

Material Safety Data Sheet

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Material Name	: Methmix 45/55/0
Recommended Uses	: Fuel additive component.
Other names	: METHANOL
Product Code	: 002C0961
Manufacturer/Supplier	: The Shell Company of Australia Limited (ABN 46 004 610 459) 8 Redfern Road Hawthorn East Victoria 3123 Australia
Telephone	: +61 (0)3 9666 5444
Fax	: +61 (0)3 8823 4800
Emergency Telephone Number	: 1800 651 818 (within Australia only) +61 3 9663 2130 (International)

2. HAZARDS IDENTIFICATION

Classified as hazardous according to the criteria of NOHSC, and as Dangerous Goods according to the Australian Dangerous Goods Code.

Symbol(s)	: F Highly flammable. T Toxic.
R-phrases(s)	: R11 Highly flammable. R23/24/25 Toxic by inhalation, in contact with skin and if swallowed. R39/23/24/25 Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
S-phrases(s)	: S1/2 Keep locked up out of reach of children. S7 Keep container tightly closed. S16 Keep away from sources of ignition - No smoking. S36/37 Wear suitable protective clothing and gloves.
Health Hazards	: Toxic by inhalation. Vapours may cause drowsiness and dizziness. Irritating to respiratory system. Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed. May cause moderate irritation to skin. Repeated exposure may cause skin dryness or cracking. Moderately irritating to eyes. Possibility of organ or organ system damage from prolonged exposure; see Chapter 11 for details. Target organ(s): Visual system. Central nervous system (CNS).
Signs and Symptoms	: Acute methanol toxicity may progress as follows: drowsiness or fatigue, and mild irritation of the eyes and mucous membranes; this may be followed (in about 18 to 24 hours and in some cases up to 72 hours) by more severe central nervous system (CNS) effects and visual disturbances including diminished eyesight or blindness, metabolic acidosis (metabolism to formic

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acid) and deep respirations. Lung damage (scarring, bronchitis, emphysema) may be indicated by shortness of breath, especially on exertion, and may be accompanied by a chronic cough. Eye irritation signs and symptoms may include a burning sensation and a temporary redness of the eye. Defatting dermatitis signs and symptoms may include a burning sensation and/or a dried/cracked appearance. Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death.

- Aggravated Medical Condition** : Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Eyes.
- Safety Hazards** : Highly flammable. May form flammable/explosive vapour-air mixture.
- SUSDP Schedule** : S6

3. COMPOSITION/INFORMATION ON INGREDIENTS

- Preparation description** : Contains methanol.

Hazardous Components

Chemical Identity	CAS	EINECS	Symbol(s)	R-phrases	Conc.
Methanol	67-56-1	200-659-6	F, T	R11; R23/24/25; R39/23/24/25	45.00 %
Water	7732-18-5	231-791-2		5	55.00 %

4. FIRST AID MEASURES

- General Information** : Keep victim calm. Obtain medical treatment immediately.
- Inhalation** : Remove to fresh air. Do not attempt to rescue the victim unless proper respiratory protection is worn. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting, or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.
- Skin Contact** : Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.
- Eye Contact** : Immediately flush eyes with large amounts of water for at least 15 minutes while holding eyelids open. Transport to the nearest medical facility for additional treatment.
- Ingestion** : If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.
- Advice to Physician** : Causes acidosis. Causes central nervous system depression. Symptoms and effects may be delayed for 18 to 24 hours and

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in some cases up to 72 hours. Treatment of poisoning may require use of ethanol. Treatment of acidosis may include correction with alkali solution, haemodialysis and supportive measures such as correction of electrolyte imbalances, where necessary. Potassium supplements may also be required.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

- Specific Hazards** : The vapour is heavier than air, spreads along the ground and distant ignition is possible. Carbon monoxide may be evolved if incomplete combustion occurs.
- Suitable Extinguishing Media** : Alcohol-resistant foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
- Unsuitable Extinguishing Media** : None.
- Protective Equipment for Firefighters** : Wear full protective clothing and self-contained breathing apparatus.
- Additional Advice** : Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

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

- Protective measures** : Isolate hazard area and deny entry to unnecessary or unprotected personnel. Stay upwind and keep out of low areas. Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse vapour or to direct its flow to a safe location for example using fog sprays. Take precautionary measures against static discharges.
- Clean Up Methods** : For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
- Additional Advice** : Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained. The vapour is heavier than air, spreads along the ground and distant ignition is possible. Vapour may form an explosive

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mixture with air. See Chapter 13 for information on disposal.

