Infosafe No™	3CHDO	Issue Date : March 2017	RE-ISSUED by ACR

Product Name : **METHANOL**

Classified as hazardous

1. Identification

GHS Product Identifier	METHANOL
Company Name	AUSTRALIAN CHEMICAL REAGENTS (ACR) (ABN 19 008 264 211)
Address	38 - 50 Bedford Street Gillman S.A. 5013 Australia
Telephone/Fax Number	Tel: (08) 8440 2000 Fax: (08) 8440 2001
Recommended use of the chemical and restrictions on use	Laboratory reagent.

Other Names	**Name**	**Product Code**
	Methanol 70% v/v Methyl alcohol, Hydroxymethane, Carbinol, Wood alcohol	2086

Other Information

EMERGENCY CONTACT NUMBER: +61 08 8440 2000
Business hours: 8:30am to 5:00pm, Monday to Friday.

Australian Chemical Reagents (ACR) 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 Australian Chemical Reagents (ACR) 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 Australian Chemical Reagents (ACR) 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

GHS classification of the substance/mixture

Acute Toxicity - Dermal: Category 3
Flammable Liquids: Category 2
Acute Toxicity - Inhalation: Category 3
Acute Toxicity - Oral: Category 3
Specific target organ toxicity - Single Exposure Category 1, Eyes

Signal Word (s)

DANGER

Hazard Statement (s)

H225 Highly flammable liquid and vapour.
H301 Toxic if swallowed.
H311 Toxic in contact with skin.
H331 Toxic if inhaled.
H370 Causes damage to organs, eyes.

Pictogram (s)

Flame, Health hazard, Skull and crossbones

Precautionary statement – Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting/.../equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Classified as hazardous

Precautionary statement – Response	Swallowed P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P330 Rinse mouth. Skin P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P312 Call a POISON CENTER or doctor/physician if you feel unwell. P361 Remove/Take off immediately all contaminated clothing. P363 Wash contaminated clothing before reuse. Inhaled P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P311 Call a POISON CENTER or doctor/physician. Fire P370+P378 In case of fire: Use foam, dry chemical, carbon dioaxide or water spray for extinction.
Precautionary statement – Storage	P403+P233+P235 Store in a well-ventilated place. Keep container tightly closed. Keep cool. P405 Store locked up.
Precautionary statement – Disposal	P501 Dispose of contents/container to an approved waste disposal plant.

3. Composition/information on ingredients

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion	Hazard Symbol	Risk Phrase
Methyl Alcohol	67-56-1	70 %		
Water	7732-18-5	30 %		

4. First-aid measures

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. Immediately medical attention is required.
Ingestion	Rinse mouth thoroughly with water immediately. DO NOT INDUCE VOMITING. Seek immediate medical advice.
Skin	Wash affected areas with copious quantities of water and soap. Remove contaminated clothing and wash before re-use. If rapid recovery does not occur, obtain medical attention
Eye contact	If contact with the eye(s) occurs, wash with copious amounts of water for approximately 15 minutes holding eyelid(s) open. Take care not to rinse contaminated water into the non-affected eye. Seek medical attention.
First Aid Facilities	Maintain eyewash fountain and safety shower in work area.
Advice to Doctor	Effects may be delayed. Treat symptomatically based on judgement of doctor and individual reactions of the patient. The severity of outcome following methanol ingestion may be more related to the time between ingestion and treatment, rather than the amount ingested. Therefore, there is a need for rapid treatment of any ingestion exposure. Ethanol (contained in alcoholic beverages) can slow the metabolism of methanol, thus reducing the potential for harmful effects.
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

Hazards from Combustion Products	Carbon dioxide, carbon monoxide, formaldehyde and other toxic, irritating chemicals.
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.

