweet, pleasant, pungent, benzene-like odour. |
| Melting Point | -95 to -93 °C. |
| Boiling Point | 110-111 °C. |
| Solubility in Water | Sparingly soluble in fresh water (53 mg/100 mL at 25 °C); slightly soluble in sea water (38 mg/100 mL at 25 °C). |
| Solubility in Organic Solvents | Soluble in all proportions in most organic solvents such as ethanol, acetone, diethyl ether, benzene, chloroform, glacial acetic acid and carbon disulfide. |
| Specific Gravity | 0.871 at 15 °C; 0.867 at 20 °C; 0.862 at 25 °C. |
| Vapour Pressure | 2.93 kPa (22 mm Hg) at 20 °C; 3.79 kPa (28.4 mm Hg) at 25 °C. |
| Vapour Density (Air=1) | 3.18. |
| Evaporation Rate | 2.0 (n-butyl acetate = 1); 6.1 (diethyl ether = 1). |
| Odour Threshold | 1.6 ppm. |
| Viscosity | 0.778 cP @ 0 °C; 0.560 cP @ 25 °C; 0.424 cP @ 50 °C; 0.333 cP @ 75 °C; 0.270 cP @ 100 °C. |
| Volatile Component | 100 %vol @ 21 °C |
| Partition Coefficient: n-octanol/water | Log P (o/w): 2.65 (experimental) |
| Surface Tension | 29.71 dyne/cm @ 10 °C; 28.93 dyne/cm @ 20 °C; 24.96 dyne/cm @ 50 °C; 21.98 dyne/cm @ 75 °C; 19.01 dyne/cm @ 100 °C. |
| Flash Point | 4 °C (CC); 16 °C (OC). |
| Flammability | HIGHLY FLAMMABLE. Keep away from heat, sparks or naked flames. Use flameproof equipment and fittings to prevent flammability risk. Electrically link and ground metal containers for transfer of the product to prevent accumulation of static electricity. Ensure adequate ventilation to prevent an explosive vapour-air mixture. Vapours will travel considerable distances to sources of ignition. |
| Auto-Ignition Temperature | 480 °C; 552 °C. |
| Flammable Limits - Lower | 1.1 vol%. |
| Flammable Limits - Upper | 8 vol%. |
| Explosion Properties | Above flash point, vapour-air mixtures are explosive within flammable limits noted above. The vapour is heavier than air, spreads along the ground and distant ignition and flash back is possible. This liquid floats on water and may travel to a source of ignition and spread fire. Vapour can accumulate in low or confined spaces resulting in a flammability and toxicity hazard. Closed containers may rupture violently |



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| | and suddenly release large amounts of product when exposed to fire or excessive heat for a sufficient period of time. Reacts violently with strong oxidants causing fire and explosion hazard. Toluene forms explosive reaction with 1,3-dichloro-5,5-dimethyl-2,4-imidazolididione; dinitrogen tetraoxide; concentrated nitric acid, sulfuric acid + nitric acid; N ₂ O ₄ ; AgClO ₄ ; BrF ₃ ; Uranium hexafluoride; sulfur dichloride. Also forms an explosive mixture with tetranitromethane. |
| Molecular Weight | 92.14. |
| Kinematic Viscosity | 0.676 mm ² /s (0.676 centistokes) at 20 °C; 0.64 mm ² /s (0.64 centistokes) at 25 °C (calculated). |
| Dynamic Viscosity | 0.586 mPa.s (0.586 centipoises) at 20 °C; 0.552 mPa.s (0.552 centipoises) at 25 °C. |
| Saturated Vapour Concentration | Approx. 29000 ppm (2.9%) at 20 °C; 37400 ppm (3.74%) at 25 °C (calculated). |
| Other Information | Conversion Factor: 1 ppm = 3.76 mg/m ³ ; 1 mg/m ³ = 0.27 ppm at 25 °C (calculated). Refractive index: 1.4967 @ 20 °C/D. Critical Temperature: 318.6°C. Critical Pressure: 4.108 MPa. Henry's Law Constant: 6.73 x 10 ² Pa.m ³ /mol (cited as 6.64 x 10 ⁽⁻³⁾ atm.m ³ /mol) at 25 °C. Dielectric constant: 2.4. Flame speed: 37 cm/sec. Minimum Ignition Energy: 0.24 millijoules at 4.1%. |

