

## Safety Data Sheet TOLUENE

SDS no. ZFUWRRGK • Version 1.0 • Date of issue: 2023-08-02

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### SECTION 1: Identification

#### GHS Product identifier

Product name TOLUENE

#### Other means of identification

Methylbenzene  
Methylbenzol  
Phenylmethane  
Toluol

#### 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, benzotrichloride, 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.

#### Supplier's details

Name ChemSupply Australia Pty Ltd  
Address 38-50 Bedford Street  
5013 Gillman South Australia  
Australia  
  
Telephone 08 8440 2000  
email [www.chemsupply.com.au](http://www.chemsupply.com.au)

#### Emergency phone number

CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)

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### SECTION 2: Hazard identification

#### General hazard statement

Classified as dangerous goods according to the Australian Dangerous Goods Code (ADG).

Classified as Hazardous according to the Globally Harmonised System of classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

**Classification of the substance or mixture**

**GHS classification in accordance with: UN GHS revision 7**

- Aspiration hazard, Cat. 1
- Flammable liquids, Cat. 2
- Toxic to reproduction, Cat. 1
- Skin corrosion/irritation, Cat. 2
- Specific target organ toxicity following repeated exposure, Cat. 2
- Specific target organ toxicity following single exposure, Cat. 3

**GHS label elements, including precautionary statements**

**Pictograms**



**Signal word**

**Danger**

**Hazard statement(s)**

H225	Highly flammable liquid and vapor
H304	May be fatal if swallowed and enters airways
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

**Precautionary statement(s)**

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof [electrical/ventilating/lighting/...] equipment.
P242	Use non-sparking tools.
P243	Take action to prevent static discharges.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor/physician
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312	Call a POISON CENTER/doctor/physician if you feel unwell.
P331	Do NOT induce vomiting.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P370+P378	In case of fire: Use agents recommended in Section 5 of SDS for extinction
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P501	Dispose of contents/container to an approved waste disposal facility

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**SECTION 3: Composition/information on ingredients**

**Mixtures**

Molecular weight: 92.14

**Components**

Component	CAS no.	Concentration
<b>Toluene (EC no.: 203-625-9; Index no.: 601-021-00-3)</b>	<b>108-88-3</b>	<b>100 % (weight)</b>
CLASSIFICATIONS: Flammable liquids, Cat. 2; Toxic to reproduction, Cat. 2; Aspiration hazard, Cat. 1; Specific target organ toxicity following single exposure, Cat. 3; Specific target organ toxicity following repeated exposure, Cat. 2; Skin corrosion/irritation, Cat. 2. HAZARDS: H225 - Highly flammable liquid and vapor; H304 - May be fatal if swallowed and enters airways; H315 - Causes skin irritation; H336 - May cause drowsiness or dizziness; H361d - ; H373 - May cause damage to organs [organs] through prolonged or repeated exposure [route].		

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**SECTION 4: First-aid measures**

**Description of necessary first-aid measures**

General advice	Advice to Doctor: 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.
If inhaled	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.
In case of skin contact	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.
In case of 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.
If swallowed	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek immediate medical advice.

**Most important symptoms/effects, acute and delayed**

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

**Indication of immediate medical attention and special treatment needed, if necessary**

For advice in an emergency, contact a Poisons Information Centre (Phone Australia 131 126) or a doctor at once.

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**SECTION 5: Fire-fighting measures**

**Suitable extinguishing media**

Caution: Use of water spray when fighting fire may be inefficient.

Small fire: Use foam, dry chemical, CO<sub>2</sub> 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**

Irritating and/or toxic gases, including carbon monoxide in case of incomplete combustion, carbon dioxide, reactive hydrocarbons, aldehydes and other organic compounds.

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.

**Special protective actions for fire-fighters**

Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA) operated in positive pressure mode. Fight fire from safe location.

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**SECTION 6: Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. For personal protection see section 8.

**Methods and materials for containment and cleaning up**

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.

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**SECTION 7: Handling and storage**

**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. 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.

**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.

**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.

**Product Transfer:** Keep containers closed when not in use. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge ( $\leq 1$  m/sec until fill pipe submerged to twice its diameter, then  $\leq 7$  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.

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## **SECTION 8: Exposure controls/personal protection**

### **Appropriate engineering controls**

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

### **Individual protection measures, such as personal protective equipment (PPE)**

#### **Eye/face 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.

#### **Skin protection**

Clean impervious clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

**Hand Protection:** Ensure hand protection complies with AS 2161, Occupational protective gloves - Selection, use and maintenance.