Classified as hazardous

Specific hazards arising from the chemical	HIGHLY FLAMMABLE: These liquids have a 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	•2WE
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

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 inhalation, contact with skin, eyes and clothing.
Personal Protection	Wear protective clothing specified for normal operations (see Section 8)

7. Handling and storage

Precautions for Safe Handling	Avoid contact with eyes. Avoid contact with skin. Avoid breathing dust (or) vapour (or) spray mist. Keep locked up. Keep containers tightly sealed. Protect against physical damage. Avoid use in confined spaces. Ensure good ventilation/exhaustion at the workplace. Work under hood. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid prolonged or repeated exposure. Do not ingest. If ingested, seek medical advice immediately and show the container or the label. Wear suitable protective clothing. Safety glasses. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Keep away from heat and ignition sources - Do not smoke. Take precautions against static discharge. All electrical equipment must be flameproofed. Fumes can combine with air to form an explosive mixture. Avoid generation of vapours/aerosols. 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. Do Not attempt to clean empty containers since residue is difficult to remove. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death. Do not expose to temperatures above 60 °C.
Conditions for safe storage, including any incompatabilities	Store in a locked cabinet or with access restricted to technical experts or their assistants. Store small containers in suitable flammable liquid storage cabinets when not in use. Larger drums (200L) must be kept in purpose-built stores. Outside or detached storage is preferred. Store in well-sealed, dry containers, in a cool, well-ventilated location, away from any area where the fire hazard may be acute and protected from direct sunlight. Keep away from heat, sparks, open flames and all possible sources of ignition. Protect against physical damage. Separate from incompatibles. Do not store together with oxidizing and acidic materials. Aluminium, magnesium powder. 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. Do Not attempt to clean empty containers since residue is difficult to remove. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death.
Corrosiveness	Methanol is not corrosive to most metals. Admiralty brass, high silicon iron, naval bronze, nickel-resist and silicon copper have excellent corrosion resistance (less than 2 mm (50.8 µm) penetration/year), while carbon steel, types 304/347, 316 and 400 stainless steels, copper, brass, bronze, aluminium, nickel, lead, tantalum, titanium and zirconium have good resistance (less than 20 mm (505 µm)/year).
Storage Regulations	Refer Australian Standard AS 1940-2004 'The storage and handling of flammable and combustible liquids'. Refer Australian Standard AS/NZS 4452:1997 'The storage and handling of toxic substances'.
Handling Temperatures	60°C maximum.

Storage Temperatures	Store at room temperature (15 to 25 °C recommended). 60 ºC Maximum.
Unsuitable Materials	Some plastics (such as ABS and Isophthalic polyester, and epoxy at 90 °C), elastomers (such as Viton A, hard and soft rubber, polyether-urethane and polyurethane), epoxy general purpose coatings, aluminium, and zinc alloys.

8. Exposure controls/personal protection

Occupational exposure limit values

Name	STEL		TWA		
	mg/m3	ppm	mg/m3	ppm	Footnote
Methyl Alcohol	328	250	262	200	

Other Exposure Information	A time weighted average (TWA) has been established for Methyl alcohol [Methanol] (Safe Work Australia) of 262 mg/m³, (200 ppm). The corresponding STEL level is 328 mg/m³, (250 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. Note: Absorption through the skin may be a significant source of exposure.
Appropriate engineering controls	In industrial situations maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.
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 recommended: Approved respirator with organic vapour and dust/mist filters. Filter capacity and respirator type depends on exposure levels.
Eye 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.
Hand Protection	Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance.
Personal Protective Equipment	Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.
Footwear	Rubber boots.
Body Protection	Flame retardant 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.
Hygiene Measures	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

Form	Liquid
Appearance	Clear, colourless, mobile, volatile, highly polar liquid.
Odour	Mild, characteristic alcohol odour, when pure. Crude methanol may have a repulsive, pungent odour.
Solubility in Water	Miscible in water in all proportions.
Solubility in Organic Solvents	Miscible with other alcohols, esters, ketones, ethers and most other organic solvents.
pH	Not available. Methanol is both a weak acid and a weak base.
Odour Threshold	Reported values vary widely; 4.2-5960 ppm (geometric mean: 160 ppm) (detection); 53-8940 ppm (geometric mean: 690 ppm) (recognition).
Volatile Component	70 %
Partition Coefficient: n-octanol/water	Log P(oct) = -0.77 (100% methanol)
Flash Point	12 °C (closed cup) (100% methanol)
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.
Flammable Limits - Lower	5.5 vol% (100% methanol)
Flammable Limits - Upper	36.5 vol% (100% methanol)