10. Stability and reactivity

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| Chemical Stability | Stable under normal temperatures, pressures and conditions of use and storage. |
| Conditions to Avoid | Heat, ignition sources (electrostatic discharge, flames, sparks), direct sunlight, vapour accumulation in confined spaces and incompatible materials. |
| Incompatible Materials | Nitric acid (especially in the presence of sulfuric acid), powdered potassium chlorate, strong oxidizing agents (e.g. nitric acid and bromine trifluoride), nitrogen tetroxide, nitrogen oxides, organic nitro compounds, tetranitromethane, silver perchlorate, sulfur dichloride (especially in the presence of iron or ferric chloride), sulfuric acid, uranium hexafluoride, halogens, inter-halogen compounds, sulfur/heat, boron trifluoride, sodium difluoride, ethanols, some forms of plastics, rubber, coatings. Strong oxidising agents, strong acids and sulfur. |
| Hazardous Decomposition Products | Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide, reactive hydrocarbons, aldehydes and other organic compounds may be evolved when this material undergoes combustion or thermal or oxidative degradation. |
| Possibility of hazardous reactions | Reaction with strong oxidizing agents (e.g. nitric acid and bromine trifluoride) has an increased risk of fire and explosion. Reaction with nitric acid is extremely violent, especially in the presence of sulfuric acid. Inadequate control may lead to a runaway or explosive reaction. Mixture with nitrogen tetroxide explodes. Reacts chemically with nitrogen oxides, or halogens to form nitrotoluene, nitrobenzene, and nitrophenol and halogenated products, respectively. Reaction with tetranitromethane forms sensitive, highly explosive mixtures. Mixtures of powdered potassium chlorate and toluene explode as violently as nitro compound explosives. Reaction with silver perchlorate forms explosive complexes. Reaction with sulfur dichloride is violent, and is greatly accelerated in the presence of iron or ferric chloride. Reaction with sulfuric acid generates a great amount of heat (exothermic). Reaction with uranium hexafluoride is very vigorous. Frozen bromine trifluoride reacts violently with toluene at -80 °C. Explosive reaction with 1,3-dichloro-5,5-dimethyl-2,4-imidazolididione. |
| Hazardous Polymerization | Will not occur. |

11. Toxicological Information

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| Acute Toxicity - Dermal | The chemical is of low acute toxicity from dermal exposure with an LD ₅₀ in rabbits of 12125 mg/kg bw (Registry of Toxic Effects of Chemical Substances). |
| Acute Toxicity - Inhalation | The chemical is of low acute toxicity from inhalation exposure, with LC ₅₀ values in the range of 20000–26000 mg/m ³ for mice, and approximately 45000 mg/m ³ for rats (IPCS, 1986). However, the chemical is known to cause central nervous system (CNS) toxicity immediately after exposure to high concentrations of the chemical by inhalation or ingestion (ATSDR, 2000; IPCS, 1986). |
| Ingestion | Harmful: may cause lung damage if swallowed. Ingestion of this product may cause irritation of the digestive tract with nausea, vomiting and pain. May cause severe central nervous system (CNS) depression and death. Systemic effects after the absorption of large quantities may include CNS disorders, inebriation, spasms, unconsciousness, respiratory arrest/paralysis, pneumonia, cardiovascular failure and death. Toluene is readily absorbed following ingestion producing symptoms similar to those described for inhalation above. Aspiration hazard if ingested/vomited - can cause severe |



