

**Section-1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE  
AND OF THE COMPANY/UNDERTAKING**

**1.1 Identification of the substance/mixture:**

**Commercial name:** TOLUENE

**Chemical name:** TOLUENE C<sub>7</sub>H<sub>8</sub>

**Synonyms:** Benzene methyl, Methacide, Toluole, Methyl benzol, Toluene.

**1.2 Use of the substance /mixture:**

For Manufacturing of benzoic acid, benzaldehyde, explosives, dyes, and many other organic compounds; as a solvent for paints, lacquers, gums, resins, in the extraction of various principles from plants, and as gasoline additive.

**1.3 MANUFACTURER & SUPPLIER: Reliance Industries Limited**

**Emergency Coordination Centre contact details:**

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SSM: Site Shift Manager

**Section 2 – HAZARD IDENTIFICATION**

**2.1 Classification of the substance/mixture: Hazard class and category code.**

**GHS Category:**

<b>Health</b>	<b>Environmental</b>	<b>Physical</b>
Aspiration toxicity category 1 Skin irritation: Category 2 Reproductive/Developmental – Category 2 Specific Target Organ Toxicity (RE) 2	Aquatic Toxicity – Category 1	Flammable – Category 2 Flammable liquid

NA: Not available, RE: Repeated Exposure.

**GHS Category table for reference:**

Study/hazard statement	Category 1	Category 2	Category 3	Category 4	Category 5
Acute Oral LD50	≤ 5 mg/kg Fatal if swallowed	> 5 ≤ 50 mg/kg Fatal if swallowed	> 50 ≤ 300 mg/kg Toxic if swallowed	> 300 ≤ 2000 mg/kg Harmful if swallowed	> 2000 ≤ 5000 mg/kg May be harmful if swallowed
Acute Dermal LD50	≤ 50 mg/kg Fatal in contact with skin	> 50 ≤ 200 mg/kg Fatal in contact with skin	> 200 ≤ 1000 mg/kg Toxic in contact with skin	> 1000 ≤ 2000 mg/kg Harmful in contact with skin	> 2000 ≤ 5000 mg/kg May be harmful in contact with skin
Acute Inhalation Dust LC50 Gases LC50 Vapours LC50	≤ 0.05 mg/L ≤ 100 ppm/V ≤ 0.5 mg/L Fatal if inhaled	> 0.05 ≤ 0.5 mg/L > 100 ≤ 500 ppm/V > 0.5 ≤ 2.0 mg/L Fatal if inhaled	> 0.5 ≤ 1.0 mg/L > 500 ≤ 2500 ppm/V > 2.0 ≤ 10 mg/L Toxic if inhaled	> 1.0 ≤ 5 mg/L > 2500 ≤ 20000 ppm/V > 10 ≤ 20 mg/L Harmful if inhaled	See footnote below this table
Flammable liquids	Flash point < 23 degrees C and initial boiling point ≤ 35 degrees C. Extremely flammable liquid and vapour	Flash point < 23 degrees C and initial boiling point > 35 degrees C. Highly flammable liquid and vapour	Flash point ≥ 23 degrees C ≤ 60 degrees C. Flammable liquid and vapour	Flash point > 60 degrees C ≤ 93 degrees C. Combustible liquid	Not Applicable

Note: Gases concentration are expressed in parts per million per volume (ppmV).

NOTE 1: Category 5 is for mixtures which are of relatively low acute toxicity but which under certain circumstances may pose a hazard to vulnerable populations. These mixtures are anticipated to have an oral or dermal LD50 value in the range of 2000-5000 mg/kg bodyweight or equivalent dose for other routes of exposure. In light of animal welfare considerations, testing in animals in Category 5 ranges is discouraged and should only be considered when there is a strong likelihood that results of such testing would have a direct relevance for protecting human health.