7. HANDLING AND STORAGE

- General Precautions** : Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For comprehensive advice on handling, product transfer, storage and tank cleaning refer to the product supplier. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Avoid contact with skin, eyes, and clothing.
- Storage** : Vapours from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a suitable vapour treatment system. Bulk storage tanks should be diked (bunded). The vapour is heavier than air. Beware of accumulation in pits and confined spaces.
- Product Transfer** : Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. 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.
- Container Advice** : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.
- Additional Information** : Ensure that all local regulations regarding handling and storage facilities are followed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
Methanol	AU OEL	TWA	200 ppm	262 mg/m3	
	AU OEL	STEL	250 ppm	328 mg/m3	
	AU OEL	SKIN_DES			Can be absorbed through the skin.

- Additional Information** : Skin notation means that significant exposure can also occur by absorption of liquid through the skin and of vapour through the eyes or mucous membranes.
- Exposure Controls** : The level of personal protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Use sealed systems as far as possible.

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	Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Adequate explosion-proof ventilation to control airborne concentrations. Firewater monitors and deluge systems are recommended. Eye washes and showers for emergency use.
Personal Protective Equipment	: Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers. AS/NZS 1337: Eye protectors for industrial applications. AS/NZS 2161: Occupational protective gloves - Selection, use and maintenance. AS/NZS 1715: Selection, use and maintenance of respiratory protective devices. AS/NZS 1716: Respiratory protective devices.
Respiratory Protection	: If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Where respiratory protective equipment is required, use a full-face mask. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. Select a filter suitable for combined particulate/organic gases and vapours [boiling point <(><<<>65°C (149°F)] meeting EN141 (AS/NZS:1716).
Hand Protection	: Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739, AS/NZS:2161) made from the following materials may provide suitable chemical protection: Butyl rubber. Incidental contact/Splash protection: Nitrile rubber. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact. Always seek advice from glove suppliers. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.
Eye Protection	: Chemical splash goggles (chemical monogoggles). Approved to EU Standard EN166, AS/NZS:1337.
Protective Clothing	: Chemical and cold resistant gloves/gauntlets, boots, and apron. Where risk of splashing or in spillage clean up, use chemical resistant one-piece overall with integral hood.
Monitoring Methods	: Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Examples of sources of recommended air monitoring methods are given below or contact supplier. Further national methods may be available. National Institute of Occupational Safety and Health (NIOSH), USA: Manual of analytical Methods http://www.cdc.gov/niosh/nmam/nmammenu.html Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha-slc.gov/dts/sltc/methods/toc.html Health and Safety Executive

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	(HSE), UK: Methods for the Determination of Hazardous Substances http://www.hsl.gov.uk/search.htm
	Berufsgenossenschaftliches Institut für Arbeitssicherheit (BIA), Germany http://www.hvbg.de/d/bia/index.html
	L'Institut National de Recherche et de Sécurité, (INRS), France http://www.inrs.fr/securite/hygiene_securite_travail.html
Environmental Exposure Controls	: Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Colourless. Liquid.
Odour	: Characteristic
pH	:
Initial Boiling Point and Boiling Range	: 63.6 - 64.6 °C / 146.5 - 148.3 °F
Melting / freezing point	: -97.5 °C / -143.5 °F
Flash point	: 10 °C / 50 °F
Upper / lower Flammability or Explosion limits	: 6.1 - 44 %(V)
Auto-ignition temperature	: 455 °C / 851 °F (ASTM E-659)
Vapour pressure	: 13,100 Pa at 20 °C / 68 °F 55,700 Pa at 50 °C / 122 °F
Specific gravity	:
Density	: 791 - 792 kg/m ³ at 20 °C / 68 °F (ASTM D-4052)
Water solubility	: at 20 °C / 68 °F Completely miscible.
Solubility in other solvents	:
Dynamic viscosity	: 0.59 mPa.s at 20 °C / 68 °F
Vapour density (air=1)	:
Evaporation rate (nBuAc=1)	: 1.9 (ASTM D 3539, nBuAc=1) 6.3 (DIN 53170, di-ethyl ether=1)
Surface tension	: 22.6 mN/m at 20 °C / 68 °F