10. Stability and reactivity

Chemical Stability	Normally stable. Decomposes on heating to produce carbon monoxide and formaldehyde. Hygroscopic (absorbs moisture from the air).
Conditions to Avoid	Heat, high temperatures, flames, static discharge, sparks and other ignition sources, confined spaces, moisture and incompatibles.
Incompatible Materials	Acids (mineral acids, such as sulfuric acid, or organic acids), acid anhydrides, acid halides, alkali metals (e.g. sodium or potassium), alkaline earth metals, metals (such as metallic powdered aluminium, powdered magnesium and zinc), reducing agents, some forms of plastics, rubber, and coatings, oxidizing agents (such as perchloric acid, metal perchlorates, salts of oxyhalogenic acids, bromine, chlorine, chromium trioxide, halogen oxides, nitrates, nitric acid, nitrogen oxides, nonmetallic oxides, chromosulfuric acid, sodium hypochlorite), hydrides, zinc diethyl, halogens. hydrogen peroxide, carbon tetrachloride and metals, acetyl bromide, dichloromethane, potassium tert-butoxide, alkylaluminium solutions, beryllium hydride, cyanuric chloride, isocyanates or phosphorus (III) oxide (tetraphosphorus hexaoxide), diethyl zinc.
Hazardous Decomposition Products	Carbon monoxide, carbon dioxide and formaldehyde.
Possibility of hazardous reactions	Can react vigorously with oxidizers. Violent reaction with alkyl aluminium salts, acetyl bromide, chloroform + sodium methoxide, chromic anhydride, cyanuirc chlorite, lead perchlorate, phosphorous trioxide, nitric acid. Exothermic reaction with sodium hydroxide + chloroform. Incompatible with beryllium dihydride, metals (potassium and magnesium), oxidants (barium perchlorate, bromine, sodium hypochlorite, chlorine, hydrogen peroxide), potassium tert-butoxide, carbon tetrachloride, alkali metals, metals (aluminium, potassium magnesium, zinc), and dichlormethane. Rapid autocatalytic dissolution of aluminium, magnesium or zinc in 9:1 methanol + carbon tetrachloride - sufficiently vigorous to be rated as potentially hazardous. May attack some plastics, rubber, and coatings.
Hazardous Polymerization	Will not occur.

11. Toxicological Information

Toxicology Information	This substance should be treated with great care.
Acute Toxicity - Oral	LDLo (human): 143 mg/kg;
Acute Toxicity - Inhalation	LC50 (Rat): 131.3 mg/l/4h.
Ingestion	Effects are the same as those described for 'Inhalation' above. There is a wide range of individual susceptibility to the toxic effects of methanol (from a fatal dose of 15 mL of 40% methanol, to survival following ingestion of 500 mL of the same solution). In general, 300 to 1000 mg/kg is considered the range of minimum lethal dose for untreated cases of methanol poisoning. Methanol can probably be easily aspirated (breathed) into the lungs) during ingestion or vomiting, based on its physical properties and comparison to related alcohols. Aspiration of methanol could cause a potentially fatal accumulation of fluid in the lungs (pulmonary edema). Ingestion is not a typical route of occupational exposure.
Inhalation	A slight irritant to the mucous membranes. Methanol is toxic and can very readily form extremely high vapour concentrations at room temperature. Inhalation is the most common route of occupational exposure. At first, methanol causes mild central nervous system (CNS) depression with symptoms such as nausea, headache, vomiting, dizziness, incoordination and an appearance of drunkenness. A time period with no obvious symptoms follows (typically 8-24 hours, but may last several hours to 2 days). This latent period is then followed by development of metabolic acidosis and severe visual effects. Symptoms such as headache, dizziness, nausea and vomiting, followed in more severe cases by abdominal and muscular pain and difficult periodic breathing have been observed. Coma and death, usually due to respiratory failure, may occur if medical treatment is not received. Visual effects may include reduced reactivity and/or increased sensitivity to light, blurred, double and/or snowy vision, and blindness. Depending on the severity of poisoning and the promptness of treatment, survivors may recover completely or may have permanent blindness, vision disturbances and/or nervous system effects.