NOTE 2: These values are designed to be used in the calculation of the ATE for classification of a mixture based on its ingredients and do not represent test results. The values are conservatively set at the lower end of the range of Categories 1 and 2, and at a point approximately 1/10th from the lower end of the range for Categories 3 – 5.

**GHS Category table for reference: Continued**

Study/hazard statement	Category 1	Category 2	Category 3
Eye Irritation	Effects on the cornea, iris or conjunctiva that are not expected to reverse or that have not fully reversed within 21 days. Causes severe eye damage.	2A: Effects on the cornea, iris or conjunctiva that fully reverse within 21 days. Causes severe eye irritation. 2B: Effects on the cornea, iris or conjunctiva that fully reverse within 7 days. Causes eye irritation.	Not applicable
Skin Irritation	Destruction of skin tissue, with sub categorization based on exposure of up to 3 minutes (A), 1 hour (B), or 4 hours (C). Causes severe skin burns and eye damage.	Mean value of ≥ 2.3 > 4.0 for erythema / eschar or edema in at least 2 of 3 tested animals from gradings at 24, 48, and 72 hours (or on 3 consecutive days after onset if reactions are delayed); inflammation that persists to end of the (normally 14-day) observation period. Causes skin irritation.	Mean value of ≥ 1.5 < 2.3 for erythema / eschar or edema in at least 2 of 3 tested animals from gradings at 24, 48, and 72 hours (or on 3 consecutive days after onset if reactions are delayed). Causes mild skin irritation.
Environment: Acute Toxicity Category	96 hr LC50 (fish) ≤ 1 mg/L 48 hr EC50 (crustacea) ≤ 1 mg/L, 72/96 hr ErC50 (aquatic plants) ≤ 1 mg/L Very toxic to aquatic life	96 hr LC50 (fish) > 1 ≤ 10 mg/L 48 hr EC50 (crustacea) > 1 ≤ 10 mg/L 72/96 hr ErC50 (aquatic plants) > 1 ≤ 10 mg/L Toxic to aquatic life	96 hr LC50 (fish) > 10 ≤ 100 mg/L 48 hr EC50 (crustacea) > 10 ≤ 100 mg/L 72/96 hr ErC50 (aquatic plants) > 10 ≤ 100 mg/L Harmful to aquatic life
Flammable Aerosol	Extremely flammable aerosol	Flammable aerosol	Not Applicable
Flammable solids	Using the burning rate test, substances or mixtures other than metal powders: (a) wetted zone does not stop fire and (b) burning time < 45 seconds or burning rate > 2.2 mm/second Using the burning rate test, metal powders that have burning time ≤ 5 minutes Flammable solid	Using the burning rate test, substances or mixtures other than metal powders: (a) wetted zone does not stop fire for at least 4 minutes and (b) burning time < 45 seconds or burning rate > 2.2 mm/second Using the burning rate test, metal powders that have burning time > 5 ≤ 10 minutes Flammable solid	Not Applicable
Flammable gases	Gases, which at 20 degrees C and a standard pressure of 101.3 kPa: (a) are ignitable when in a mixture of 13% or less by volume in air; or (b) have a flammable range with air of at least 12 percentage points regardless of the lower flammable limit. Extremely flammable gas	Gases, other than those of category 1, which, at 20 degrees C and a standard pressure of 101.3 kPa, have a flammable range while mixed in air. Flammable gas	Not Applicable