10. STABILITY AND REACTIVITY

Stability	: Stable under normal conditions of use. Reacts violently with strong oxidising agents.
Conditions to Avoid	: Avoid heat, sparks, open flames and other ignition sources. Prevent vapour accumulation.
Materials to Avoid	: Strong oxidising agents.
Hazardous Decomposition Products	: Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment	: Information given is based on product data.
Acute Oral Toxicity	: Low toxicity:LD50 >2000 mg/kg Classified as toxic. There is a marked difference in acute oral toxicity between animals and man, man being more susceptible than animals. The estimated fatal dose for man is 100 millilitres (1/2 cup)., Rat
Acute Dermal Toxicity	: Low toxicity:LD50 >2000 mg/kg Classified as toxic., Rat

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Acute Inhalation Toxicity	: Low toxicity: LC50 >20 mg/l Classified as toxic. High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death. / 4 h, Rat
Skin Irritation	: May cause moderate skin irritation (but insufficient to classify). Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis.
Eye Irritation	: Moderately irritating to eyes (but insufficient to classify).
Respiratory Irritation	: Inhalation of vapours or mists may cause irritation to the respiratory system.
Sensitisation	: Not a skin sensitiser.
Repeated Dose Toxicity	: Visual system: may cause marked impairment of vision or blindness.
Mutagenicity	: Not mutagenic.
Carcinogenicity	: Not expected to be carcinogenic.
Reproductive and Developmental Toxicity	: Causes adverse effects on the foetus based on animal studies. Does not impair fertility.
Additional Information	: In humans, over-exposure to methanol can result in blindness and metabolic acidosis There is a marked difference in acute oral toxicity between animals and man, man being more susceptible than animals. The estimate mean fatal dose = 300 mg/kg for an adult.

12. ECOLOGICAL INFORMATION

Acute Toxicity	
Fish	: Low toxicity: LC/EC/IC50 > 1000 mg/l
Aquatic Invertebrates	: Low toxicity: LC/EC/IC50 > 1000 mg/l
Algae	: Low toxicity: LC/EC/IC50 > 1000 mg/l
Mobility	: If product enters soil, it will be highly mobile and may contaminate groundwater. Dissolves in water.
Persistence/degradability	: Readily biodegradable meeting the 10 day window criterion. Oxidises rapidly by photo-chemical reactions in air.
Bioaccumulation	: Does not bioaccumulate significantly.

13. DISPOSAL CONSIDERATIONS

Material Disposal	: Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses. Waste product should not be allowed to contaminate soil or water.
Local Legislation	: Disposal should be in accordance with applicable regional, national, and local laws and regulations.

14. TRANSPORT INFORMATION

ADG	
UN number	1230
Proper shipping name	METHANOL

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Class	3
Subsidiary class	6.1
Packing group	II
Hazchem Code	• 2WE

IMDG

Identification number	UN 1230
Proper shipping name	METHANOL
Class / Division	3
Subsidiary class/Division	6.1
Packing group	II
Marine pollutant:	No

IATA (Country variations may apply)

UN No.	: 1230
Proper shipping name	: Methanol
Class / Division	: 3
Packing group	: II

15. REGULATORY INFORMATION

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

SUSDP Schedule : S6

Local Inventories

AICS : All components are listed or exempt

Other Information : National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC:2011] List of Designated Hazardous Substances [NOHSC:10005]. Approved Criteria for Classifying Hazardous Substances [NOHSC:1008]. Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003]. Australian Dangerous Goods Code. Standard Uniform Scheduling of Drugs and Poisons.

16. OTHER INFORMATION

R-phrases)

R11	Highly flammable.
R23/24/25	Toxic by inhalation, in contact with skin and if swallowed.
R39/23/24/25	Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.

MSDS Version Number : 1.1

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- MSDS Effective Date** : 17.06.2010
- MSDS Revisions** : A vertical bar (|) in the left margin indicates an amendment from the previous version.
- MSDS Regulation** :
- MSDS Distribution** : The information in this document should be made available to all who may handle the product.
- Disclaimer** : This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.