Classified as hazardous

Skin	Methanol may be moderately irritating to the skin, based on unconfirmed animal information. No human information was located. Methyl alcohol is a defatting agent and may cause skin to become dry and cracked. Skin absorption can occur; symptoms may parallel inhalation exposure.
Eye	Methanol is a mild to moderate eye irritant, based on animal information. There is no human information available. Inhalation, ingestion or skin absorption of methanol can cause significant disturbances to vision, including blindness. Refer to 'Inhalation' above for additional information.
Carcinogenicity	Not listed in the IARC Monographs.
Reproductive Toxicity	There is no human information available. No conclusions can be drawn based on the available animal information. No effects on reproductive performance were reported in a two- generation reproductive study. Rats were administered 10-1000 ppm by inhalation for 18-20 hours/day. Some studies suggest that inhalation of methanol may affect certain hormones (e.g. testosterone and lutenizing hormone) in male rats. The results have not been consistent or dose-related.
Chronic Effects	Marked impairment of vision has been reported. Prolonged or repeated skin contact may cause dermatitis. Chronic exposure may cause effects similar to those of acute exposure. Methanol is only very slowly eliminated from the body. Because of this slow elimination, methanol should be regarded as a cumulative poison. Though a single exposure may cause no effect, daily exposures may result in the accumulation of a harmful amount.
Serious eye damage/irritation	Moderate irritant.
Mutagenicity	There is insufficient information available to conclude that methanol is mutagenic. There is one positive report of mutagenicity in a study using live animals, but there are not enough details available to evaluate the study. Other studies using live animals have produced negative results. Negative results have been obtained in tests using cultured mammalian cells and bacteria. Oral administration of 1000 mg/kg increased the incidence of chromosomal aberrations, as well as the incidence of micronuclei in red blood cells in mice. This study is reported in an abstract and there are not enough details available to draw firm conclusions. Negative results were obtained in other studies where live mice or rats were exposed orally or by inhalation. Negative results have been obtained in most tests involving cultured mammalian cells. A high concentration (7.9 mg/mL) produced positive results in mouse lymphoma cells, in the presence of metabolic activation. Negative results have been obtained in tests using bacteria, with or without metabolic activation. Inconclusive results were obtained in one strain of bacteria, in the presence of metabolic activation.

12. Ecological information

Ecotoxicity	Harmful effect on aquatic organisms. Risk of formation of explosive vapours above water surface. When used properly, no impairments in the function of waste-water-treatment plants are to be expected.
Persistence and degradability	Abiotic degradation: Slow degradation. (air) Biologic degradation: BOD 76 % von TOD /5 d (closed bottle test). Readily biodegradable (reduction: DOC >70 %; BOD >60 %; BOD5 to COD >50 %). Degradability: BOD5: 0.60 - 1.12 g/g; COD: 1.42 g/g; TOD: 1.5 g/g.
Mobility	Distribution: log P(o/w): -0.74.
Bioaccumulative Potential	No bioaccumulation is to be expected (log P(o/w <1).
Environmental Protection	Do not allow to enter waters, waste water, or soil!
Acute Toxicity - Fish	Lepomis macrochirus LC50: 15400 mg/l /96 h (in soft water).
Acute Toxicity - Daphnia	Daphnia magna EC50: > 10000 mg/l /48 h.
Acute Toxicity - Algae	Maximum permissible toxic concentration: Algeal toxicity: Scenedesmus quadricauda IC5: 8000 mg/l /8 d.
Acute Toxicity - Bacteria	Maximum permissible toxic concentration: Bacterial toxicity: Pseudomonas putida EC5: 6600 mg/l /16 h.
Acute Toxicity - Other Organisms	Maximum permissible toxic concentration: Protozoa : Entosiphon sulcatum EC5: > 10000 mg/l /72 h.

13. Disposal considerations

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

14. Transport information

Infosafe No™	3CHDO	Issue Date : March 2017	RE-ISSUED by ACR

Product Name : **METHANOL**

Classified as hazardous

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	1230
UN proper shipping name	METHANOL
Transport hazard class(es)	3
Sub.Risk	6.1
Hazchem Code	•2WE
Packaging Method	3.8.3RT1
Packing Group	II
EPG Number	3A3
IERG Number	16

15. Regulatory information

Regulatory Information	Listed in the Australian Inventory of Chemical Substances (AICS).
Poisons Schedule	S6

16. Other Information

Literature References	'Standard for the Uniform Scheduling of Medicines and Poisons No. 15', Commonwealth of Australia, November 2016. 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 fot the Preparation of Safety Data Sheets for 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: All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make no warranty either expressed or implied, with respect to the completeness or accuracy to the information contained herein. Australian Chemical Reagents (ACR) accepts no responsibility whatsoever for its accuracy or for any results that may be obtained by customers from using the data and disclaims all liability for reliance on information provided in this data sheet or by our technical representatives. ...End Of MSDS...