**GHS Label: GHS02: Flame.****Signal word: Danger****Details of statements:**

Hazard Statements	<p>H225: Highly flammable liquid and vapour.          H304: May be fatal if swallowed and enters airways.          H315: Causes skin irritation.          H336: May cause dizziness or drowsiness.          H361d: Suspected of damaging fertility or the unborn child.          H373: May cause damage to organs through prolonged or repeated exposure.</p>
Precautionary Statement Prevention	<p>P 102: Keep out of reach of children.          P 103: Read label before use.          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.          P 233: Keep container tightly closed.          P 240: Ground/bond container and receiving equipment.          P 241: Use explosion-proof electrical/ventilating/lighting/equipment.          P 242: Use only non-sparking tools.          P 243: Take precautionary measures against static discharge.          P 260: Do not breathe dust/fume/gas/mist/vapours/spray*.          P261: Avoid breathing dust/fumes/mist/vapours/spray.          P 264: Wash thoroughly after handling.          P 270: Do not eat, drink or smoke when using this product.          P 280: Wear protective gloves/protective clothing/eye protection/face protection*.          P271: Use only outdoors or in a well-ventilated area.          P281: Use personal protective equipment as required.</p>
Precautionary Statement Response	<p>P 101: If medical advice is needed, have product container or label at hand.          P 301: IF SWALLOWED:          P 302: IF ON SKIN:          P 303: IF ON SKIN (or hair):          P304: IF INHALED:          P 305: IF IN EYES:          P308: IF ON CLOTHING:          P 310: Immediately call a POISON CENTER or doctor/physician.          P312: Call a POISON CENTER or doctor/physician if you feel unwell.          P313: Get medical advice/attention.          P 314: Get medical advice/attention if you feel unwell.          P 321: Specific treatments see on (in first aid section) this label).          P 331: Do NOT induce vomiting.          P 332: If skin irritation occurs:          P 337: If eye irritation persists:          P 338: Remove contact lenses, if present and easy to do. Continue rinsing.          P340: Remove to fresh air and keep at rest in a position comfortable for breathing.          P 351: Rinse cautiously with water for several minutes.          P 352: Wash with plenty of soap and water.          P 353: Rinse skin with water/shower.</p>

	P 361: Remove/Take off immediately all contaminated clothing. P 362: Take off contaminated clothing and wash before re-use. P 370: In case of fire: P 378: Use for extinction.
Precautionary Statement Storage	P 235: Keep cool. P 403: Store in a well-ventilated place. P405: Store locked up.
Precautionary Statement Disposal	Follow local regulation

**Hazard ratings:**

NFPA HAZARD CODES	RATINGS SYSTEM
<b>HEALTH:</b> 2	0 = No Hazard
<b>FLAMMABILITY:</b> 3	1 = Slight Hazard
<b>INSTABILITY:</b> 0	2 = Moderate Hazard
	3 = Serious Hazard
	4 = Severe Hazard

Data Reference: <http://toxnet.nlm.nih.gov/cgi-bin/sis/search>.

**2.2 Information pertaining to particular dangers for human:**

After swallowing possibility of aspiration (passage into the lung) and danger of chemical pneumonia (pulmonary oedema). Product irritates eyes and skin. High vapour concentrations irritate respiratory system and eyes and may lead to fast coma and death. Liquid is absorbed through skin and may develop allergic eruption.

**2.3 Information pertaining to particular dangers for the environment:**

NA.

**2.4 Other adverse effects:**

Highly flammable and easily ignitable substance. Danger of ignition at normal temperature. Readily evaporates and vapours form with air toxic and explosive mixtures heavier than air. Mixtures keep above ground and after ignition they spread fast into far distances. Ignition possible when exposed to hot surfaces, sparks, naked flames and by electrostatic discharges too. The substance is practically insoluble in water, floats on the water level and forms toxic and explosive mixtures above the water level. Risk of explosion if emptied into drains or released into wastewater. Attacks rubber and plastics.

**Route of entry:**

Occupational exposure to toluene can occur through inhalation, dermal contact and

Skin Contact	Skin Absorption	Eye Contact	Inhalation	Ingestion
Yes	Yes	Yes	Yes	Yes

ingestion.

**DATA REFERENCE:** <http://toxnet.nlm.nih.gov/cgi-bin/sis/search>.

**Health hazards:**

Source	NTP listed?	IARC cancer review group?	OSHA Regulated?
Carcinogenicity	No	No	No

DATA REFERENCE: Toxic release inventory (TRI) basis of Occupational Safety and Health Administration (OSHA) carcinogen, National Toxicological program (NTP), International Agency for Research on Cancer (IARC), <http://toxnet.nlm.nih.gov/cgi-bin/sis/search>.