#### **Body protection**

Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

**Respiratory protection**

If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/ mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements. Reference should be made to Australian Standards AS/ NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

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**SECTION 9: Physical and chemical properties**

**Basic physical and chemical properties**

Physical state	Liquid
Appearance	Clear, colourless volatile liquid.
Color	Colourless
Odor	Sweet, pleasant, pungent, benzene-like odour.
Odor threshold	1.6 ppm.
Melting point/freezing point	-95 to -93 °C.
Boiling point or initial boiling point and boiling range	110-111 °C.
Flammability	No data available.
Lower and upper explosion limit/flammability limit	Flammable Limits - Lower: 1.1 vol%. Flammable Limits - Upper: 8 vol%.
Flash point	4 °C (CC); 16 °C (OC).
Explosive 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 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 tetroxide; concentrated nitric acid, sulfuric acid + nitric acid; N <sub>2</sub> O <sub>4</sub> ; AgClO <sub>4</sub> ; BrF <sub>3</sub> ; Uranium hexafluoride; sulfur dichloride. Also forms an explosive mixture with tetranitromethane.
Auto-ignition temperature	480 °C; 552 °C.
Decomposition temperature	No data available.
Oxidizing properties	No data available.
pH	No data available.
Kinematic viscosity	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. [87] Kinematic Viscosity: 0.676 mm <sup>2</sup> /s (0.676 centistokes) at 20 °C; 0.64 mm <sup>2</sup> /s (0.64 centistokes) at 25 °C (calculated). [88] Dynamic Viscosity: 0.586 mPa.s (0.586 centipoises) at 20 °C; 0.552 mPa.s (0.552 centipoises) at 25 °C.
Solubility	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.
Partition coefficient n-octanol/water (log value)	Log P (o/w): 2.65 (experimental)

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Vapor pressure	2.93 kPa (22 mm Hg) at 20 °C; 3.79 kPa (28.4 mm Hg) at 25 °C.
Evaporation rate	2.0 (n-butyl acetate = 1); 6.1 (diethyl ether = 1).
Density and/or relative density	Specific Gravity: 0.871 at 15 °C; 0.867 at 20 °C; 0.862 at 25 °C.
Relative vapor density	3.18.
Particle characteristics	No data available.

#### Supplemental information regarding physical hazard classes

[AN] 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.

#### Further safety characteristics (supplemental)

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<sup>3</sup>; 1 mg/m<sup>3</sup> = 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<sup>2</sup> Pa.m<sup>3</sup>/mol (cited as 6.64 x 10(-3) atm.m<sup>3</sup>/mol) at 25 °C.

Dielectric constant: 2.4.

Flame speed: 37 cm/sec.

Minimum Ignition Energy: 0.24 millijoules at 4.1%.

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## SECTION 10: Stability and reactivity

### Reactivity

Stable under normal conditions of storage and handling.

Risk of ignition. Vapours may form explosive mixtures with air

### Chemical stability

Stable under normal temperatures, pressures and conditions of use and storage.

### 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.

### 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.

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## **SECTION 11: Toxicological information**

### **Information on toxicological effects**

#### **Acute toxicity**

Inhalation: The chemical is of low acute toxicity from inhalation exposure, with LC50 values in the range of 20000–26000 mg/m<sup>3</sup> for mice, and approximately 45000 mg/m<sup>3</sup> 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).

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 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.

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.

#### **Skin corrosion/irritation**

Acute Toxicity - Dermal: The chemical is of low acute toxicity from dermal exposure with an LD50 in rabbits of 12125 mg/kg bw (Registry of Toxic Effects of Chemical Substances).

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.

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.

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

#### **Serious eye damage/irritation**



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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.

#### Respiratory or skin sensitization

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.

#### Germ cell mutagenicity

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

#### 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).

#### Specific target organ toxicity (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).

#### Specific target organ toxicity (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).

#### Aspiration hazard

May be fatal if swallowed and enters airways.

#### Additional information

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, 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.

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

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## SECTION 12: Ecological information

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### Toxicity

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

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

[8Y] Acute Toxicity - Daphnia: Daphnia magna EC50: 6 mg/l /48h.

[8Z] Acute Toxicity - Algae: Selenastrum capricornutum IC50: 12 mg/l /72h.

### Persistence and degradability

Readily biogradability.

### Bioaccumulative potential

Bioconcentration factor: 90.

### Mobility in soil

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

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## SECTION 13: Disposal considerations

### Disposal methods

#### Product disposal

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers.

#### Sewage disposal

Bioconcentration factor: 90.

#### Other disposal recommendations

Do not discharge this material into waterways, drains and sewers.

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## SECTION 14: Transport information

### ADG (Road and Rail)

UN Number: 1294

Class: 3

Packing Group: II

Proper Shipping Name: TOLUENE

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

### Hazchem emergency action code (EAC)

3YE

### IMDG

UN Number: 1294

Class: 3

Packing Group: II

EMS Number:

Proper Shipping Name: TOLUENE

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### IATA

UN Number: 1294

Class: 3

Packing Group: II

Proper Shipping Name: TOLUENE

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## SECTION 15: Regulatory information

### Safety, health and environmental regulations specific for the product in question

#### Australia SUSMP

Poison Schedule: S6

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## SECTION 16: Other information

### Further information/disclaimer

ChemSupply Australia 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 ChemSupply Australia 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 ChemSupply Australia 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.

### Preparation information

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Standard for the Uniform Scheduling of Medicines and Poisons, Commonwealth of Australia

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

Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals', July 2020.

Safe Work Australia, 'National Guide for Classifying Hazardous Chemicals', July 2020.

Safe Work Australia, Workplace Exposure Standards for Airborne Contaminants, December 2019

Safe Work Australia, Hazardous Chemical Information System (HCIS), [hcis.safeworkaustralia.gov.au](http://hcis.safeworkaustralia.gov.au)

IATA, Dangerous Goods Regulations (DGR)

IMO, International Maritime Dangerous Goods Code (IMDG)