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| Inhalation | <p>lung irritation, damage to the lung tissues, chemical pneumonitis and death. Ingestion of approximately 60 mL (2 oz) toluene was fatal to an adult within 30 minutes in one reported case, probably due to depression of the central nervous system, but possibly due to aspiration effects. Ingestion is not a typical route of occupational exposure.</p> <p>Harmful if inhaled. Inhalation exposure to approximately 50 ppm, may cause slight drowsiness and headache. Inhalation of vapours or mists between 50 and 100 ppm may cause irritation of the nose, throat and respiratory system, coughing, wheezing, nasal discharge, headache, and absorption. Inhalation exposure to about 100 ppm may cause fatigue and dizziness; over 200 ppm may cause symptoms similar to drunkenness, numbness, and mild nausea; and over 500 ppm may cause mental confusion and incoordination. Inhalation of high concentrations (>200 ppm) of toluene are clearly associated with CNS encephalopathy, headache, depression, lassitude (weakness, exhaustion), impaired coordination, transient memory loss, and impaired reaction time. Other symptoms may include nausea, dizziness, tremors, restlessness, lightheadedness, exhilaration, confusion, hallucinations, ataxia and muscle contraction or spasticity. Inhalation of high concentration of vapour may also affect the cardiovascular system (rapid heart beat, heart palpitations, increased or decreased blood pressure, dysrhythmia), respiration (acute pulmonary oedema, respiratory depression, apnea, asphyxia), cause vision disturbances and dilated pupils, and cause loss of appetite. Higher concentrations (estimated at higher than 10000 ppm) can result in unconsciousness and death. Most serious incidences of exposure have occurred when the vapour has accumulated in confined spaces. Peculiar skin sensations (e. g. pins and needles) or numbness may be produced. Inhalation has given rise to the development of inflammatory and ulcerous lesions of the penis, prepuce, and scrotum in animals. Liver and kidney effects, including reversible kidney failure, as well as heart disturbances, may occur with severe exposure.</p> |
| Skin | Causes mild to moderate skin irritation. Symptoms may include redness and itchiness. Absorption through the skin may be significant, but harmful effects may be limited. Repeated or prolonged skin contact may lead to dermatitis (dry, cracked, red skin). Not expected to cause an allergic skin reaction. |
| Eye | Causes mild to moderate eye irritation. Very short exposure (3-5 minutes) to the vapour can cause slight eye irritation at 300 ppm. Longer exposures (6-7 hours) to 100 or 150 ppm also causes slight irritation. Symptoms may include redness, tearing, burning sensation, stinging and blurred vision. Splash contact with eyes also causes conjunctivitis, blepharospasm, corneal oedema, corneal abrasions. This usually resolves in 2 days. |
| Skin Sensitisation | Toluene is not a skin sensitizer. Despite widespread use, no reports of skin sensitization in humans were located. A negative result was obtained in a well-conducted but unconfirmed animal test. |
| Carcinogenicity | Toluene [108-88-3] is evaluated in the IARC Monographs (Vol. 47, Vol. 71; 1999) as Group 3: Not classifiable as to carcinogenicity to humans. |
| Reproductive Toxicity | The chemical is classified as hazardous with hazard category 'Reproductive toxicity Category 1A' and hazard statement 'May damage fertility or the unborn child' (H360) in the Hazardous Chemical Information System (HCIS) (Safe Work Australia). In humans, the chemical has been shown to cause congenital defects in infants born to mothers who were exposed to high doses during pregnancy. Long-term exposure in humans at lower doses produced no effects on the fertility of male workers exposed to the chemical, but female workers showed significantly reduced fertility (US EPA, 2005). |
| STOT-single exposure | The available information support classification as hazardous with hazard category 'Specific target organ toxicity (single exposure) Category 3' and hazard statement 'May cause drowsiness or dizziness' (H336) in the Hazardous Chemical Information System (HCIS) (Safe Work Australia). |
| STOT-repeated exposure | The chemical is classified as hazardous with hazard category 'Specific target organ toxicity (repeated exposure) Category 2 and hazard statement 'May cause damage to organs through prolonged or repeated exposure' (H373) for repeat dose inhalation toxicity in the Hazardous Chemical Information System (HCIS) (Safe Work Australia). |
| Chronic Effects | Harmful: danger of serious damage to health by prolonged exposure through inhalation. Prolonged or repeated exposure via inhalation may cause liver damage/failure, kidney damage/failure (with haematuria, proteinuria, oliguria, renal tubular acidosis), brain damage, weight loss, central nervous system (inconclusive evidence) and cardiovascular symptoms similar to that of acute inhalation and ingestion as well as blood (pigmented or nucleated red blood cells (inconclusive evidence - may be confounded by benzene exposure), changes in white blood cell count), bone marrow changes (inconclusive evidence - may be confounded by benzene exposure), electrolyte imbalances (hypokalemia, hypophosphatemia), severe, muscle weakness and rhabdomyolysis. Kidney and liver effects are not expected to occur unless exposures are very high. There is weak evidence that toluene causes immunotoxicity. Long-term exposure to very high concentrations of toluene and noise has produced hearing loss in some studies, but firm conclusions cannot be drawn based on the limited information available. Repeated or prolonged exposure to toluene may cause dermatitis (dry, itchy, |