**Section 3 – COMPOSITION & INFORMATION ON INGREDIENTS**

Ingredients / Hazardous	CAS No.	EC No.	Percentage
Toluene/Yes	108-88-3	203-625-9	> 99.80 %
Benzene/Yes	71-43-2	200-753-7	< 0.05 %

Data reference: <http://ecb.jrc.ec.europa.eu/esis/>

**Section 4 – FIRST AID MEASURES**

**4.1 General advice**

**IMMEDIATE MEDICAL ATTENTION IS REQUIRED AFTER INHALATION OR AFTER SWALLOWING.**

In case of health troubles or doubts, seek medical advice immediately and show this Material Safety Data Sheet.

Ensure activity of vitally important functions until the arrival of the doctor (artificial respiration, inhalation of oxygen, heart massage). If patient is unconscious, or in case of danger of blackout (apsychia), transport patient in a stabilized position. In case of first degree burns (painful redness), and second degree burns (painful blisters), cool the affected area with cold running water for a long time. In case of third degree burns (redness, cracking pale skin, usually without pain), do not cool affected skin, dress the area with sterile dry gauze only.

**4.2 Inhalation**

Remove patient to fresh air, keep him warm and in order to rest quietly. Avoid walking. Seek medical advice.

**SYMPTOMS AND EFFECTS:** irritation, headache, dizziness, weakness, stupefaction, irritant coughing, convulsions, unconsciousness, possible respiratory inhibition or arrest.

**4.3 Skin contact**

Immediately take off all contaminated clothing and footwear. Flush effected area with copious quantities of water. Seek medical advice.

**SYMPTOMS AND EFFECTS:** Mild irritation, degreasing, absorption, eruptioning and blistering.

**4.4 Eye contact**

Immediately flush eyes with clean lukewarm water and continue flushing for at least 15 minutes – keep the eyelids widely apart and flush thoroughly with mild water stream from the inner to the outer. Seek medical advice.

**SYMPTOMS AND EFFECTS:** severe irritation, cornea damage.

**4.5 Swallowing**

If patient is conscious and without convulsion, immediately try to induce vomiting. Never give anything by mouth to an unconscious person, just put patient into a stabilised position. Seek medical advice immediately.

**SYMPTOMS AND EFFECTS:** nausea, vomiting, convulsions, irregular heartbeat.

**Section 5 – FIRE FIGHTING MEASURES**

**5.1 Suitable extinguishing media**

Foam, powder, CO<sub>2</sub>. Cool containers with water spray.

**5.2 Extinguishing media to be avoided**

Water.

### **5.3 Caution about specific danger in case of fire and fire-fighting procedures**

Danger of violent reaction or explosion. Vapours may travel considerable far distances and cause subsequent ignition. Vapours are heavier than air, may cumulate along the ground and in enclosed spaces – danger of explosion. Do not empty into drains. When burning, it emits carbon monoxide, carbon dioxide and irritant fumes. Containers with the substance exposed to excessive heat may explode.

### **5.4 Special protective equipment for fire-fighters**

Wear full protective fire-resistant clothing and self-contained breathing apparatus.

## **Section 6 –ACCIDENTAL RELEASE MEASURES**

### **6.1 Person-related safety precautions**

Isolate hazard area. Evacuate all unauthorized personnel not participating in rescue operations from the area. Avoid entry into danger area. Remove all possible sources of ignition. Stop traffic and switch off the motors of the engines. Do not smoke and do not handle with naked flame. Use explosion-proof lamps and non-sparking tools. Avoid contact with the substance. Apply recommended full protective personal equipment. When escaping from the contaminated area, wear mask with cartridge against organic vapours. In case of general average, evacuate personnel from danger area. In places under the ground level and in enclosed spaces (including drains) risk of explosion and accumulation of toxic vapours.

### **6.2 Precautions for protection of the environment**

Prevent from further leaks of substance. Do not allow substance to enter soil, water and sewage systems. In case of substance discharge to water courses or water containers, inform water consumers immediately, stop service and exploitation of water.

### **6.3 Recommended methods for cleaning and disposal**

Pump off substance safely, soak up residues with compatible porous material and forward for disposal in closed containers. Dispose off under valid legal waste regulations.

## **Section 7 –HANDLING AND STORAGE**

### **7.1 Information for safe handling**

Observe all fire-fighting measures (no smoking, do not handle with naked flame and remove all possible sources of ignition). Take precautionary measures against static discharges. Wear recommended personal protective equipment and observe instructions to prevent possible contact of substance with skin and eyes and inhalation.

Avoid leak to environment.

### **7.2 Information for storage**

Storerooms should meet the requirements for the fire safety of constructions and electrical facilities and should be in conformity with valid regulations. Store in cool, well-ventilated place with effective exhaust, away from heat and all sources of ignition. Store in tightly closed container. Do not store together with oxidizing agents.

Take precautionary measures against static discharges. Avoid leak to environment.

### **7.3 Information for specific use**

Not applicable.

**Section 8 – EXPOSURE CONTROL & PERSONAL PROTECTION**

**8.1 Occupational Exposure Limits:**

Material	Source	Type	ppm	mg/m3	Material
TOLUENE	ACGIH	TWA	100	375	TOLUENE
	ACGIH	STEL	150	560	
	ACGIH	SKIN_DES TWA	NA		
	NIOSH	IDLH	*500		
	OSHA	TWA	100	375	
	OSHA	STEL	150	560	

NA: Data not available

DATA REFERENCE: <http://toxnet.nlm.nih.gov/cgi-bin/sis/search>.

Provide adequate ventilation when using the material and follow the principles of good occupational hygiene to control personal exposure.


Recommended determination method in the work place atmosphere: gas chromatography, detector tube.

**8.2 Occupational exposure controls**

Collective protection measures: General and local ventilation, effective exhaust.

Individual protection measures: Personal protective equipment (PPE) for the protection of eyes, hands and skin corresponding with the performed labour has to be kept at disposition for the employees. In cases, where the workplace exposure control limits cannot be observed with the help of technical equipment or where it is not possible to ensure that the respiratory system exposure does not represent a health hazard for the personnel, adequate respiratory protection have to be kept at disposition. In the case of continuous use of this equipment during constant work, safety breaks have to be scheduled, if the PPE-character requires this. All PPE have to be kept in disposable state and the damaged or contaminated equipment has to be replaced immediately.

**RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE):**

HANDS	EYES	BODY	RESPIRATORY
			

**Respiratory protection:** If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-face piece respirator, airline hood, or full face piece self-contained breathing apparatus. protective mask with canister A (brown coloured, protecting against organic vapours), self-contained breathing apparatus.

**Eye protection:** Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

**Hand protection:** Wear gloves of impervious material.

**Body protection:** Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Protective coverall antistatic design recommended, impervious when handling big amounts (nitrile rubber), sealed leather footwear (free from synthetic adhesives)

**Hygiene Measures:** Wash hands, forearms and face thoroughly after handling. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

**8.3 Environmental exposure controls**

Proceed in accordance with valid air and water legislative regulations.