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Classified as hazardous

cracked, red skin) because of its defatting action. Exposure to very high concentrations of similar materials has been associated with irregular heart rhythms and cardiac arrest. The evidence is inconclusive as to whether long-term exposure to toluene results in a persistent impairment of colour vision.

Mutagenicity There is insufficient information available to conclude that toluene is mutagenic.

Skin The chemical is classified as hazardous with hazard category 'Skin irritation Category 2' and hazard statement 'Causes skin irritation' (H315) in the Hazardous Chemical Information System (HCIS) (Safe Work Australia). The data available support this classification.

corrosion/irritation The chemical is a slight to moderate skin irritant in rabbits and guinea pigs (IPCS, 1986).

Other Information NICNAS: Benzene, methyl-: Human health tier II assessment, CAS Number: 108-88-3

12. Ecological information

Ecotoxicity Damage of aquatic organisms. Toxic effect on fish and plankton. Change in the flavour characteristics of fish protein.

Persistence and degradability Readily biogradability.

Mobility Distribution: log P(o/w): 2.65 (experimentally).

Bioaccumulative Potential Bioconcentration factor: 90.

Environmental Protection Do not allow to enter waters, waste water, or soil!

Acute Toxicity - Fish P. promelas LC50: 5.44 mg/l / 7d

Acute Toxicity - Daphnia Daphnia magna EC50: 6 mg/l /48h.

Acute Toxicity - Algae Selenastrum capricornutum IC50: 12 mg/l /72h.

13. Disposal considerations

Disposal Considerations Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and disposed of according to relevant local, state and federal government regulations.

14. Transport information

Transport Information Dangerous Goods of Class 3 Flammable Liquids, are incompatible in a placard load with any of the following: - Class 1, Class 2.1, if both the Class 3 and Class 2.1, dangerous goods are in bulk, Class 2.3, Class 4.2, Class 5, Class 6, if the Class 3 dangerous goods are nitromethane and Class 7.

U.N. Number 1294

UN proper shipping name TOLUENE

Transport hazard class(es) 3

Hazchem Code 3YE

Packing Group II

EPG Number 3A1

IERG Number 16

15. Regulatory information

Regulatory Information Listed in the Australian Inventory of Chemical Substances (AICS). Not listed under WHS Regulation 2011, Schedule 10 - Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.

Poisons Schedule S6

16. Other Information

Literature References 'Standard for the Uniform Scheduling of Medicines and Poisons .', Commonwealth of Australia. Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons, Inc., NY, 1997.

National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.', 2007.

Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous



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Product Name : **TOLUENE**

Classified as hazardous

Chemicals', 2011.
Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide',
Standards Australia/Standards New Zealand, 2010.
Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'.
Safe Work Australia, 'Hazardous Substances Information System, 2005'.
Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances
(2011)'.
Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational
Environment [NOHSC:1003(1995) 3rd Edition]'.

**Contact
Person/Point**

Paul McCarthy Ph. (08) 8440 2000 **DISCLAIMER STATEMENT:**
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**Empirical Formula &
Structural Formula**

Empirical Formula: C7-H8.
Structural Formula: C6H5-CH3.
...End Of MSDS...

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