**Engineering measures:** Use only with adequate ventilation. If user operations generate

dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

### Section 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Colourless liquid
Odour	Sweet pungent benzene like
Solubility in water	Insoluble in water , soluble in alcohol
Relative Density (H <sub>2</sub> O=1)	0.8636
Boiling Point °C	110.6 °C
Melting Point °C	-94.9 °C
Relative Vapour Density (Air=1)	3.1
Flash point °C	4 °C (Closed cup) 16 °C (open cup)
Auto ignition °C	536 °C
Vapour pressure (mmHg) @ 20 °C	22
Molecular weight	92.14
Explosive limits in air % by volume	LEL 1.1% UEL 7.1%
pH	NA
Viscosity cP @25 °C	0.424
Pour point	NA
Evaporation rate (water=1)	NA
Octanol/water partition coefficient log Kow	2.73
% volatile	NA

NA: NOT AVAILABLE

DATA REFERENCE: <http://toxnet.nlm.nih.gov/cgi-bin/sis/search>

### Section 10 – CHEMICAL STABILITY AND REACTIVITY INFORMATION

#### 10.1 Conditions to avoid:

Concentrations within the explosion limits, sources of ignition, high temperature, sun radiation.

#### 10.2 Material to avoid

**AIR AND WATER REACTIONS:** Highly flammable. Insoluble in water. TOLUENE reacts vigorously with allyl chloride or other alkyl halides even at minus 70° C in the presence of ethyl aluminum dichloride or ethyl aluminum sesquichloride. Explosions have been reported [NFPA 491M 1991]. Incompatible with strong oxidizing agents. When added to a tank of sulfur dichloride, the tank over pressurized and ruptured in a reaction thought to be catalyzed by iron or iron(III) chloride [Chem. Eng. News, 1988, 66(32), 2].

**REACTIVE GROUPS:** Hydrocarbons, Aromatics

#### 10.3 Hazardous decomposition products

Thermal decomposition generates carbon monoxide and carbon dioxide.

### Section 11 – TOXICOLOGICAL INFORMATION

#### 11.1 Acute effects

After swallowing possibility of aspiration (passage into the lung) and danger of chemical pneumonia (pulmonary oedema). Product irritates eyes and skin. High



vapour concentrations irritate respiratory system and eyes and may lead to fast coma and death.

Acute toxicity data:

Parameter	Route	Species	Values	Exposure period
LC50	Inhalation	mammal	30g/m <sup>3</sup>	8 hours
LD50	Oral	Rat	636 mg/Kg	Not applicable
LD50	Dermal	Rabbit	430 mg mild	Not applicable

Data Reference: <http://toxnet.nlm.nih.gov/cgi-bin/sis/search>.

**11.2 Repeated dose toxicity:** Chronic effects cause develop leukaemia.

**11.3 Sensitisation:** May cause skin allergy.

**11.4 CMR effects (carcinogenicity, mutagenicity, toxicity for reproduction)**

Not a CMR.

**11.5 Toxicokinetics, metabolism, distribution:** NA.

## Section 12 – ECOLOGICAL INFORMATION

### 12.1 Ecotoxicity data:

Parameter	Route	Species	Values	Exposure period	Condition of bioassay
LC50	Inhalation	Bluegill	17 mg/l	24 hours	Not specified
LC50	Inhalation	Daphnia magna (water flea)	313 mg/m <sup>3</sup>	48 hours	Not specified

Data Reference: <http://toxnet.nlm.nih.gov/cgi-bin/sis/search>

**12.2 Mobility:** NA.

**12.3 Persistence and degradability:** Substance is biodegradable.

**12.4 Bioaccumulative potential:** NA

**12.5 Results of PBT assessment Persistence and Degradation:** Toluene in air will photo-degrade.

**12.6 Other adverse effects**

The product is hazardous substance.

**Environmental Fate:** Toluene is expected to have high mobility in soil. Toluene is expected to biodegrade in soils.

## Section 13– DISPOSAL CONSIDERATION

**Local Legislation:** Disposal should be in accordance with applicable regional, national, and local laws and regulations. This product should not be dumped, spilled, rinsed or washed into sewers or public waterways.

**13.1 Recommended disposal methods for the substance / mixture**

Product reuse or disposal in accordance with valid waste legislative regulations.

**13.2 Recommended disposal methods for contaminated packaging**

Product is transported in tank-vehicles.

**13.3 Waste management measures that control exposure of humans and environment**

Proceed in accordance with valid health, air and water legislative regulations.

**13.4 Waste regulation**

Follow local regulation.

**Section 14– TRANSPORT INFORMATION**

**International Transport Regulation:**

**ADR/RID (Road/Rail), IMDG (Sea) and ICAO/IATA (Air)**

**Proper Shipping Name:** TOLUENE

**Hazard Class:** 3, Flammable Liquid

**UN Number:** 1294

**Packing Group:** II

**Emergency Action Code:** 3YE

**14.2 Special transport precautionary measures**

Not applicable.

**Section 15– REGULATORY INFORMATION**

**MSDS format on a 16 Section based on guidance provided in:**

**Indian Regulation:**

Manufacture, Storage and Import of Hazardous Chemicals Rule, 1989.

The Factories Act 1948

**International Regulations:**

European SDS Directive

ANSI MSDS Standard

ISO 11014-1 1994

WHMIS Requirements

**United States**

Hazard Communication Standard

**Canada**

Hazardous Products Act and Controlled Products Regulations

**Europe**

Dangerous Substance and Preparations Directives

**Australia**

National Model Regulations for the Control of Workplace Hazardous Substances

**The Globally Harmonized System of Classification and Labeling of Chemicals endorsed by The UN Economic and Social Council**

\*RISK PHRASES: R11 Highly flammable, R20 Harmful by inhalation, R38 Irritating to skin, R48 Danger of serious damage to health by prolonged exposure, R63 Possible risk of harm to the unborn child, R65 Harmful: may cause lung damage if swallowed. R67 Vapours may cause drowsiness and dizziness.

\*SAFETY PHRASES: S2 Keep out of the reach of children, S36 Wear suitable protective clothing, S37 Wear suitable gloves, S46 If swallowed, seek medical advice immediately and show this container or label, S62 If swallowed, do not induce vomiting; seek medical advice immediately and show this container or label.

\*These standard risk and safety phrases for use when interpreting Material Safety data Sheets are derived from the European Union Regulation, CHIP Regulations - Chemicals (Hazard Information and Packaging for Supply). They are required to be

used in Materials Safety Data Sheets to identify potential hazards and offer safe handling advice.

<b>Section 16 – OTHER INFORMATION</b>
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#### Training instructions

Personnel handling the product has to be acquainted demonstrably with its hazardous properties, with health and environmental protection principles related to the product and first aid principles.

Tremcard details/Reference: Refer Section 14

Local bodies involved :Local District Authority and Local Crisis Group

#### Sources of data used to compile the Material Safety Data Sheet

**Data compilation reference:** National Institute for Occupational Safety and Health guide to chemical hazards and International Chemical Safety Cards (WHO/IPCS/ILO) and <http://toxnet.nlm.nih.gov/cgi-bin/sis/search>, <http://webnet3.oecd.org/eChemPortal/Results2.aspx?SubstanceId=169630>, . <http://ecb.jrc.ec.europa.eu/esis/index.php?PGM=ein>, <http://www.cdc.gov/niosh/npg/npgd0049.html>

#### MSDS Revision Status:

Date of Revision	Revised Sections	Supercedes
Sep. 01, 2009	Format revised	Feb. 01, 2008
Sep. 01, 2011	Section 2 Health category, 3 Text below table removed, 4 (4.3), and 15 R & S Phrases.	Sep. 01, 2009
Aug. 01, 2013	Section 2 NFPA Hazard statement	Sep. 01, 2011

**This MSDS is issued by the Centre for HSE Excellence, Reliance Industries Limited**

**Contact Details:** For any enquiry/comment regarding this Material Safety Data Sheet, kindly contact the Centre for HSE Excellence at [HSE.ExcellenceCentre@ril.com](mailto:HSE.ExcellenceCentre@ril.com)

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End of MSDS